



Needs Assessment Study for Leathergoods and Footwear Sector 2016

Environmental Friendly Production and Low Cost Financing



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Abbreviations

ADB	Asian Development Bank
BB	Bangladesh Bank
BSCI	Business Social Compliance Initiative (BSCI)
COEL	Centre of Excellence for leather Skill
CPL	Climate Policy Initiative
CER	Carbon emission reduction
CERPA	Certified Emission Reduction Purchase Agreement
CPI	Climate Policy Initiative
DFI	Development Financial Institute
EDD	Environmental Due Diligence
ECR	Environmental Conservation Rule
EDGE	Excellence in Design for Greater Efficiencies
EnvRR	Environmental Risk Rating
ERM	Environmental Risk Management (ERM)
ETS	Emission Trading System
GCPF	Global Climate Partnership Fund
GIZ	Gesellschaft für Internationale Zusammenarbeit (GIZ)
GTF	Green Transformation Fund
IDCOL	Infrastructure Development Company Limited
IFC	International Finance Corporation (IFC)
IIDFC	Industrial and Infrastructure Development Finance Company
JICA	Japan International Cooperation Agency
LEED	Leadership in Energy and Environmental Design
LFMEAB	Leather and Footwear Manufacturers and Exporters Association of Bangladesh
LSBPC	Leather Sector Business Promotion Council
KII	Key Informant Interviews
NBFI	Non-Banking Financial Institution
OECD	Organization for Economic Cooperation and Development
SME	Small and Medium Enterprises
SREDA	Sustainable and renewable energy development authority
SEAF	Small Enterprise Assistance Fund
USAID	U.S. Agency for International Development
UNIDO	United Nations Industrial Assistance Organization
USGBC	United States Green Building Council

Executive Summary

This Research was commissioned by Business Promotion Council (BPC) for leather sector through LFMEAB (Leathergoods and footwear manufacturers association of Bangladesh) to study the needs of the leathergoods and footwear sector in terms of environment friendly technology and corresponding available finance. This study looks at the problems faced by the members of LFMEAB in getting loans, decreasing popularity of the green financing initiative of Bangladesh Bank, the technological changes needed to be environmentally friendly.

There is considerable gap between resources available, production and manufacturing practices in the leathergoods and footwear sector. The study finds that there is little knowledge or motivation among the firms, particularly SMEs to adopt environment friendly technologies. The reasons are due to

- Shortage of skilled technical people
- Management interest and guidance in new technology is insufficient
- Lack of awareness of resources use and its' environmental impact
- Lab improvements to an extent to be accredited
- Lack of research and development or product development

The study explored alternative avenues available to the leather and footwear firms looking for low cost financing to facilitate changes to be environmentally friendly. The possible alternatives were SEAF, GCPF, IDCOL and the future initiative of SREDA, which were discussed in Section 5.5.

The study also made recommendations regarding possible changes needed to incentivize the industry to adopt environment friendly practices. The most important recommendations were:

Technological improvements: Through adopting best available technology, efficient use of resources and in times investing in new efficient equipments.

Benchmarking: To develop a full understanding of the relative strengths and weaknesses of the leather supply chains in the national and regional chains to focus on the areas where intervention needed most. This can be done through national benchmarking and then comparing it to the competitors regionally and internationally. SREDA could help on this

to identify the equipments in leather sector, rated or benchmark them, which in turn can help to get low cost financing.

Ecolabelling: Since there is a low confidence of buyers to source local hides, which in turn causes dependence on imported leather, it is essential to adopt Ecolabel, such as LWG certification to boost the confidence of buyers.

Alternative source of funding: Along with the green finance and green transformation fund, there are other funds that can be availed through different channels such as embassies. It is also suggested that to get funding from carbon financing scheme a study should be carried out including other related trade bodies.

Policy restructuring: Tax rebate, mortgage of land to prospective values rather than actual values, cash incentive towards ecolabelling could be some of the schemes that can be adopted by the respective government body which can boost the environment.

Buyers' engagement: Finally, buyer is the key to the export oriented industry. In seminar, dialogue and policy meeting, buyers should be encouraged to attend to get their views across. This could create active engagement and give confidence for them to source from the Bangladeshi leather industry.

Addressing these gaps of knowledge of technology and finance it is possible that Bangladesh leather and footwear sector can make a significant contribution to the economic and industrial development in short period of time.

1 Introduction

1.1 Background of Study

The leather and footwear sector is one of the top four sectors prioritized by the government of Bangladesh and is seeing rapid export growth year by year. Many international buyers are very much interested to enter into this sector of Bangladesh, however, due to many environmental issues are not able to do so. In response to an increasing awareness over climate change and environmental degradation, urgent measures for sustainable development are being addressed by stakeholders all over the world. Consumers, buyers and civil societies are finding ways to pressurize manufacturers into more environment friendly production. One of the drawbacks of this industry in Bangladesh is the heavy environmental pollution caused by the tanneries. Initiatives have been taken by the government to set up new tanneries on the outskirts of Dhaka using more environment friendly methods. In recent years, there is an increase in the use of market based instruments to improve environmental conditions. Additionally, the banking systems hold a unique position in the economy that can affect production, business and other economic activities through procedures for financing activities which would in turn contribute to protecting the environment/climate from pollution.

Reed Consulting Bangladesh (RCB) has been commissioned to conduct a needs assessment study to identify key changes required to reduce the environmental impact of leathergoods and footwear industry of Bangladesh. Navigators' Group, a business consultancy firm, worked as an RCB Associate in this project.

1.2 Study Objectives

The main objectives of this study are to identify the key changes required to reduce the environmental impact of the leathergoods and footwear industry in Bangladesh. This assessment was carried out from the local perspective to implement these measures in the short term, intermediate term and longer term. The following tasks were performed to achieve the study objectives:

- Assessment of the current scenario of the leathergoods and footwear industry of Bangladesh.
- Suggestions for the technological improvements required for leather and footwear production systems to become resource efficient and technologically aware.

- Identification of knowledge gaps among all the stakeholders of this industry with regard to eco-friendly production systems.
- The identification of the needs of the labour force throughout the industry required to achieve sustainable production systems.
- The identification of financing mechanisms that can assist and motivate the owners to invest in resource efficient and environment friendly production improvements.

1.3 Scope of the Study

The study has been conducted mainly with stakeholders from this industry who are located near to Dhaka i.e. Savar, Gazipur and Hazaribagh. The study focuses on investment grade products and services on water, energy and emissions to air that assist in environmentally friendly manufacturing and how these products and services can be linked to green finance from commercial banks and financial institutions. Lastly it also explores the needs and quality of training to incorporate changes in approach and sustain the technology in production floor.

1.4. Limitations

The main limitation found in conducting this research was reliability of data. There are descriptive opinions and information for secondary research but the availability of reliable quantitative data is still an issue for this industry in Bangladesh.

2 Methodology

2.1 Data Collection

Data has been collected through both primary and secondary sources.

2.1.1 Primary Data

The primary sources of data include key informant interviews (KII), focus group discussions (FGD) and field visits, while secondary sources of data include previous reports from LFMEAB on leather and associated industry, journal articles, research, newspapers etc. KII provides the key information needed to reach the project objectives.

A total of 14 interviews were conducted including production managers, general managers of the factory or organizations and experts on green finance. 13 leathergoods and footwear units were visited along with the interview. A FGD was conducted where representatives from industry, banking and financial sectors and policy maker from government were present.

2.1.2 Secondary Data

Information from relevant articles and journals published on this subject were collected. There has however been found no significant research on this specific topic.

2.2 Study Design

The study is comprehensive in nature, with components of both descriptive and exploratory research utilized. The study consists of secondary research and primary research to develop the concepts. Information for the development of the primary data collection tools was gathered through background research.

In the next stage, KIIs, FGDs, and Field Visits have been conducted. Through the data collection tools, primary data was collected. In order to reach the research objectives, analysis was carried out predominately based on the data collected from the primary and secondary sources. The list of KIIs is given in Appendix C.

2.3 Sampling

Judgmental sampling techniques are used for this project. A representative sample from each of the sectors involved in the leather industry is included in the study. These are: Footwear, Footwear & Leathergoods, and Leathergoods. Organizations have been selected based on their size and the number of employees to ensure that a mix of larger and smaller

facilities is included. 82% of the LFMEAB member factories are located in Dhaka city, Gazipur, Ashulia, Savar and Narayanganj. All sample SME's have been chosen from the Dhaka, Hazaribagh and surrounding area. The list of factories that were visited is given in Appendix A.

2.4 Questionnaire Development

After conducting sufficient background research, a questionnaire for the KIIs was prepared. The final version of the questionnaire (See Appendix B) was completed after the feedback from the associated stakeholders and authorities.

3 Industry overview

3.1 Leather and footwear sector of Bangladesh

The Leather and Footwear Industry in Bangladesh began in the colonial era, but modernization of the sector began in the late 1980s. The first mechanized footwear factory came into existence through BATA Shoe Co. LTD. Now there are 169 members of LFMEAB alone and a far more trying to achieve membership. Moreover there are around 4500 non mechanized units SME that produce footwear for both the domestic and foreign markets.

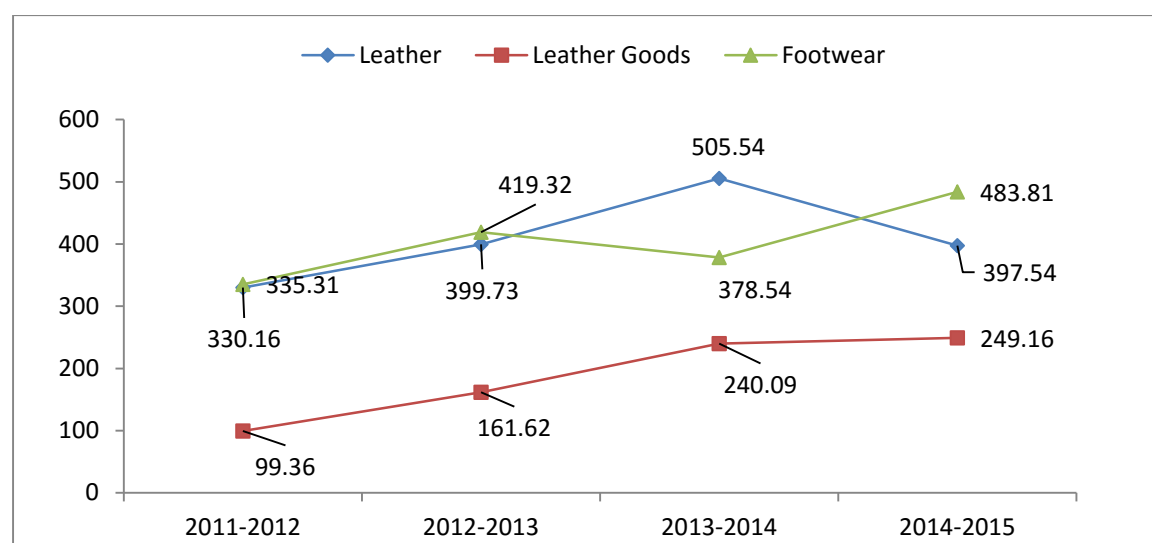


Figure 1: Production of leather products through 2011-15[1]

There has been a rapid growth in production capacity in recent years, as can be seen from Figure 1, total production has increased almost 50% in the last 4 years. The EU is the biggest importer of Bangladesh's leather products and accounts for 60% of the total leather export followed by Japan which imports approximately 30%. Bangladesh's export accounts for 3% of total leather export in the world [1]. China, the world's largest manufacturer of footwear is known to be withdrawing from low-end footwear manufacturing, which creates a potential to tap in similar to RMG sector. According to LFMEAB president, Syed Nasim Manjur, at least 51 foreign companies have expressed interest in establishing joint-venture footwear units in Bangladesh.

3.1.1 Background of the industry

The leather and footwear industry accounts for about 2 percent of GDP and 3 percent of the overall export earnings of the country and is considered to be the 'highest potential'

sector and can play an important role in revitalizing the economic growth of the country. According to the Export Promotion Bureau (EPB), Bangladesh earned USD 1.29 billion by exporting leather in the fiscal year 2013-14, which is 32.12 percent higher than the previous year.

In May 2014, the Bangladeshi leather sector crossed the USD 1 billion mark in annual exports for the first time. Compound annual growth for the preceding five years was over 25 percent, and there are early signs that the industry is moving towards higher value-added production, more diversified export markets, and innovative new products [2]. One indicator of the structural changes in the leather sector that have been accelerated by the reform is the shifting composition of exports among three categories of products: finished leather, leathergoods, and footwear. In 2008, 62 percent of all export earnings from the sector came from finished leather, but by 2014, this proportion had fallen to 39 percent, as earnings surged in the higher value-added categories of leathergoods and footwear [3]. Although the current targets of exports of this sector are not totally fulfilled recently, great progress has been made in case of leathergoods exports. In a quarterly review by Keystone it is projected that footwear export will be USD 820 million by FY 2019-20, while export of leather and other leathergoods will cross USD 1 billion in export value in FY 2017-18.

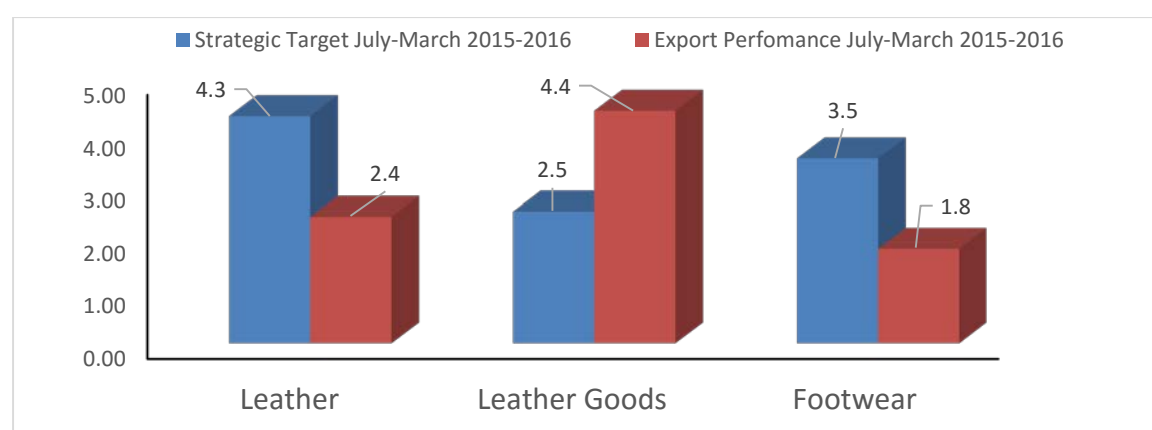


Figure 2: Export of Leather Sector in 2015-16, in million USD [1]

In terms of Gross Domestic Product (GDP), footwear contributes more than leather and leathergoods by a large margin. In the last decade, both these industries of the leather sector are growing and contributing more in the total GDP of Bangladesh.

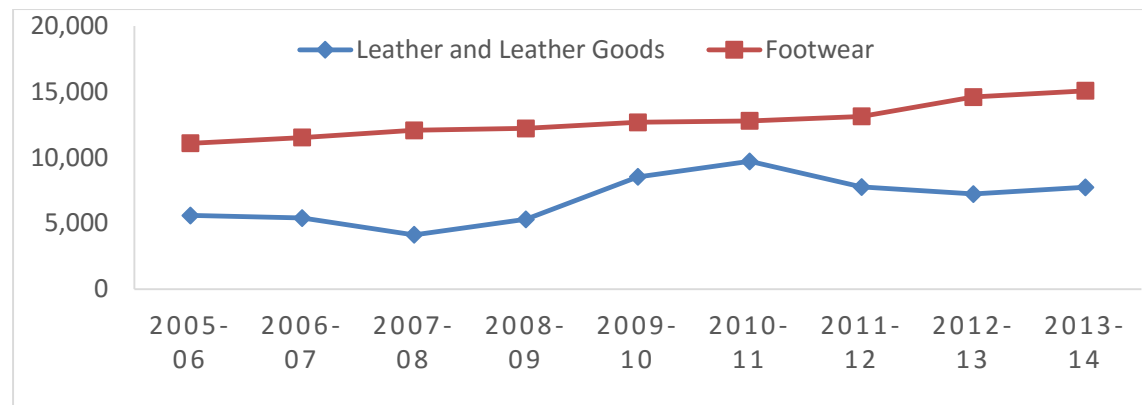


Figure 3: GDP contribution by Leather Sector of Bangladesh (in million Taka) [4]

Bangladesh's leather industry is one of the very few industries for which Bangladesh does not have to import all the main raw materials. But even so, a considerable amount of money is spent on importing this industry's raw materials. With the rise of local industry these imports have been reducing in the last few years as shown in Figure 4 [4].

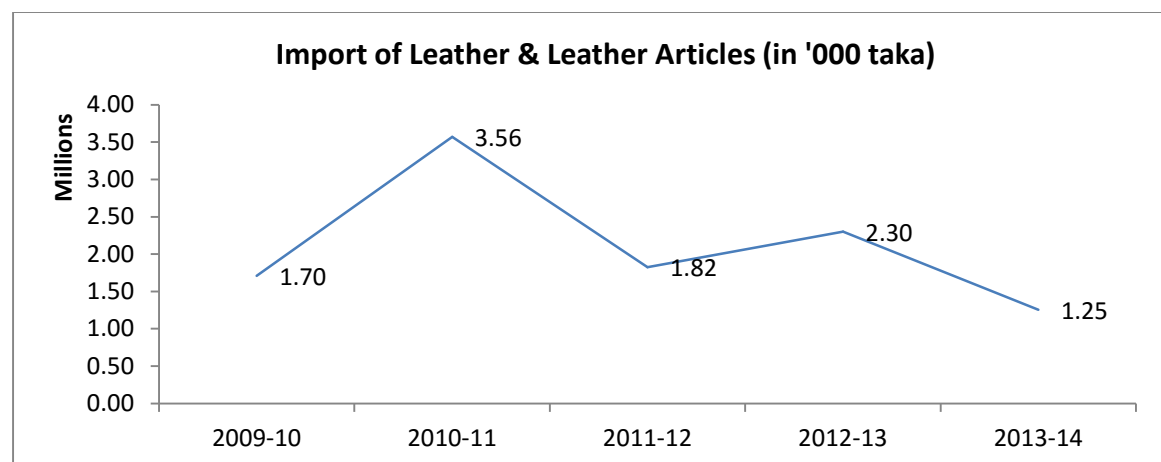


Figure 4: Import of Leather and Leather Articles [2]

Another exciting development is the rise of eco-friendly leather, which is now being used in many products including car seats, children's shoes, handbags, covers for electronics, and aircraft seats. But this innovative approach has so far only been followed by only one company in Bangladesh.

3.1.2 Relocation of Tanneries in Bangladesh

Bangladesh's leather industry is in a crucial situation at a time when it crossed the one billion dollar mark in leather and leathergoods export. The raw materials of this thriving industry are processed and produced in Hazaribagh, Around 200,000 people share their

homes with these tanneries which have been using highly toxic chemicals, producing hazardous wastes posing the threat of hazardous health conditions to these people.

Arrangements are being made to relocate the tanneries and leather factories from Hazaribagh to the Savar Leather Industrial Park. Entrepreneurs are taking a long time to relocate their tanneries. The environment of adjoining areas of Hazaribagh is posing a major threat for health of the people living there. The government arranged a proper location to shift the tanneries so that the environmental waste threat could be treated and a congenial atmosphere maintained. From the entrepreneurs' point of view, it is a matter of time, cost of relocation, threat of losing buyers if delay is not accepted to deliver orders, paying labour without production, etc. Despite the fact that there are more than 1000 tanneries in Hazaribagh, only 155 tanneries, which account to just more than 10 percent of the total tanneries, have been allotted plots in the estate for relocation [5].

3.2 Global Scenario of Leather Sector

Italy, UK, Belgium, Spain, France, Germany, Poland, the US and Canada are the big markets for Bangladeshi leather and leathergoods. Three giant leather exporting countries China, Vietnam and Brazil are shifting their focus from leather industry due to labour cost, which opens up huge opportunity for Bangladesh.

The three major external factors that substantially influence the export prospects of firms of Indian Leather Industry are Environmental Regulation, Quality Standard and Stiff foreign competition [6].

Globally, the leather industry used to be characterized by small or medium-size family businesses. The trend has been for the manufacture of leather products to move to where labour is cheapest, and for the tanneries to follow. Very often, the countries with the fastest growing leather industries such as Korea, Taiwan, China, Indonesia and Vietnam have been hindered by shortcomings in raw material supply and have had to import large quantities of hides and skins. Now, new tanneries are being set up in these countries in order to meet the growing demand for leather, while most tanners in Europe, Japan and the USA have closed down their facilities. This trend seems likely to continue [7].

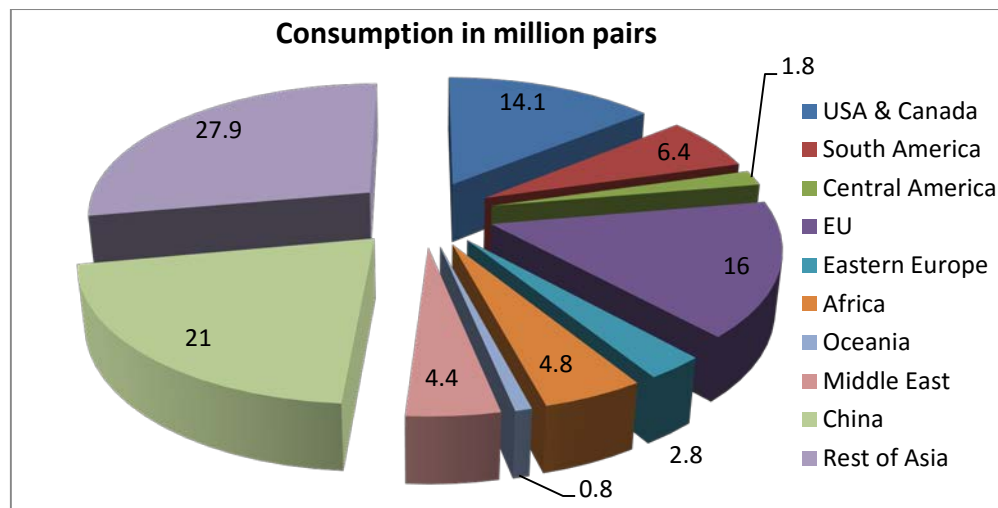


Figure 5: Global Footwear Market in 2014 [8]

Many footwear businesses, even very small ones, have been able to adapt to the steep decline of shoe manufacturing in the developed countries by changing their structure and resorting to outsourcing or joint ventures. An important development has been the growing power of major brands and retailers, which makes the industry more demand-led than supply-driven. It has also been the case that countries with good raw material supplies, such as India and Brazil, have continued to grow their industries successfully all the way to the finished product stage. This trend is expected to continue in places such as Ethiopia and Pakistan, which are joining the group of countries determined to achieve high levels of competence and employment in the leather industry by capitalizing on indigenous resources.

China has been, by far, the most significant player in all sectors of the leather industry in recent years. The country now dominates every category of manufacture by a considerable margin. Lately, China has recognized that it has allowed development without proper environmental safeguards, and it is now starting to take corrective action. It has also reduced its support for footwear manufacture since it hopes to make similar progress with products with a higher level of value added. Increased costs in China have already created new opportunities for further development of the industry in Vietnam, Indonesia, Bangladesh, and India [7].

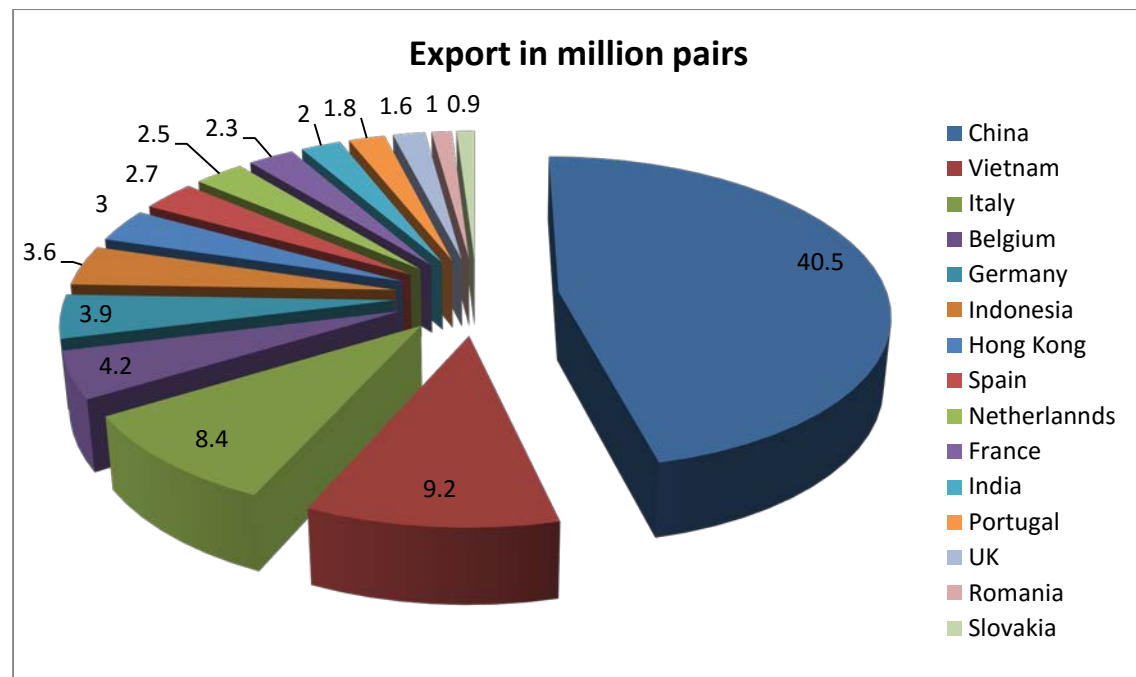


Figure 6: Global Footwear Exporters in 2014 [8]

With the rising cost of labour in China, there is a chance for Bangladesh to get more of the share of world exports. According to HSBC, Chinese factories are planning to relocate to other countries with lower cost of production. Bangladesh is one of the three countries that are being considered [9].

3.3 Compliance: Social and Environmental

There is a growing concern for environmental issues for the leather and footwear sector that can potentially have a heavy impact on the environment due to a number of chemical substances used in the treatment of the hide and skin into processed leather.

Compliance, in other words, a code of conduct, a requirement applicable to features of industrial products, processes or methods of production aiming at protecting the workers, environment and consumers. These compliances may come from the government, buyers or external body.

3.3.1 Social compliance

Although social compliance is not under scope of this study but the leather and footwear sector of Bangladesh can be considered as early stages, similar to what garment sector experienced in the 90s. Currently, the leather and footwear SME follows the Bangladesh Labour Act 2006 or the recently updated Bangladesh Labour law 2013 for social aspects

like basic wages, working hours etc. Other common requirement involves signing a buyers' code of conduct, to conduct your operations in a responsible manner.

Several external initiatives have also introduced by the buyers for manufacturers to follow, for examples, the Ethical Trading Initiative (ETI) and the Business Social Compliance Initiative (BSCI).

3.3.2 Environmental compliance

On an average, approximately 17 billion pairs of shoes are produced each year, ranging from functional work boots to designer high heels. Manufacturing a single pair of shoes can involve over 100 processes and apart from leather can include a wide range of materials such as textiles, rope, wood, plastic and synthetics. Because of the complexity of footwear products and leathergoods, manufacturers are increasingly pressured to ensure that potentially harmful chemicals are not used in the product lifecycle.

From raw hides to finished leather, three main stages processing takes place:

- Cleaning and preservation after abatement: basic cleaning and care to preserve skin/hides to processing
- Pre-tanning involves production of hides and skins from the domestic stock of bovine cows and goats. There are six stages in this step: desalting, soaking, liming, deliming, bating and pickling
- Tanning where raw hides converts into leather is the most polluting stage and 80% of industry pollution occurs at this stage. Chromium tanning is carried out at this stage of which Cr^{6+} is known to be carcinogenic.
- Post tanning is leathergoods and footwear segment which is less polluting, labour intensive and high value added segment.

The yield from raw hide to leather is summarized by [10].

- Final leather product yield is 200 kg/ ton of raw hides;
- Waste generation is around 250 kg of non-tanned solid waste and 200 kg of tanned waste containing 3 kg of chromium per ton of raw hide;
- Wastewater generation is around 50 m³ / ton of raw hide, containing approximately 5 kg of chromium;
- More than 60% of originally used chromium is lost in the wastes and wastewater.

- It is estimated that each footwear production leads to the generation of 220 g of total wastes

In the case of finished footwear, the formaldehyde content is important, with at the European ecological label scheme establishes a maximum of 150 ppm of formaldehyde in the leather. Equivalent Japanese standard limits formaldehyde to 112 ppm [11].

There are three key European-wide legal obligations for selling conventional (non-safety) footwear in the European Union. All shoes sold in the EU must comply with The General Product Safety Directive (2001/95/EC) for safe use without or very little risk; all footwear must be labelled correctly under the European Labelling Directive for Footwear (94/11/EC) and all footwear must comply with the REACH (The Registration, Evaluation, Authorization and Restriction of Chemicals) regulation (EC1907/2006).

Buyers like Adidas, Nike, Puma, Clarks, Reebok and Ralph Lauren are also imposing stringent technical requirements for both suppliers of raw materials (leather, plastics, adhesives, glues etc.) and finished products (artifacts in leather and textiles) to ensure end-user safety and environmental protection.

Many new demands related to climate change and the sustainable use of resources, such as energy and water, have emerged as a result of international concerns about sustainability. Buyers are responding to these concerns by already factoring energy and water into their codes and requesting their suppliers to take certain mitigating measures [12].

Energy efficiency is a concern shared by buyers and manufacturers, as energy is not only a sustainability issue but also a major part of production costs. Water efficiency and rating for water-using products is an emerging concern for governments, corporations and civil society and other stakeholders.

Other main environmental impacts from the leathergoods and footwear industry mostly concerns with the solid and chemical wastes produced as by-product. The footwear industry and some areas of the leathergoods industry produce relatively high levels of solid waste the majority of which is from the cutting process [13].

3.3.3 Cost competitiveness and environmental compliance

The main challenge for the manufacturers is to be cost competitive maintaining environmental compliance. Often it is considered as a trade-off between environmental

compliance and export competitiveness. It is also reported that to meet environmental standard higher than that standard prevailing in the country increases social cost of the compliance as well [14]

The three main factors were portrayed as the challenge to comply with the environmental standards [15]:

- High cost of compliance due to limitations of knowledge and technical infrastructure
- Conflicted motivations of state due to the various priorities of the government of a developing country in a free trade world,
- Capacity of environmental institutions is limited due to political weakness or technical capacity or due to regularly updated standards

In sectors dominated by SME firms, the high cost of maintenance of environmental standard is more difficult.

3.4 Access to Low cost Financing

3.4.1 Banking Sector overview

The financial sector of Bangladesh can be divided into the formal sector, the semi-formal sector and the informal sector. This study is mostly focused on formal sector, which consists of

- The Money Market: banks and non-banking financial institutions (NBFIs).
- The Capital Market: stock exchanges, investment banks, credit rating companies.
- The Foreign Exchange Market

Financial markets are regulated by

- Finance (loan) market regulated by Bangladesh Bank (BB) and,
- Equity (Shares & bond) market regulated by Bangladesh Securities and Exchanges Commission (BSEC).

The banking sector is characterized by a large number of operating banks and financial institutions, high interest rate, long delay on obtaining loans and lower level of service satisfaction. Bangladesh Bank oversees 56 Scheduled Bank, 4 Non-scheduled Bank and 31 NBFIs as medium of financing loan. Financial sector is regulated by the Banking Companies Act of 1991 (Amended in 2013), the Financial Institutions Act of 1993, the Financial Institution Regulation of 1993 and the Money Loan Court Act of 2003. There

are further regulations and guidelines have been developed over the years to regulate more specific to the sectors, such as guidelines on credit risk management for banks, Environmental Risk Management Guidelines for Banks and Financial Institutions including templates for ten sectors, policy guidelines for green banking and foreign borrowing procedures and guidelines.

Banks offer diverse financial products, in BDT or USD, conventional or Shariah compliant, Short or long term, with or without collateral, recurring or one off to their clients based on circumstance and eligibility.

3.4.1.1 Loan interest rate

One of the major importance for any of the investors is the interest rate offered by banks and NBFIs. The interest rate was as high as 14% in 2014; since then a downtrend interest rate (9-13%) of commercial lending was observed. Figure 7 shows recent trend of commercial interest rate in Bangladesh for industrial finance

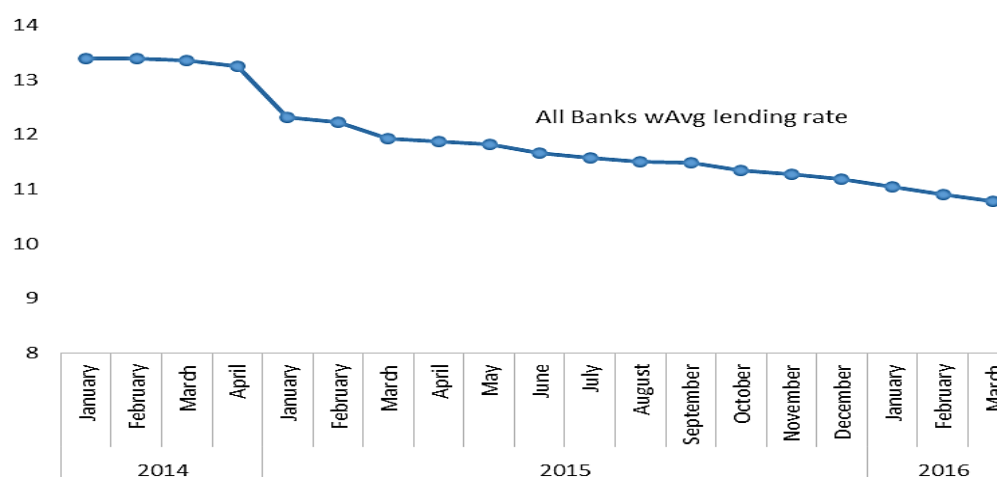


Figure 7 weighted average lending rate of all banks

3.4.1.2 Environmental Risk Management and Credit Risk Management

Any decision making for approval of loan are carried out by risk-based pricing, which has seven key analytical dimension: cost of funds, expected loss, cost of allocated capital, term cost of liquidity, loan administration costs, cost of liquid asset buffer, competitive margin [16]. Additionally environmental risk is brought into the mix to facilitate credit risk which can be arising from environmental issues. Banks are financial institutions are expected to apply a screening and rating of their client based on their environmental risk exposure following the Environment Conservation Act, 1995. Subsequently the “Environmental Risk Management (ERM) Guidelines for Banks and Financial

Institutions” developed by Bangladesh bank in 2011 request banks and NBFIs to calculate the Environmental Risk Rating (EnvRR) of any client before making credit risk rating to highlights any potential environmental impacts of operations of a factory.

Table 1 Environmental Guideline Summary [17]

Area	Description
Policy	Under Environmental Conservation Act (ECA) 1995 and Environmental Conservation Rule (ECR) 1997.
Applicability	To all banks or NBFIs to create a level playing field
Goal	To understand and manage risks that arise from environmental concerns and to integrate credit risk with environmental risk.
Approach	Not policing but focus on managing risks and not on avoiding risks.
Sources of risk	Land location, climate change impact, community opposition, social unrest, Regulatory non-compliance, Changing export market conditions
Types of risk	Direct risk, indirect risk, reputation risk, business/industry risk, management risk, security/collateral risk, legal risk
	For all individual customers (corporate, institutional, personal, small and medium enterprise) with following thresholds
Target	• SMEs for financing > BDT 2.5 million • Corporate for financing > BDT 10 million • Real estate financing > BDT 10 million For new, green field projects as well as those pertaining to existing facilities, e.g. renovation and expansion

At a portfolio level, Banks/FIs should classify their financing of business activities across the Department of Environment (DoE)’s Categories of Red, Orange A, Orange B and Green (Schedule 1 of the ECR 1997). On receiving the proposal for financing, Banks/FIs should conduct a preliminary environmental risk review using Environmental Due Diligence (EDD) checklists. A template of EDD checklist for Tannery, which is in Red Category, is given in Table 2, with italicized questions are most critical. This checklist has huge impact in leather supply chain to get access to low cost finance.

Table 2 Environmental Due Diligence (EDD) Checklist for Tannery [17]

Particulars	Yes / No / NA
1. Hazardous chemicals: Does the business activity include appropriate hazardous chemicals management methods in pretreatment, dyeing and other processes?	
2. Wastewater / ETP: * Does the proposed business activity have its own ETP?	
* Does the ETP design ensure that there is no bypass arrangement?	
* If it is to a Common ETP, is this in working order?	
* Does the proposed business activity include a chrome recovery unit in its design?	
* Is the post-ETP treated wastewater discharged into a water body from where water is drawn for other applications?	
3. Solid Wastes: * Are there responsible methods to dispose the solid waste / sludge from the ETP been included in the design? * Is the management of solid wastes properly planned and methods of disposal identified?	
4. Odour: Are there methods to control the odour from leather tanning as these constitute a nuisance to the surrounding community?	
5. Monitoring: Is environmental monitoring, particularly Chromium VI, proposed on a periodic / regular basis?	

3.4.2 Green finance

The concept of green finance can be regarded as innovative in the field of finance. The term ‘green finance’ describes a broad range of funding for environment oriented technologies, projects, industries or businesses. Green finance is a core part of low carbon, energy efficient green growth because it connects the financial industry, environmental improvement and economic growth and all these are essential for all the countries in the world to sustain in the long run.

According to the Climate Policy Initiative’s (CPI) report titled ‘Landscape of Climate Finance 2013’, the total green finance investment in 2012 was estimated at USD 359 billion globally [18]. The majority of this total, USD 224 billion was from private sector sources with the public sector contributing USD 135 billion (or 38%). But in terms of flows of green finance, according to the CPI report, the public sector made up the vast majority from developed to developing countries.

Banks report on their exposure to ‘direct green finance’ which includes financing for key green technologies including renewable energy and biogas, water supply, wastewater treatment, solid and hazardous waste disposal, green buildings, green products and

materials, clean transportation, land remediation, and sustainable land management. Green projects face a range of challenges in accessing finance. There is always an uncertain risk to investors on new technology, as well as to the underlying investment framework or lack of a supportive enabling environment. Generally, barriers and risks for investors vary depending on the structure of the sector.

Researchers have found out that green technologies often have higher initial capital costs which can discourage investors. In developing countries, these may also include operational or performance-related risks. In addition to general market risks, such as country or currency risk, green investments carry additional risks relating to the immaturity of the market [19].

For most developing and emerging countries there is a lack of awareness and capacity of green technologies and activities among the policy and investment authorities [19]. A lack of understanding of the technologies by policy-makers, project developers and financiers may lead to inappropriate measures of support and high levels of perceived risk.

Mobilizing finance for eco-friendly production requires a holistic approach. Mechanisms like green bonds, debt funds, off-grid funds, risk insurance instruments are successfully implemented in many countries for green financing [20].

3.4.2.1 Green Financing in Bangladesh

Green financing is a relatively new concept in Bangladesh. In 2009, the Bangladesh Bank launched a green refinancing line with an initial focus on solar energy, biogas, and waste treatment projects. Its' scope has continuously been expanded and now covers 47 items with 2 billion Taka (USD 25 million) available for commercial banks to disburse loans to key green sectors.

In February 2015, the Bangladesh Bank announced its intention to create a new longer term refinancing window to provide USD 500 million of funding of which USD 200 million will be allocated specifically for green initiatives including water and energy use efficiency measures in the textiles and leather industry. From January 2016 onwards, the target would be 5.0% of the total loan disbursement of funded loan for all banks and financial institutions. The Industrial Policy 2010 states that the government will take necessary measures to run ETPs and central effluent treatment plants in the industries properly [21].

Bangladesh Bank (BB) has developed a Green Banking Policy in 2011. To promote green financing, BB has introduced three types of refinancing facility: BB refinance scheme, Asian Development Bank (ADB) supported refinance scheme and refinance schemes funded by Sharia-based banks and financial institutions [22].

3.4.2.2 Green Transformation Fund (GTF)

Green Transformation Fund has been established by the Bangladesh Bank in order to promote sustainable growth in export oriented textile and leather sectors. Its aim is to transform export oriented RMG and leather industry into a green factory. The loan could be given as new or re-finance existing ones. The term of loan will be from 5 to 10 years along with a 1 year grace period.

The total fund of GTF is of USD 200 million which shall be revolved year round. The fund shall be managed by Forex Reserve and Treasury Management Department of Bangladesh Bank. The loan from the GTF will be offered in US Dollars and will be provided by authorized dealers of foreign exchange. Sustainable Finance Department of Bangladesh Bank will approve applications forwarded by the authorized dealers.

The GTF is intended to facilitate access to financing in foreign exchange by all manufacturer-exporters in export oriented textiles and textile products and leather manufacturing sectors to import capital machinery and accessories for implementing following green/environment-friendly initiatives:

- Water use efficiency in wet processing;
- Water conservation and management;
- Waste management;
- Resource efficiency and recycling;
- Renewable energy;
- Energy efficiency;
- Heat and temperature management;
- Air ventilation and circulation efficiency;
- Work environment improvement initiatives; and

All of the above initiatives, if taken in a manufacturing units, could help to transform the industry both in terms of environmental and financial aspects.

3.4.3 Other low cost Financing

In addition to commercial funds, specialized finances are available from different source with specific eligibility criteria. Those are varied in currency- BDT and USD; from sources of Asian Development Bank, International Finance Corporation, The World Bank, other development agencies; to improve environment, increase capacity of plants and working capital or enhance financial inclusion.

Loan in foreign currency is getting much of interest due to lower interest rates. The usual interest rate is set at LIBOR + 4.5%, which increases to 6% above LIBOR due to commissioning and management of loans by banks. Under the Companies Act of 1994, enterprises are allowed to raise financing in foreign currency from different sources:

- International banks, international capital markets, multilateral financial institutions (such as IFC, WB, ADB, CDC, DEG, FMO, OPIC, OPEC Fund)
- Export credit agencies
- Suppliers of Equipment
- Foreign equity holders.

Foreign lending is possible for industrial sector to import of capital goods for new projects, or modernization/expansion of existing production units. Some offshore banking unit of reputed international commercial banks like HSBC and SCB are common sources of USD financing to establish and/or expand large projects.

3.4.3.1 Carbon finance

Carbon Finance is a new innovation in the area of environmental financing. Through carbon finance governments and companies originating from Organization for Economic Cooperation and Development (OECD) countries buy reduction in carbon emissions. It is done through an Emission Trading System (ETS) which facilitates carbon trading. The idea is that those industries with low emissions can sell their excess capacity to the industries that overstep their bounds [23].

Carbon Financing can become a tool that can motivate the leather industry to adopt environment friendly technologies. A brick kiln in Bangladesh has received 10 million BDT by selling their excess emission capacity.

Leather sector as a whole leaves a tremendous amount of carbon footprint. The carbon footprint for 100m² leather is about 15.2 tonnes of CO₂ [24]. Producing a pair of shoes can emit up to 37.67 Kg of CO₂ in the environment [25]

Industrial and Infrastructure Development Finance Company (IIDFC) is the first local financial institute in Bangladesh that started carbon trading. After signing Certified Emission Reduction Purchase Agreement (CERPA) with World Bank., IIDFC sold 125,000 tons of CER (carbon emission reduction) from 2009 to 2015 [26].

Basic unit of trading is carbon allowance which is 1 ton of CO₂. The price of per unit of emission is currently at around 4.96 euro per allowance but from 2015 the price has been fluctuating around 5 to 9 euro [27].

4 Findings from the Study

4.1 Profile of the surveyed firms

This research required field visit to leathergoods and footwear manufacturing firms who are members of LFMEAB. The principal objective was to assess the current state of their green practices and to find out the problems the firms were facing regarding green financing. The interviews were focused on these objectives and also on finding out how these problems can be resolved. The evaluation was qualitative in nature as it is difficult to quantify quality of a firm's green practices and the problems associated to get green financing. Firms that were interviewed were heterogeneous in size as LFMEAB's member pool is heterogeneous in size and respondents were mainly managerial level. Apart from the factory staff, KIIs were conducted with financial experts who are affiliated with various financial organizations.

The interviews resulted in gaining significant insight into the perceived state of the green financing initiative and the current state of the adoption of green technologies among the firms.

4.2 Technological Barriers faced by the firms

From the field study and KIIs, following key trends were identified in terms of technical limitation that affects the environmental performance.

- **Shortage of skilled technical people**

The leather and footwear sector is suffering due to a shortage of skilled workers, particularly lack of technically sound knowledge on the operation and maintenance of equipment and machinery. Workers have a low level of education and therefore usually poorly paid. In conversation with factory management, lack of skill is highlighted as the prime reason for not importing modern machinery for using improved manufacturing methods.

- **Management interest and guidance in new technology is insufficient**

To take production to the next level, significant investment is required along with strong guidance from upper management. There is a resistance to incorporate new machinery or processes. One of the reasons could be these SMEs are personally financed rather than through bank loans. As a result the mindset for production is to move forward with the profit generated on the current set up.

- **Lack of awareness of resources use and its' environmental impact**

Although leathergoods and footwear associations were aware, but the firm itself does not take an active stance to reduce the environmental footprint of production activities and is unaware of the cost reductions and ancillary benefits that come with resource optimization and waste reduction.

- **Laboratory improvements**

For any environmental legislation to be met, it is important to have a strong laboratory base with trained personnel, proper infrastructure and methodologies. Accreditation of the lab from the third party or buyers would enhance capacity of the factory to a significant extent.

- **Lack of research and development (R&D)/Product development**

Research and development are the key to moving forward and, although it may be realized but there is not enough investment in this. It is almost absent any R&D in firm level, but at least properly structured product development section can grow internal knowledge in the factory about better technologies and alternative processes for improved design.

4.3 Financial Constraints

4.3.1 In Green Financing

The study has found that green refinancing scheme has its own share of issues, which are holding this plan back from achieving its desired effects. These issues are listed below:

- When this refinancing scheme was first put into effect in 2009 the rate of interest in the market was as high as 17% depending on the product and the tenor of the loan. At that time an interest rate of 9% was highly lucrative to the companies. At this moment, the situation is vastly different. Along with the policy of Bangladesh Bank the interest rate in the market are getting downwards. Some banks are even giving out loans with interest rate as low as 6% depending on the clients' negotiation power. This is clearly detrimental to the goal of the green refinancing scheme. The companies are no longer being incentivized to adopt green practices.

- Another problem the respondents brought up is that the process of getting approval from the Bangladesh Bank is too long and rigid. The entire process has too many stakeholders to be a competitive one. Financial institutions, Central bank, third party evaluator all of these stakeholders make the entire process a nightmare for the companies.

- The products listed in the approved list of technologies are not really suited for Leather and footwear industry. While some of them can be used for leather industry there are new technologies that can be implemented in the leather sector.

4.3.2 In Regular Banking

There are currently 56 scheduled banks operating under the supervision of Bangladesh Bank. Also there are 31 NBFIs operating in Bangladesh. Average lending rate was 11.27% in 2015 which fell to 10.78% in April, 2016 according to Bangladesh Bank. Bangladesh Bank with a view to boost the economy is slashing the interest rate. Overall this is a good news for the economy but it challenges the motivation to invest in environment friendly technology associated with low interest rate.

It is common knowledge that bargaining power of the investors are the key to negotiate the interest rate and the bigger the client is the lower the interest rate is usually fixed. So the interest rate is inversely proportional to the company's bargaining power. This poses a problem that leathergoods and footwear industries have small, medium and large players. While small and medium industries have shown remarkable interest in going for green financing, the bigger industries are apathetic due their loans bearing interest rate as low as 6%.

One of the other challenges were identified that the industry-bank relationship. Even though leather industry has a long history in Bangladesh it is still treated as a new industry by the banking authorities and by association the leathergoods and footwear industry. The industry is largely dominated by SMEs, relatively unknown to the financial sector and no/little or bargaining power. The banks perceive them as having relatively higher default risk without any guarantor.

5 Proposed Solutions

5.1 Technological Improvements

There are various ways to improve the environment performance of current leather and footwear sector. Some options are through use of cleaner production methods and use of best available technologies. Other options are changing the process or investing in new machineries with low environmental impact.

In this section, these options are summarized with the associated investment required. The investments are categorized at

Low	USD>1k
Medium	USD 1K-10K
High	USD 10K-100K
Very High	USD 100K+

5.1.1 Leather processing

Table 3: Technology at Leather processing Stage

Process		Traditional system	Alternative/Advanced option	Financial Investment	
1	Hide preservation	Curing	Salting and drying for short/long term	For short term- Freeze drying; using PEG; cooling by using crushed ice or refrigerated storage; by using biocides	Medium
2	Beam house	Soaking	Drum and brush type desalting machine	Drums with modifications (water meter, better turbulence, optimized speed and drain valve); more effective wetting agents and enzymes	Medium-High
		Liming & unhairing	Done in drums using lime and sodium sulphide	Drums with temperature control, pH regulation, recirculation system; organic sulphur compound; oxidative agent	Medium – high
		Fleshing	Reciprocating machine	Green fleshing with modified machine	High
		Deliming	Ammonium sulphate	Organic acid, Carbon dioxide	low
3	Tanning	Pickling	Salt with no liquor recycling	Storage tank to collect recycled pickle liquor; Screen for filtering solids	High
		Tanning	Chrome tanning	High exhaustion using tanning auxiliaries; recycling tanning float, chrome recovery by precipitation	Medium
		Washing	Running wash/ open drumwash	Batch wash with closed drum	Medium - High
4	Post Tanning	Neutralisation	Neutralising salts	Optimisation of salt and rinsing	Low
		Retanning	Syntan (synthetic tannins)	High exhaustion using tanning auxiliaries (Masking agent)	Medium
		Dyeing	Low fixation dyes	Dyeing auxiliaries; Process modification (temperature control, pH control, short float)	Medium
		Fat liquoring	Fats/oils; formic acid	High exhaustion by using amphoteric polymer, temperature and pH control	Medium - High
		Drying	Natural air drying; Toggle drying; Vacuum drying	More efficient dewatering with modern machines; One time investment into larger drying capacities at lower temperatures; Use of the energy from renewable sources	High – Very High
5	Finishing	Coating	Spray Coating (Conventional spray gun); Roller coating	Spray coating (High volume low pressure spray gun; Airless spray gun; Computer aided spraying); Curtain coating	Low to very High

5.1.2 Footwear Manufacturing

Table 4: Technology used by Footwear Manufacturers

Process	Traditional system	Alternative/Modified option	Financial Investment
Automation			
1 CAD/CAM integration	Design files are converted to templates and manually marked onto the leather and cut	CAD/CAM systems allow the conversion of design directly into instructions for the machinery enabling the design to be perfectly replicated.	High
2 Leather Area Measuring Machines	Measurement of the surface of skin or cut parts to display area on a panel	Record shape and send to computer system to allow the identification of the most efficient way of cutting leather	Medium
3 Dieless Cutting Systems	Production of dies and cutting of leather according to a particular model	CNC laser cutting or oscillating blades to cut leather according to design without any use of dies	High – Very High
Process changes			
1 Injection Molding machine	All parts of bottom are made separately and assembled together	PVC based bottoms can be made directly by molding machine	High – Very High
2 Use of water based adhesive	Chemical based adhesives are used	Substitution to water based adhesive	Low – Medium
3 High efficiency motors	Old, inefficient motors in use	Use IE2 or IE3 high efficiency motors	Medium – High
Waste management			
1 Energy recovery	Landfill disposal	Waste is ground to small powder and burnt for energy/ digested by enzymes to produce fuel gas	Medium – High
2 Production of Collagen	Landfill disposal	Chemical digestion of waste can produce collagen which is a valuable product	Medium – High

5.1.3 Utility

Table 5: Technology used for utility

Area	Traditional system	Alternative/Modified option	Investment
Electricity			
1 Generator	Lack of maintenance, documentation and assigned personnel	Assign a dedicated person in charge of the generator. Build a maintenance schedule according to manufacturer guidelines and follow it regularly for improved efficiency and long life.	Low-Medium
	Lack of documentation of work done by third-party for maintenance	Keep documentation for further reference and appropriate actions in future	Low
Boiler			
2 Boiler	Lack of air-fuel ratio tuning	Boiler burner must be tuned every three months to maintain optimum air-fuel ratio for efficient combustion and maximum energy utilisation	Low
	No Condensate recovery system	Condensate must be returned to the feedwater tank to raise feedwater temperature. This will reduce fuel consumption immediately	Medium
	No Economiser	Economiser uses energy from exhaust gases to reduce the fuel bill	High
Compressor			
3 Compressor	VFD not present	Install a variable frequency drive (VFD) on air compressors to minimise compressor idling.	Medium
	Purging of compressed air vessel is insufficient	Auto-purging system can be installed to remove water from the air vessel. Otherwise, manual purging is required twice a day.	Low-Medium
	Air Leaks	Purchase ultrasonic leak detector for detection of all types of leakages easily. Repair leakages throughout the system and save compressed air. As a rule of thumb, 50% savings on electricity consumption can be achieved by repairing leakage.	Low
Others			
4 VFD	Large motors in major equipment	Use of VFD in motors can save electricity and increase machine life.	Medium
5 Flowmeters	Lack of meters in the factory make it difficult to track resource usage	Install meters to identify areas of possible savings.	Medium-High

5.2 Benchmarking leather and footwear products in the global market

Benchmarking is defined as ‘the continuous process of measuring products, services and practices against the toughest competitors recognized as industry leaders’ in a given sector. It is important to developing a full understanding of the relative strengths and weaknesses of the leather supply chains in the national and regional chains to focus on the areas where intervention needed most. A benchmarking exercise is given in the Box below showing how other countries have applied the tools to enhance growth of a sector.

Examples of benchmarking applications

The Netherlands. In 1995, benchmarking was applied in the Netherlands to evaluate the competitiveness of the Dutch economy. The general results highlighted the need to create a modern economic structure, modernize some of the education policies, improve the function of the labour market, and strengthen the entrepreneurial climate.

Malaysia. In 1996, benchmarking was carried out by the national productivity council of Malaysia of the manufacturing sector, using Korea, Taiwan province, Hong Kong and Singapore as a reference. It was proposed to launch quality and productivity benchmarking service for manufacturing sector to improve the competitiveness to be offered by the Malaysian national productivity corporation to groups of enterprises in specific sectors. There is now a Malaysian benchmarking model.

Pakistan: Pakistan applied the Malaysian benchmarking model to the spinning sector, with the participation of 14 spinning mills. The parameters of a standard spinning mill for Pakistan were developed in 2002, which will then be used by local mills to analyse performance by the national productivity council. Once the gaps are identified, remedial strategies to improve the competitiveness of the sector will be recommended.

Source: UNIDO 2002

Table 6 shows the qualitative benchmarking of Bangladesh leather sector with 13 parameters of the leather supply chains compared with those of Italy, one of the EU leaders in the leather sector. The example is created to position the individual components of the leather supply chain within the international context, and to highlights the competitive strengths and weaknesses in the international market.

Table 6 Benchmarking of the leather supply chain: Bangladesh vs. Italy

Factors	Bangladesh	Italy
Availability of raw hides and skins	Abundant	Low
Quality of raw hides and skins	Low-high	High
Access to and cost of raw materials	Generally easy	Difficult
Access to financial resources	Difficult	Easy
Sustained capital investment	Low	High
Degree of vertical integration	Low	High
Technological sophistication of facilities and equipment	Low	Very high
Process skills	limited	Very high
Research & development	Limited	Very high
Product development	Limited	Very high
Unique skills within the sector	Rare (except craftsmanship)	High
Product perception by the global market	Poor	High

5.3 Ecolabelling

Ecolabels are the market based mechanism that ensures the consumers that the labelled product is maintained certain social and environmental standard than other products in the same category. Thus ecolabels complement environmental laws and regulations.

Ecolabelling can be based on two types of criteria: Product or Production related. Product related criteria considers environmental impact of product only while production-related criteria covers the environmental impact of entire production system. The most used and comprehensive ecolabelling programmes are based on life cycle analysis (LCA), which is on brief, considers environmental impact of ‘cradle-to-grave’ throughout the supply chain. Although it sounds very good in principle but it is very difficult to implement.

There are many ecolabelling programmes in as central regulatory body from EU, Canada, India or other accepted private initiative such as LWG (Leather working Groups) and Natureland. The list of some prominent ecolabeling programmes is given in Appendix D. The study found that all buyers accept sourcing from LWG certified leather firms. In Bangladesh there is only one LWG certified Bronze rated firm (Apex footwear Ltd.) while there are approximately 100 LWG certified leather units throughout the world.

5.4 Green Building

The term 'Green' refers to the environment friendly option and the 'Green building' refers to a structure that has been built on natural/renewable materials and maintained by resource efficient processes throughout a building's life-cycle. Thus design of a green building includes balance between economic feasibility and the sustainable environment. Any construction of green building requires close cooperation of the architects, the engineers, and the client at all project stages.

The most popular Leadership in Energy and Environmental Design (LEED) is a set of rating systems for the design, construction, operation, and maintenance of green buildings which was developed by the U.S. Green Building Council (USGBC). Other certificates system that confirms the sustainability of buildings is the British BREEAM (Building Research Establishment Environmental Assessment Method) for buildings and large scale developments. Currently, World Green Building Council is conducting research on the effects of green buildings on the health and productivity of their users and is working with World Bank to promote Green Buildings in Emerging Markets through EDGE (Excellence in Design for Greater Efficiencies).

The continuously developing new industrial building has the potential to be green, which will then reduce significant emissions. Buildings account for 18% of global emissions today, or the equivalent of 9 billion tonnes of CO₂ annually. It is estimated that existing buildings are responsible for more than 40% of the world's total primary energy consumption and for 24% of global carbon dioxide emissions [28].

Initial investment in construction of green building is high but operational and maintenance cost is lower. The western buyers feel safe and secured to source from this kind of factories, where managing their own social and environmental compliance are taken care of. This helps to create greater appeal to their customers.

It has been found that, there is a direct correlation between increased productivity and employees who love being in their work space [29] . Specifically, worker productivity can be significantly impacted by certain aspects of green building design such as improved lighting, reduction of pollutants, advanced ventilation systems and the use of non-toxic building materials [30].

5.5 Central Bank Sustainable Financing

To incentivize all the companies to adopt green technologies there are some new improvements that could be made to the green financing adopted. These improvements are:

- The process of approving green re-financing could be streamlined to make the entire process more efficient. The financial institutes have stated that the entire process takes 3-12 months which is too long. This might be because there way too many parties involved in the process. The evaluation process could be handed over to the banks in order to make it faster.
- An awareness campaign could be launched in order to increase knowledge about environment friendly technology and globally accepted environmental standards. There exists a lack of knowledge about recent technologies and international standards. The process of achieving ISO certification and ECO labeling seem confusing to many.
- The banks could be encouraged to create a Green fund of their own which would be exempt from reserve ratio that would be kept at the central bank. This will make the cost of fund significantly lower for the bank and in turn it will make the interest rate lower. Moreover the prospect of a fund that is exempt from reserve ratio will be attractive to the banks and NBFIs which in turn will lead to greater promotion for green financing.

5.6 Possible Alternate source of Funds

Aside from green financing there are some alternate avenues that can be considered to raise capital at a cheaper rate. These options are not exhaustive list of low cost finance.

5.6.1 Global Climate Partnership Fund (GCPF)

The GCPF is controlled under Luxembourg law of February 13, 2007 and was initiated by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and KfW Entwicklungs bank. The GCPF's goal is to facilitate an environmentally friendly economic growth in poor and developing countries.

Currently City Bank and SouthEast banks are the two partners working with GCPF to bring this low cost fund to the entrepreneurs of Bangladesh who aim to reduce their carbon footprint and achieve a sustainable economic growth. SouthEast bank is in the process of acquiring funds from GCPF worth 20 million USD. These funds are very low cost being only 2-3% above LIBOR rate. The companies themselves can apply for loan from GCPF. The entire process for direct investment is shown in Figure 8.

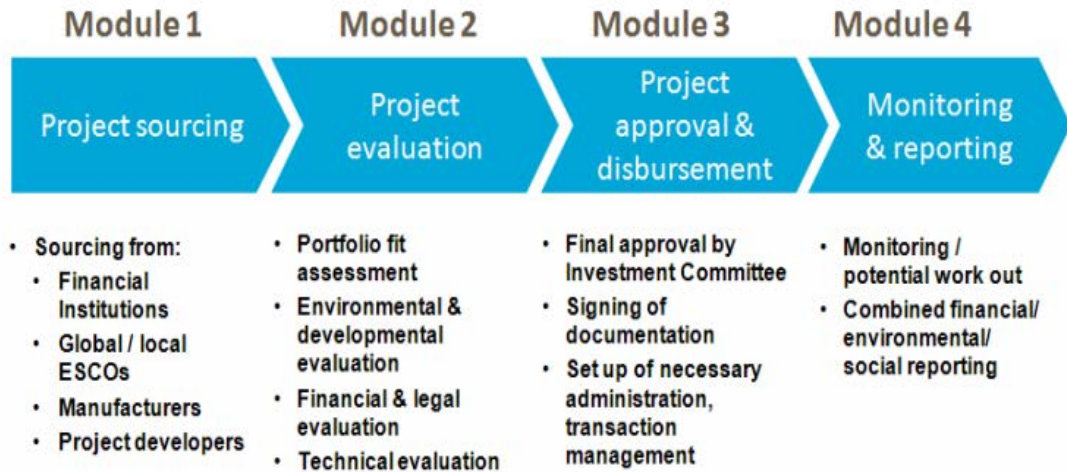


Figure 8: The process of acquiring GCPF loan [31]

This fund may leave the companies open to exchange rate risk. Without appropriate hedging mechanism it is inadvisable to borrow directly from GCPF.

5.6.2 Small Enterprise Assistance Fund (SEAF)

SEAF Bangladesh Ventures is an investment company that invests in medium-sized businesses in Bangladesh. SEAF BV was founded by SEAF Ventures Management LLC which is a subsidiary of SEAF. SEAF BV started its operation in June 2010 and its aim was to provide long-term capital as well as strategic advice to support growing businesses in Bangladesh. SEAF aims to bolster businesses with strong growth opportunities, which can add significant value and with the potential of leather sector, this could be a match.

Table 7: Structure of SEAF's investments [32]

Structure	Amount, USD	Rights
Equity	250,000-1,000,000	Governance and Information Rights
Quasi equity	250,000-1,000,000	Revenue Participation, Variable or Payment In-Kind Interest, Conversion Options

5.6.3 Infrastructure Development Company Limited (IDCOL)

IDCOL is a state-owned development financial institution dedicated to finance infrastructure and renewable energy projects in Bangladesh. IDCOL has recently focused on the energy efficiency sector. Its investment under this sector includes the following projects:

- Solid Waste Management
- Water and ETP plant

- Energy Efficient Boilers and Industrial Machineries
- Power Plants
- Renewable energy

The World Bank, KFW, Global Partnership on Output-Based Aid (GPOBA), Japan International Cooperation Agency (JICA), United States Agency for International Development (USAID), Asian Development Bank (ADB) and Department for International Development (DFID) are providing financing support in these projects. With IDCOL's help small and medium scale leather manufacturers can upgrade their current Infrastructure and be environmentally friendly.

5.6.4 Sustainable and renewable energy development authority (SREDA)

Sustainable and renewable energy development authority of Bangladesh is a government organization which came into being in 22 May 2014 because of SREDA Act 2012. SREDA's goal is to promote renewable energy and adopt energy efficient measures. Through FGD It is known that SREDA is in the process of developing a loan scheme for renewable and efficient energy that will have an interest rate of 4%. This loan scheme will be distributed through IDCOL and Bangladesh Infrastructure Finance Fund Limited (BIFFL). A list of equipments particularly related to the leather and footwear sector can be incorporated into SREDA's list of equipments, which can be forwarded to Bangladesh Bank for Green Transformation Fund.

5.7 Policy Restructuring

Environmental consciousness can be further rewarded. This could be done through policy changes. Some possible new changes are:

- **Ecolabelling:** An eco-label is used to identify products which are proven environmentally preferable overall, within a specific product or service category. It is usually done voluntarily but government may encourage or if necessary make it mandatory for the companies to take up ecolabelling, which has been done in India. This could be done through further tax breaks.
- **Rebate:** Currently leathergoods are given 7% rebate on export while footwear enjoys a 15% cash incentive [33]. This rebate can be increased, for example 20%, given that the exporting companies have embraced ISO 50001:2011 on Energy management systems, OHSAS 18001 on Occupational health and safety, and other eco labeling.

- **Mortgage:** As leather Industry is an emerging sector in Bangladesh, there are always new entrants joining the fray. One of the most significant costs to a new venture or a company looking to restructuring is the factory building itself. So a possible avenue is allowing banks to consider the low cost land not at their book value but at their potential value.

- **Buyer Engagement:** Buyers are perhaps the most important element of the entire process with unlimited power throughout the supply chain. Getting them involved can only be beneficial. A platform that brings buyers and producers together to jointly improve the industry can speed up the entire process.

6 Proposed action plan

Some steps can be taken to ensure that leathergoods and footwear sector stays on the green path. LFMEAB, and other leather associations can play a key role in achieving this.

6.1 Short Term Plans

The short term plans described here can be implemented within 1 year.

No	Plan	Organization	Underlying Reason	Description	Possible/ Desired Outcome
1	Awareness Campaign	LFMEAB, BPC, COEL	- Knowledge gap about the latest environment friendly technology. - Knowledge gap about the benefits of latest technology.	Create an awareness campaign with an aim to educate and promote the technologies mentioned above.	- Dissemination of Technology. - Increased awareness among the stakeholders.
2	Research on Carbon Financing	BPC, SREDA, BTA, LFMEAB, IIDFC	- No concrete information about the total carbon output by leather industry of Bangladesh. - Lack of data about the possible reduction of carbon output.	Carry out a study to get the carbon financing through IIDFC for leather sector. Due to nature of GHG emission throughout the supply chain, a combined initiative between Tanners' Association and others trade body would be beneficial.	Identification of feasibility of carbon financing for leather and footwear sector.
3	Research on Nation Branding	BPC	- Lack of buyer knowledge about Bangladeshi leather sector. - Not enough branding on the comparative benefits of Bangladeshi product.	Invest in research and product development to exploit the unique traditions and skills within the concept of 'Made in Bangladesh.	Increased demand for Bangladeshi product in global market.
4	Leather Summit	BPC	For greater buyer-supplier engagement.	Create an event that will bring the leather goods and footwear manufacturers and the buyers together to promote sustainable growth. A 'Leather Summit' could bring all stakeholders together under same platform and declare an ambitious target.	- Improved stakeholder relation. - Possibility for joint development projects. - A more inclusive approach to Environmental protection.
5	Trade Fair	LFMEAB	Knowledge gap existing in buyers and suppliers about Bangladeshi product.	Organize a fair that will display all the latest technologies. Through this members of LFMEAB	- Education about new technologies. - Promotion of Bangladeshi products.

No	Plan	Organization	Underlying Reason	Description	Possible/ Desired Outcome
			• Lack of cooperation among stakeholders. • Lack of technological knowledge.	can get a demonstration of the new technologies and the benefits. Also they can show their own products.	• Adoption of new technologies.
6	Reduced Spread	Bangladesh Bank	• High comparative interest rate for green financing. • Low competitiveness of green financing.	If Bangladesh Bank can lower the spread and allow the banks to give out loans with decreased interest rate, this can motivate the leather goods and footwear manufacturers to take up green financing and reduce their environmental impact.	• Greater implementation of environment friendly practices. • Increased proliferation of green finance.
7	Green Certificates	LFMEAB, BPC	• Lack of international certifications • No accepted standard in the industry.	Encourage members to get Green certificates such as LEED. At this moment there are none in the leather sector SME manufacturing units, but one example within the industry may cause a snowball effect.	• Adoption of globally accepted standards.

6.2 Medium Term Plans

The medium term plans described here can be implemented within 1-5 years

No	Plan	Organization	Underlying Reason	Description	Possible/Desired Outcome
1	Adoption of Technology	LFMEAB, Ministry of Commerce	• Use of antiquated technology. • Lack of environment friendly Practices	Use the technologies mentioned in Section 5.1 and apply pressure those to be included in Green Financing approved list, especially for the Green Transformation fund. The technologies and the practices mentioned there can dramatically lower the leathergoods and footwear industry's environmental impact. This stage of adoption will take upwards of 5 years.	• Use of latest technology. • Adoption of better practices.
2	Improved Training	COEL	• Non-frequent or ineffective training	Although there is plenty of trainings available the effectiveness and impact of the training is questionable. It has been realized that those trainees are hardly able to implement the knowledge gained either due to not knowing	• Skill Improvement. • Improved workforce.

No	Plan	Organization	Underlying Reason	Description	Possible/Desired Outcome
	and Research			where to start or how it would be done or there are not enough opportunities/incentives from the company to implement them in the respective areas. COEL can serve as a research hub that coordinates various researches into the best industrial practices for leather sector. Internship to the students can be made available and close collaboration with the educational institute will be the key in this aspects.	
3.	Mortgage on potential	LFMEAB, LSBPC, Bangladesh Bank, Ministry of Commerce	• High cost of creating Green Building. • Great financial burden on the companies who want to relocate. • Low Value of lands outside of Dhaka	Propose to the Bangladesh Bank to allow the banks to mortgage land on the basis of its potential value. This will lower the financing problems as the current members are currently experiencing. Furthermore it will allow the companies to increase their production capacity easily and in turn motivate them to build greener buildings	• A greater inclination toward green buildings and move towards more suitable locations.
4.	Bank Industry Relation Building	LFMEAB, LSBPC	• Knowledge Gap on the side of the banks about leather sector. • Lack of prestige of the industry	Can play an instrumental role in filling the knowledge gap the bankers currently have about the viability of the leathergoods and footwear industry. LFMEAB can act as a link between the borrowers and the banks to boost the confidence of banking sector. Currently the banks and financial institution hardly know the players in the sector which culminates in leather and footwear firms to pay a higher interest rate. LFMEAB can follow two paths. Firstly, negotiate with the banks on behalf of the members to bring the interest rate down. Secondly, go into partnership with a certain bank or banks that will provide a group financing to all LFMEAB members.	• Lower interest rates • Smoother process of loan application. • Faster service.
5	Virtual Market	LFMEAB	• Lack of ancillary industries • Lack of transparency of the process. • Time lag in the business process.	Create a virtual marketplace for eTrade for the leather supply chain as given in Figure 8, which will also assist in acquiring technology and respond to market with efficient and timely flow of information. The virtual marketplace could include for the manufacturers of wet-blue to	• Free flow of information. • Faster trade. • Timely service.

No	Plan	Organization	Underlying Reason	Description	Possible/Desired Outcome
				source their inputs, especially for the hides, skins and chemicals for processing, market trends, accessories etc.	

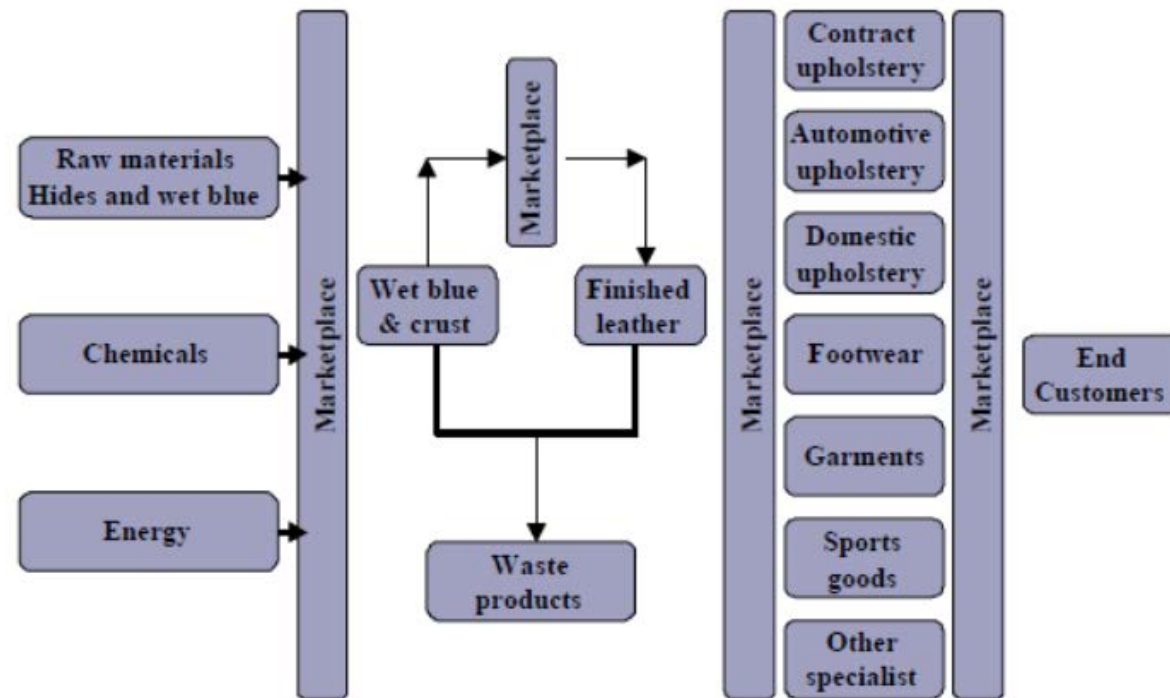


Figure 9 A virtual market place for leather supply chain to facilitate trade [34]

6.3 Long term Plans

The long term plans described here will take longer than 5 years to be implemented

No	Plan	Proposing /Authorizing Organization	Underlying Reason	Description	Possible/Desired Outcome
1	Increased Focus on recycling	LFMEAB	- Current recycling practices not up to the mark. - A lot of material are haphazardly disposed	Focus more on value addition for products. Currently a huge amount of raw hides are exported, which could be used to develop value based products. Similarly solid waste from the leather sector can be used to produce smaller leather goods or accessories.	- Better recycling practices. - More value addition to products. - Lower production cost.
2	Model factories	LFMEAB, Interested Company	- Lack knowledge on the part of producers. - No existing example of environment friendly technologies and practices in Bangladesh	LFMEAB can try to create a model industry from the solutions given before. Creation of such a factory will promote environ friendly technologies and practices. It will demonstrate the profitability of such ventures thus inspire more and more producers to focus on green technologies. More over creating a green building can bring out the best in the employees and increase productivity. LFMEAB cannot be the sole initiative taker. There need to be an interested investor that will take the burden of building and running such an initiative.	- Reduce the knowledge gap - A visible example to serve as a guide to the industry. - Serve as an incentive.

6.4 Role of other organizations

6.4.1 Centre of Excellence (COEL)

COEL's mission is to improve the overall workforce of the leather sector. It is a nonprofit organization that is located at Pallibiddut, Chandra, Gazipur. This organization can be revamped to serve the continuously changing need of the industry.

- It can serve as a research hub that coordinates various researches into the best industrial practices for leather sector. Internship to the students can be made available and close collaboration with the educational institute will be the key in this aspects.
- It can play an integral part in disseminating latest technology among the stakeholders of the business through training and seminars.
- Some of our respondents have complained about the irregularity of the training sessions. This must be addressed. Similarly the impact of the training should be measured.

6.4.2 Business Promotion Council (BPC) Leather sector

BPC is a sector specific promotion council that seeks to diversify the exports of Bangladesh. BPC was born from idea of the private public partnership. BPC is a great initiative for leather sector, the full advantage of which is yet to be taken.

- Create a new generation of entrepreneurs for the leather sectors through promotion, incentives and skills training.
- BPC can create and maintain relationship with other stakeholders in the supply chain. For example BGMEA, BTA, BFLLEA and other international organization.
- Can act as a liaison between the industry and the government to make policy changes and adoption seamless.
- It can also create and set industry standard that binds all the stakeholders at all level of production. This will make the entire leather industry change together.

6.4.3 Sustainable and Renewable Energy Development Authority (SREDA)

SREDA is a government organization that aims to promote and facilitate renewable energy use in Bangladesh. It has an impressive track record of renewable energy promotion.

- Promote green technology. Because efficient technology decreases energy consumption.
- It can introduce the concept of green building. Green factories are sustainable and profitable in the long term.

- Promote and facilitate low cost finance for green initiatives.

6.4.4 Partnership with IFC for low cost finance

International Finance Corporation (IFC) is providing a credit facility of USD 10 million specifically targeted to readymade garment factories to improve structural integrity, fire and electrical safety. At the same time IFC provided loan to garment unit for purchasing new equipments. The main attraction for IFC credit is competitive interest rates although due diligence is usually stringent. The interest rate is LIBOR + 4.5% which can raise to 9% depending on the relationship of local banks as fund is distributed through four banks. Loans can span from USD 100,000 to USD 2 Million.

A similar partnership between leather and footwear sector and IFC can be established to create fund with low interest rate

6.4.5 Partnership with other donor organisations

There are various embassy and donor organisations who are working on this sector. Gesellschaft für Internationale Zusammenarbeit (GIZ) particularly has taken particular interest in this sector and taken various initiatives. Netherland embassy is also in process to finalise a project targeted to leather sector. Similarly Agency Française de Développement (AFD), U.S. Agency for International Development (USAID) and Japan International Cooperation Agency (JICA) could be other options through where partnership could create sustainable development of the sector.

7 Conclusion

The leathergoods and footwear sector is the next rising tiger of Bangladesh economy. It has tremendous potential for growth, but this growth must be sustainable and should not be a short term bubble. For an industry to become sustainable it has to take account of the environmental impact that it has on the industry. Even though the leathergoods and footwear industry does not impact the industry compared to tanneries that much still it is under constant scrutiny due to leather supply chain perspectives. The industry must strive to reduce its environmental impact in every way possible. The wonder of technological revolutions must be through the assistance of the financial sector. The financial institutions need to be allowed to provide lower cost financing so that the producers may be able to mitigate the effect on the environment.

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Appendices

Appendix A

List of factories that were visited along with the key person:

No	Factory Name	Key Person	Designation
1	Jihan Footwear	Md. AbdusSattar	Executive Director
2	SonaliAansh Ltd	Md. Mizanur Rahman Sikder	Manager
3	Escort Footwear	Mr. Apurba Bhattacharya	General Manager
4	Albarosa Ltd	Md Shahidul Kamal	Production Manager
5	Akij Footwear	Mohammad SamsuzzamanTipu	Senior Officer
6	Aleron Ltd	Mahtab Uddin Bhuiyan	Director Operation
7	Italy Footwear Ltd	Mr. MA Mannan	Vice Chairman

8	Pacific Footwear	Md. Nurul Islam (Nantu)	Asst. General Manager
9	Paruma Shoe Limited	Mr. Kaiyum Ahmed	Commercial Manager
10	Rider Bags& Luggage Factory ltd	Mehedi Hasan	Executive Commercial
11	Riyadh Trading Ltd	Siddikur Rahman Rana	Executive Director
12	Wintex Gloves Ltd	Md. RashidulAlam	Executive Director
13	Karigor	Tania Wahab	Owner
14	ABC footwear	MA Massud Khan	Deputy General Manager

Appendix B Questionnaire

For Leathergoods and footwear Manufacturers

Q1. Give a brief description of the factory that you are running. What type of goods do you produce?

Q2. (a) Have the goods that you are producing or the business been designed to meet recognized environmental standards? (Identify: the relevant standards for both the goods and the factory)

(b) If the business has been designed to meet any other environmental standards, please provide a copy of these.

Q3. In your opinion, what are the areas that need to be addressed to get more buyers and at the same time improve environmental standard.

Q4: What are the technological changes that you think you need to get to reduce Energy, Water, Chemical and solid waste consumption.

Q5: Can you identify any machines/equipments that can help you to improve but cannot do it due to non-availability of financing

Q6: Would you be interested to produce goods with environment friendly technology if low cost financing is available?

Q7. In your opinion, what are the mechanisms other than bank loans can be initiated for financing these environmental issues?

Q8. What sort of external help do you get/need regarding reducing environmental impact?

Q9. If there are actual or potential environmental impacts according to above, please give details (e.g. consultants' reports, argument for choice of technique, planned mitigating factors, etc.)

Q10: Give us an idea of following:

4. Production, pair (year):
5. Groundwater use (day/month/year)
6. Electricity bill, BDT (day/month/year)
7. Electricity use, kWh (day/month/year)
8. Gas bill, BDT (day/month/year)
9. Gas use, kWh (day/month/year)
10. Solid Waste, ton: a) leather_____ b) synthetic leather: _____

For Finance Experts

1. How do you see the current scenario of Bank- Industry partnership?
2. According to the directive of Bangladesh Bank, how much you are disbursing as environment friendly loans?
3. Within the Green products list, which are the products that you provide loans from your banks from Green re-finance scheme? What are the potentials you see?
4. In your opinion what other new products can be offered in this regard? (e.g. Green fund. Off greed fund, risk insurance instrument)
5. Which sectors are your biggest clients for green financing/ which sectors can benefit most from green financing?
6. What is your opinion on emerging leathergoods and footwear sector?
7. How do you think these sectors can get low interest financing from Bank and FIs particularly when they are investing in environment friendly technology and operation?
8. What are other financing mechanisms available to this sector?
9. What kinds of improvements can be done to the process of handing out loans?
10. Are the regulations of BB too stringent? If yes elaborate

Appendix C List of KIIs

List of people who were interviewed on KII

No	Name of the Organization	Key Person	Designation
1	ECM Footwear Limited	Mr. Labik Kamal	Director
2	Italy Footwear Limited	Mr. MA Mannan	Vice Chairman
3	Karigor	Ms. Tania Wahab	Owner
4	BLJ Corporation Ltd	Mr. Faruq	Managing Director
5	Wintex Gloves (DK) Ltd	Mr. Rashid	Executive Director
6	IDLC	Abul Kalam Azad	Senior Manager
7	Lightcastle Partners	Zahedul Amin	Director (finance and strategy)
8	Ecoleban	Mikel Perez Maiz	Project Manager
9	IIDFC	Ameer Moshtaque Ahmed	Manager (corporate finance)
10	SouthEast Bank	Mostafa Meer Khaled Omar	Vice President, SME & Agri Credit Division

Appendix D: Ecolabelling Initiatives in different countries

Country	Name of Program	Commenced
Germany	Blue Angel	1977
Canada	Environmental Choice Program	1988
Japan	Ecomark	1989
Nordic Countries	White Swan	1989
United States	Green Seal	1989
Sweden	Good Environmental Choice	1990
New Zealand	Environmental Choice	1990
India	Ecomark	1991
Austria	Austrian Eco-label	1991
Republic of Korea	Ecomark	1992
Singapore	Green Label Singapore	1992
France	NF – Environment	1992
Netherlands	Stichting Milieukeur	1992
European Union	EU Ecolabel for Leather	1992
OTHERS		
The International Association of Natural Textile Industry (IVN)	NATURLEDER	2011
Leather Working Group	LWG	2005