

LEAN MANUFACTURING IN GARMENTS ACCESSORIES AND PACKAGING INDUSTRY OF BANGLADESH



A seminar paper for

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Written and Presented

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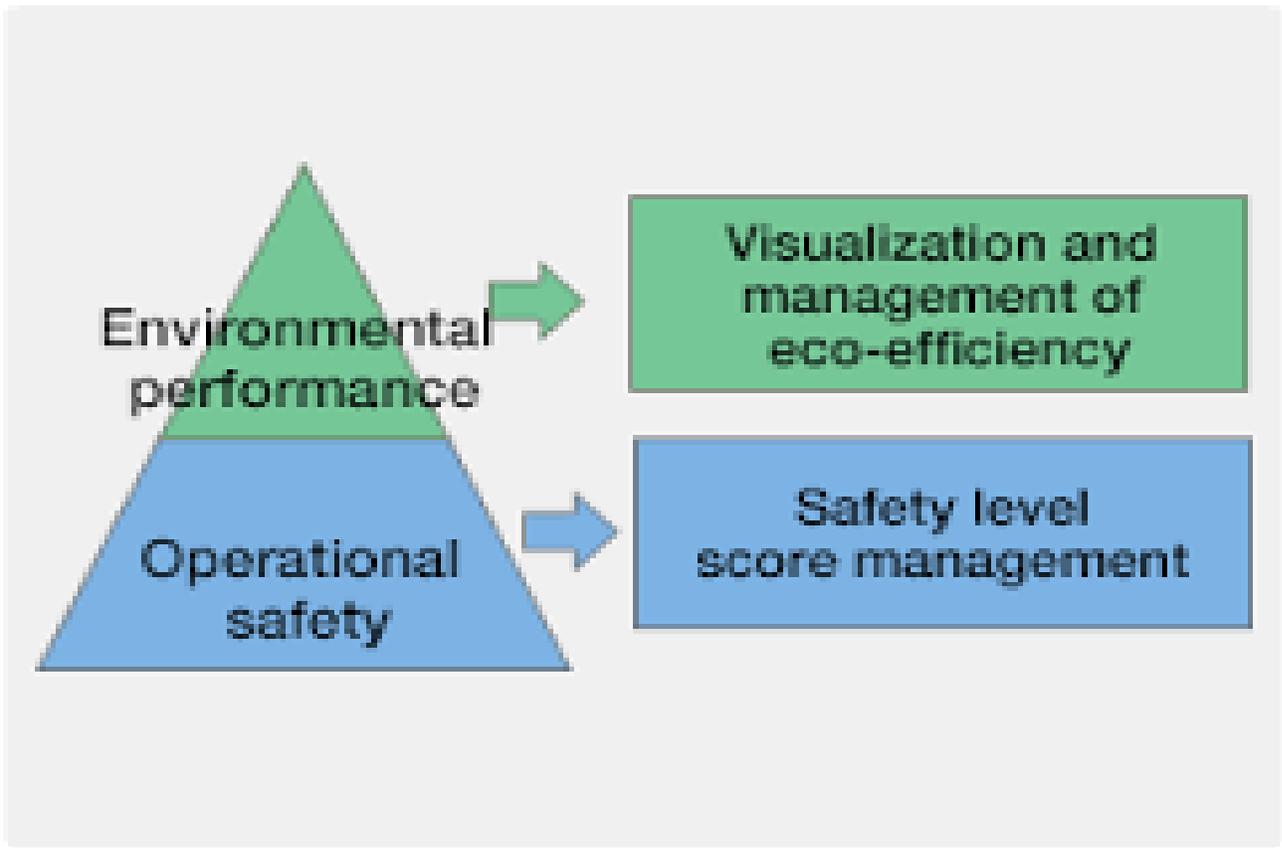
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■ Sharp Green Factory (ShGF) Scheme



Basic approach

1. Legal compliance and
minimization of
environmental risk

2. Improvement of environmental
performance

3. Coexistence with
communities and nature

Definitions:

Green Industry: Industry which commits to environmentally friendly entrepreneurship by focusing on development and continuous improvement in production process and environmental management

Green Commitment: Commitment demonstrated by policy, goals and action plans to reduce environmental impacts and assuring effective organizational internal communication

Green Activity: activities in compliance with policy, goals and plans which have been set to reduce concretely environmental impacts as commitment states

Green System: Systematic environmental Management including follow-up, assessment and revision aimed to continuous development as well as receiving a widely recognized award on environment and accreditations of various types of environments

Green Culture: cooperation of employees in all level organization to implement friendly environment in all aspects of business operations until it becomes a part of organization culture

Green Networking: Demonstration of network extension throughout green demand chains by supporting business partners and allies entering into accredited green industry process

Environmental Culture: Environmental awareness creation, attitude to people in the organization, collective behaviour sharing , value building, environmental operations and promoting understanding to people inside the organization and concerned people. Practice guidelines setting to enhance awareness in order to sustain environment which will become an organization culture,

Environmental Ethics: Behaviour Characteristics for natural and environmental best practices. The environmental truth will be taken into account; reasonable use of natural resources in parallel with sustainable development.

Sustainable Development: The development that meets the need of the present generation without compromising the ability of future generations to meet their own needs.

Continuous Improvement: Improvement resulting from continuous efforts and its former standards including daily work improvement

Green Economy: Economy system which will improve quality of life and decrease inequality in a long term. The next generation of people will not face natural resources degradation and environmental problems

Certified Organization: organization which was accredited and assessed whether it is in compliance with the green industry regulations.

Level1: Green Commitment-demonstrated by policy, goals and action plans to reduce environmental impacts and effective organizational internal communication

Level 2: Green activity-incompliance with policy, goals and plans which have been set to reduce substantially environmental impacts as commitment states

Level 3: Green System- systematic environmental management including follow-up, assessment and revision aimed to continuous development as well as receiving a widely recognized award on environment and accreditations on a variety of environments

Level 4: Green Culture-cooperation of employees at all level of the organization to implement friendly environment in all aspects of business operation until it becomes a part of organizational culture

Level 5: Green Network- demonstration of network extension throughout green demand chains by promotion business partners and allies entering in to accredited green industry process.

Executive Summary

The global clothing accessories industry is worth close to \$16.5 billion, according to research from Packaged Facts. Spending patterns concerning accessories are slightly different than clothing purchases as accessories are often bought both on compulsion and on impulse or as add-on purchases. The world accessories market is expected to exceed \$20 billion by 2018. The global accessories market is expected to see growth resume in the coming period as consumers become increasingly conscious about the environment, demand for environmentally friendly items are on rise. In FY 2015-2016 1500 BGAPMEA members altogether exported US\$6.12 billion garments accessories and packaging, mostly deem exports of course.

Market Outlook

The global clothing accessories industry faces several challenges, including rising prices of raw materials and stricter government and trade regulations. Emerging markets are expected to record strong growth, with Asia-Pacific demand for luxury items and replica rising. Competition from Asia-Pacific continues to threaten US producers, with companies looking to boost quality rather than lower prices to compete. The industry is heavily reliant on technology, with specific emphasis on improving production by using the most up-to-date machinery. As both purchasing power and standard of living rise, the accessories industry will see its consumer base grow.

Whether you're trying to save money, attract new customers and clients, or make your business a better place to work, implementing sustainable business practices can help. That's especially true if your target customers or employees are Millennials. This age group cares more than any other about sustainable business practices, according to a new survey. About two-thirds (62 percent) of small and midsize businesses in the second annual Cox Conserves Sustainability Survey have implemented sustainable business practices such as conserving energy and resources. The top five ways that small and midsize businesses are supporting sustainability: Using supplies efficiently, Using energy-efficient lighting and equipment, Offering paperless office, Offering recycling programs, and Holding meetings virtually

Among the top benefits of sustainable business practices are cost savings, demonstrating a commitment to the environment and enhancing the company's public image. So what's holding small and midsize businesses back from becoming more environmentally friendly? Unwillingness to pay for sustainability is a key factor, as is the fact that other priorities are taking precedence. Pollution has become the first enemy of the mankind. Industrial revolution of 19th century led to environmental disaster. The whole world is now more afraid of pollution rather than nuclear blast. Technological advancement has brought revolutionary changes in life style and national economy with overwhelming power over nature. The protection of environment has become a major issue around the global for the well being of the people and economic development.

The trouble with environmental compliance is that it is still viewed with circumspection by a large part of the industry. While social compliance was a visible problem, inside the industry, environmental compliance is seen, in layperson's terms, as taking care of your garbage, and not many industries are prepared to do that. Also worrying, is that while the cost of social compliance has been internalized by most factories, environmental compliance is still generally

perceived as a sunk cost by the industry. Yet it is absolutely vital for the long term sustainability of the sector and to ensure that Bangladesh gains a competitive edge in the apparel market, via greater market access.

The present environmental condition of Bangladesh is not at all equilibrium. Severe air, water and noise pollution are threatening human health, ecosystems and economic growth of Bangladesh. Air pollution caused due to increasing population, burning fossil fuels, industrialization and associated motorization. The water pollution is mainly caused due to industrialization. The inhabitants of major cities of Bangladesh are also exposed to high level of noise pollution. Environmental degradation of Bangladesh is also caused due to poverty, over-population and lack of awareness on the subject. Few steps have been taken by the government to improve the environmental degradation and pollution control. This paper analyzes the different types of environmental pollution and associated health hazard in Bangladesh. It also discusses the different governmental steps as well as some suggested steps to improve the pollution control. About 2500 industrial units were penalized in the recent months for non-compliance of environmental standards.

There is now a proliferation of standards, rating, and certification programs in the marketplace to help guide, demonstrate, and document efforts to deliver sustainable, high-performance buildings. It is estimated that there are nearly 600 green product certifications in the world with nearly 100 in use in the U.S., and the numbers continue to grow (Source: Building Green). There are also green building rating programs in use around the world and they vary in their approach with some outlining prerequisites and optional credits, while others take a prescriptive approach, and still others suggest performance-based requirements that can be met in different ways for different products and project types. As a result, it can be challenging and time consuming determining which standards, certifications, and rating programs are most credible and applicable to a particular project. This paper covers examples of environmentally-conscious measures implemented together with suppliers, in line with "eco together" with Business Partners, including adjusting the thickness of the layers in corrugated carton boxes to reduce environmental impacts.

Green/Lean Factory Concept

Let us follow Environmentally Conscious Design and Manufacturing. Our key to the solution of environmental problems lies in our policy of adopting environmentally friendly products and production operations—the concept of eco-factory. Following environmentally conscious manufacturing by adopting environmentally responsible activities like “Zero avoidable pollution” and “green manufacturing”. Viewing waste, not as an unavoidable result of our processes, but as a measure of our efficiency. The more waste a process generates, the less efficient it is considered, and the greater is the need for improvement and implementing the same. Aware of the various environmental protection and pollution control laws and regulations so as to take them into consideration when planning to build a factory and/or when managing the daily operation of a plant.

Expanding upon this system, the new Green Factory Certification System aims to ensure that factories are comprehensively environmentally friendly. The new system sets stricter standards in the area of supporting a recycling-oriented society and establishes unified group-wide criteria for preventing global warming and reducing the risk of chemical substances.

Concept and Green Industry Operation Framework “Green Industry for me is the industry which commits to environmentally-friendly entrepreneurship by focusing on development and continuous improvement, and practice business with responsibility towards society inside and outside organization as well as supply chain for sustainable development Green Industry is based on 2 principles

5 Tips for Efficient Goal-Setting in the Green Industry: The green industry is a busy one, it's easy to get caught up in the pace and daily tasks that come with the business. In order to prioritize and organize daily work, the team needs goals and motivation to look towards. The difference between green industry businesses that set goals and those that don't is noted in the longevity of their business. Here are a few ways to set effective goals.

1. Set SMART goals: In order to create a goal setting plan that will actually result in accomplishment of those goals, you need to follow a few guidelines. Each goal should be SMART, which means that the goal should be:

- Specific
- Measurable
- Attainable
- Realistic
- Timely

Each time set a goal and give it the SMART test. If any one of the requirements of a SMART goal isn't met, you'll likely struggle with the goal. An example of a SMART long-term goal would be: 'Increase revenue by 5% in 3 years.' The goal is specific, measurable, attainable, realistic and timely. Don't decide on these goals yourself, have a meeting in order to set these goals and decide as a team if they are SMART.

2. Communicate: Communication is essential through everything you do in business. While setting your goals, it's important to the degree that your team will be working together to accomplish those goals. Think about how much more involved and willing your team will be to work hard if they're involved in the goal-setting process.

3. Track your goals: If you've made sure your goals are SMART, they should be measurable. The next step is to actually measure your goals. The way your goals should be measured is dependent on the specific goal. If you are setting a monetary goal, you will need to track the numbers along the way. That's what measurable means. Can you measure how close or far you are from the goal? If your goal is to increase sales by 5% within the year, update your sales numbers each week and compare them to what your goal number is.

4. Reward accomplishment: Goals for anyone, on any level should come with some type of motivation. Obviously, not losing your job is a great motivation. But monetary motivation works even better. Set up specific bonuses for each of your employees based upon the goals you set for them. What works for us is to set up quarterly bonuses and allow set bonuses when said goals are met.

5. Set long-term goals first: In order to understand where you need to be 3-years from now, you need to know where you need to be 1 year from now and so on and so forth. Before setting your 90-day goals, have your 1, 3 and 10 year goals down. The reason this is so important because it sets a track for your business. Two questions to ask your team are:

- What is our number one goal as a company?
- Picture the company in 10 years- what does it look like?

Created a full-fledged guide and outline to setting

Introducing a Green Factory Certification System Which Comprehensively Evaluates Environmental Friendliness of Production Sites. Activity Highlight-Environmental Activities at Production Sites For the Global Environment

Practice-based Application for the Green/Lean Industry Development

Scope

A green industry manual will be required as guideline for industry entrepreneurs of all sizes, all types and all areas for the application of the green industry accreditation of the Ministry of Industry. The manual may cover definitions, principles, practice-based guidelines for green industry development and procedures for obtaining each level of green industry accreditation.

Origin of the Green/Lean Industry Project

Sustainable Development should be as promised in Johannesburg Declaration on Sustainable Development-JDSD in 2002 and Manila Declaration in 2009. The Ministry of Industry, which is the main sector to develop Bangladesh economy, is to set up industry development strategies for environment and society and will proactively take action in enhancing and promoting industry growth and sustainability. Total Quality Management -TQM, combined with balance principles of triple bottom line of Social, Economic and Environmental issues, became the principles of the green industry on these 2 fundamental bases:

- 1) Continuous Improvement
- 2) Sustainable Development

Green Commitment : Commitment demonstrated by policy, goals and action plans to reduce environmental impacts, and effective organizational internal communication
Green Activity: Activities in compliance with policy, goals and plans which have been set to reduce substantially environmental impacts as commitment states

Green System: Systematic environmental management including follow-up, assessment and revision aimed to continuous development as well as receiving a widely recognized award on environment and accreditations on a variety of environments

Green Culture: Cooperation of employee in all level organization to implement friendly environment in all aspects of business operation until it becomes a part of organization culture

Green Network: Demonstration of network extension throughout green demand chains by promotion business partners and allies entering into accredited green industry process

The Guideline for Green Industry Promotion and Development

1) The environmental-friendly industry can be possible by technology improvement, technology application, resource saving and resource efficiency. The industry of the future must be a low carbon society which might be settled in an eco-industry area. It may be, thus, difficult to build up individual or independent plants. Therefore, the Ministry of Industry must develop industrial settlement or eco-industry areas to serve it.

2) Social Responsibility Practice – many sectors of the Ministry of Industry have set up social responsibility projects.

3) Community Living – the industry must love its community and local people and then they will love the industry. The industry must be accessible to local people and ensure effective communication between them, as an example of the projects of the Ministry of Industry, which aim to develop good governance system, enable industry and its community to access information and establish mutual understanding and affection in order that local people can trust the industry. Green industry development requires collaboration from 3 sectors: public sector, industrial sector and people sector.

Industrial Standards Institute

Some projects support green industry development such as the training and environment management ISO 14001 environmental system setting project and the training and ISO 50001 energy management project.

Industrial Estate Authority

Some projects related to green industry development can be equivalent to levels of green industry. The community participation in monitoring factories in industrial estate project (White Flag Green Star), for instance, can be equivalent to green industry, level 2. Beside, the ecology industrial estate project which works together with Department of Industrial Works can be equivalent to green industry, level 2.

Concepts on industry development can be summarized into main points as follows:

- Driving green industry into the action plan for which all organizations are responsible
- Promoting more green industry through advertisement, public relations, events etc.
- Promoting advantages that factories will obtain from being a green industry at each level
- Organizing a talk to share experience to others factories on « how to become a green industry » by the factories that have been certified at each level
- Supporting factories which have been certified “green industry” to keep improving in order to reach a higher level, including building green industry network.

Advantages

Currently, trend in resource, energy and environment preservation is well responded by all sectors around the world. It is because energy source, petrol and gas, dropped more rapidly than expected, including fear of natural disasters of which a part results from greenhouse gas emission from the industrial sector. The Guideline for Green Industry Promotion and Development:

- 1) Environment system or ISO 14001 accreditation
- 2) Occupational health and safety management system standard
- 3) Waste and residue will be used to produce biogas as alternative energy
- 4) Waste Air from the production process will be reused.

Advantages that green/lean industry entrepreneurs will obtain are

- 1) Impact Reduction on environment and community, less complaints about impacts from industrial entrepreneurs, risk reduction of being responsible for the impacts in the future
- 2) Building a good image and receiving a good attitude for being environmentally friendly industry. It will develop a better understanding and mutual recognition between the industry and its neighboring people.
- 3) Surrounding people will obtain justice and have a better quality of life from economy and society development which results from the green industry

4) Increasing job creation and employability related to environment, fairness in job hiring. Workers will work safely and happily in a good environment

5) Natural Resource and Energy use reduction, cost saving in business operations, competition Opportunities.

6) Marketing opportunities in focusing on “green” products and production process which are being accepted and needed by consumers around the world

7) Add value in national economy which will not affect society, community and environment Moreover, entrepreneurs who have been certified can request advantages from Ministry of Industry.

Criteria of Green Industry Level 1: Green Commitment

1. Organization must define environmental policy covering all commitment that related to

(A) Impact Reduction on environment or Prevention Pollution or

(B) Sustainable Resource Use or

(C) Climate Change Mitigation and Adaptation or

(D) Protection and Restoration of the Natural Environment

Sustainability, the Green/Lean Industry and we

Going green is becoming increasingly attractive as a business strategy. As scientists and politicians debate the truth of global warming and dwindling natural resources, green industry practices not only enjoy favorable public sentiment and the psychic income of a lower carbon footprint, but increased cost savings, supportive government policies, and ever-increasing profitability as well. Trends in consumption, government policy, and costs all point towards even more green industry business opportunities in the years ahead. Within the franchising sector there are a number of ways to take advantage of the green business movement, from growing organic food, to providing energy efficiency expertise, to car washes and maid services that use eco-friendly soaps, and dozens of concepts in between. But before jumping into any green franchise, it's critical that potential franchisees understand what these businesses -- and the industry overall -- are really all about.

What Does the Green Industry do?

The green industry focuses on making a profit while having a negligible (or even a beneficial) impact on the environment. Leaders within the industry make sustainability a key consideration in decision-making throughout the organization. They work to minimize both use and production of harmful chemicals, excess materials, and waste byproducts in the delivery of their goods and services. Recognizing the importance of our planet's dwindling natural resources - or perhaps the economic opportunity that that creates - the green industry seeks to meet the demands of today without compromising the needs of tomorrow.

There are varying degrees of going green; large factories may install solar panels to reduce energy costs while a local restaurant may deliver by bicycle to reduce emissions. A warehouse may install energy saving light bulbs while a home builder may use insulation made from recycled denim. But increasingly it's becoming the standard that companies recognize the cost savings and potential profitability of going green; more and more are taking steps, small and large, toward greater sustainability.

Interesting Green Industry Business Trends

In our increasingly connected world, consumers are becoming more educated about the environmental impact of a growing population competing over finite natural resources. Put simply - most people are more open to less harmful products - especially if they are as easy to find and use as other products. Though the scientific cause and effect of many environmental issues remains debated by some, what is undeniable is a significant consumer interest in environmentally friendly business practices and products. A recent survey found that 88% of Americans believe taking care of the earth is very important - but only 52% believed that the government should be taking action to protect it. Green business can benefit either way: greater consumer interest and/or more protective policy! Globally, a report from 2014 says that 55% of consumers across 60 countries are willing to pay higher prices for goods from environmentally conscious companies. A 2013 study claims that 71% of Americans at least consider the environment as a factor when shopping. Organic food sales in particular seem to have turned a corner, jumping 11.3% in 2014, while overall food sales grew only 3%. Organic food has become far more mainstream over the last several years - expanding well beyond the niche market it once was. Sales in 2014 were over \$35 billion - compared to only \$3.4 billion in 1997. Growth is expected to continue strongly until at least 2018.

Green Business Can Go Forever!

We can be sure that producing more pollution is never going to seem like a good idea again. Green industry methods are on the rise because they're increasingly demanded by consumers, sought after by shareholders, and required by governments. Sustainable business practices acknowledge the finite resources available and reduce costs through renewable and reusable inputs; they attract niche customers early and have enormous potential to grow into the mainstream.

5-level Development of Green Industry (5 steps)

Organization must communicate environmental policy to all personnel for acknowledgement. Organization must define environmental policy covering all commitment that related to at least one of environmental activities below:

- (A) Impact Reduction on environment or Prevention Pollution or
- (B) Sustainable Resource Use or
- (C) Climate Change Mitigation and Adaptation or
- (D) Protection and Restoration of the Natural Environment and communication environmental policy to all personnel for acknowledgement

2. Preparation of environmental plan to reduce environmental impact or prevention of pollution or sustainable and efficient resource utilization or to reduce impact of climate change mitigation and adaptation and protection and restoration of natural environment, the environmental plan must consist of objective, target, procedure, responsible person and completed time frame
3. Organization must implement environment plan for achievement

1. Environmental Policy

Top management of organization must define environment policy covering commitment to implement in order to

- (A) Reduction environmental impact or prevention of pollution or
- (B) Sustainable resource utilization
- (C) Reduction impact of climate change mitigation and adaptation or
- (D) Protection and restoration of natural environment and communication the environmental policy to all personnel in organization or working on behalf of organization for acknowledgement

2. Planning

- (1) Organization must indicate environmental issues caused by activity, product and organization management and consider the environmental issues that affected significantly impact to environment
- (2) Organization must indicate and follow provisions of law and all other provisions concerned environment which is related to environmental issues
- (3) Organization must define environmental objective and target which is consistent to policy, law and significantly environmental issues
- (4) Organization must prepare environmental plan to achieve the set objective and target, the action plan should consist of responsible description in all level and related organizations as well as procedures and completed time frame
- (5) Organization must implement environmental action plan by distributing and suggesting the environmental action plan to related personnel for recognition and comprehension to implement according to defined plan
- (6) Organization must follow up implementation of defined environmental plan
- (7) Organization must conduct revision of environmental objective, target and plan periodically

3. Implementation

- (1) Organization must provide sufficient resource for environmental management
- (2) Organization must conduct training to create awareness for personnel in organization or working on behalf of organization on environmental issues and environmental impact

- (3) Organization must define communication channel and method to distribute environmental information both for internal and external personnel of organization
- (4) Organization must provide process of implementation in order to control document which is defined by environmental management system
- (5) Organization must provide process of implementation in order to reduce environmental impact, to reduce impact of climate change mitigation and adaptation and efficient and sustainable resource utilization
- (6) Organization must provide process of implementation to support emergent or unexpected situation that affected to environment and community

4. Follow up and evaluation

- (1) Organization must provide process of implementation for follow up/monitor environment quality and parameters used for following up and monitoring, must be verified and maintained appropriately
- (2) Organization must provide process of implementation to evaluate consistency between environmental management system and provisions of law during defined time frame
- (3) Organization must provide process of implementation to cope with existed environmental defects or may be occurred by implementing preventive and corrective actions
- (4) Organization must indicate, storage, prevent and specify duration of keeping record that related to environmental implementation
- (5) Organization must conduct internal evaluation of environmental management which is defined periodically to ensure that the environmental management system is implemented efficiently and conformed to related requirements

5. Revision and system maintaining

Top management of organization must review environmental management system of organization to ensure that it is conformed to related provisions of law and the environmental management system which is appropriately and continuously effectiveness

Criteria of Green Industry

Level 4: Green Culture

- 1. Organization must have environmental management system as mentioned in Level 3 all provisions
- 2. Organization must create organization culture in environment and implement it effectively by covering criteria of standard of corporate social responsibility ISO 26000 as follow
 - 2.1 Organization is responsible for its impact to environment by:
 - 1. Impact of decision making and implementation of organization to social and environment, especially significantly negative impact
 - 2. Implement preventive action for unintentionally negative impact to avoid recurrence

The Guideline for Green Industry Promotion and Development

2.2 Organization must have transparency in decision making and implementing that affected to environment, organization must reveal it clearly, correctly and completely by

1. Affected persons from organization's implementation can access directly to information source which is easy to understand 2. Updated information for appropriate time, being fact, clear and reliable, related persons can evaluate precisely

2.3 Organization must provide promotion for ethical implementation in environment seriously by:

1. Announcement to define environmental value and criteria of organization clearly

2. Implement with respect to management structure that supported Ethical operation in environment in organization

3. Provide supervised and controlled mechanisms to follow up, promote and enforce for ethical implantation in environment

4. Encourage and promote ethical implantation in environment

5. Prevent and improve conflict of interest in organization that may lead to non ethical implementation in environment

6. Preparation report of ethical implementation in environment

2.4 Organization must respect, consider and respond to stakeholder's interest in environment

2.5 Organization must follow to environmental laws and provisions

2.6 Organization must respect international environment implementation n case of law or law enforcement is not sufficient to protect environment and the organization must impel to respect international implementation

2.7 Organization must respect human rights in term of good environmental condition and recognize the importance of environment and international human rights

3. Organization must prepare environmental implementing report which is communicated to the public

Criteria of Green Industry: Level 5: Green Network

1. Organization must provide environmental management system and create organization culture with respect to Green Industry criteria of Level 4 in all aspects

2. Organization must implement promotion, creation and interrelation of environmental activity with stakeholder throughout supply chain, community and consumer with substantial achievement and to develop continuously and sustainably by:

1. To promote supply chain that leading to Green Industry and implement effectively by operating throughout supply chain and to develop continuously and sustainably

2. To promote community participation, community development and cooperate with community in encouraging awareness and promote earning, good understanding in sustainable consumption by emphasis and attention to environment

3. To provide learning and awareness of consumer in sustainable consumption

4. Organization must prepare implementation report which is related to promotion, creation and interrelation of environmental activity with stakeholder and achievement report for distribution.

How Green is Your Business?

Whether you're trying to save money, attract new customers and clients, or make your business a better place to work, implementing sustainable business practices can help. That's especially true if your target customers or employees are Millennials. This age group cares more than any other

about sustainable business practices, according to a new survey. Cox suggests four ways that you can make your small business more sustainable.

1. **Review your baseline energy usage.** Contact your utility company to get detailed records of what your energy usage is. Some utilities will also conduct an energy audit for you, assessing wasteful practices and suggesting ways to improve energy savings.
2. **Look for government programs to help.** There are many tax credits, rebates and other incentives for businesses that can make becoming energy-efficient more affordable.
3. **Take advantage of nature.** Use low-tech solutions to save energy. For example, if the sun blazes into your office windows at sunrise every morning, try closing the window blinds at night so the office will be cool when employees arrive. Have ample natural light? Turn off your lights during part of the day and rely on windows or skylights.
4. **Involve your employees.** As the survey shows, today's employees—especially younger ones—are passionate about sustainability. Pick their brains for ideas and suggestions about ways you can make your business more sustainable. Also encourage them to practice sustainable business with simple acts such as turning off lights when they leave the room, powering down their equipment at the end of the day, and using reusable coffee mugs.

Green Industry Level 1: Green Commitment Criteria

1. Organization must define environmental policy covering all commitment related to
(A) Impact Reduction on environment or Prevention Pollution or
(B) Sustainable Resource Use or
(C) Climate Change Mitigation and Adaptation or
(D) Protection and Restoration of the Natural Environment
2. Organization must communicate environmental policy to all personnel for acknowledgement

Practice Guidelines

- The policy on environment is top management's official declaration of commitment. Top management must be sure that the policy environment which was issued
 - will be suitable for type, size, impacts on environment of product activity and services
 - will aim at continuous improvement and protects environment
 - will comply with law and other regulations related to environmental issues
 - will be in the framework and review objectives and goals about environment
 - will be written, implement and conserve
 - will be informed to all employees in the organization or people who work on behalf of the organization
 - can be communicated to public
- Top Management must define policy on environment and prepare a written version and sign in environment policy declaration. For establishing environment policy, it should emphasize directions of environment impact reduction environment impact protection, sustainable utilization of natural resources climate change mitigation and natural resource protection and restoration
- Top management must indicate follow-up methods in order that everyone working for the organization understands and can implement effectively
- Organization must inform and communicate policy on environment to public and

neighboring community to show commitment to environment by using one of appropriate communication tools

2) Practice Guidelines for Green Industry Level 2: Green Commitment

Criteria

1. Organization must define environmental policy covering all commitment related to
 - (A) Impact Reduction on environment or Prevention Pollution or
 - (B) Sustainable Resource Use or
 - (C) Climate Change Mitigation and Adaptation or
 - (D) Protection and Restoration of the Natural Environment

Practice Guidelines

- The policy on environment is top management's official declaration of commitment. Top management must be sure that the policy environment which was issued
- Organization should review activities in the organization to know which activities affect environment. Priority order must be considered, based on the most significant impact on environment
- One of activities which have significant impacts will be chosen to set objectives and goals in order to reduce impacts on environment
- Organization must set up operation plans on environmental issues by
 - Collecting details and data related to what will affect objectives and goals e.g. problem causes, concerned organizations for plan development
 - Specify the operations in order to achieve the objectives and the goals
 - Indicate completed time frame and time frame for each step of operations
 - Appoint a responsible person for the overall plan and responsible persons of each step of operations
 - Prepare necessary natural resources e.g. equipments, personnel, expenses
 - Propose the plan to Authority
- Organization must put the plan into practice for effective outcomes, and specify monitoring system and record system for the outcomes of the environment plans
- Top Management should review and improve environment policies according to circumstance changes

The Guideline for Green Industry Promotion and Development

3) Practice Guidelines for Green Industry Level 3: Green System

- Organization should review activities in the organization to know which activities affect environment. Priority order must be considered, based on the most significant impact on environment
- One of activities which have significant impacts will be chosen to set objectives and goals in order to reduce impacts on environment
- Organization must set up operation plans on environmental issues by
 - Collecting details and data related to what will affect objectives and goals e.g. problem causes, concerned organizations for plan development
 - Specify the operations in order to achieve the objectives and the goals
 - Indicate completed time frame and time frame for each step of operations

- Appoint a responsible person for the overall plan and responsible persons of each step of operations
- Prepare necessary natural resources e.g. equipments, personnel, expenses
- Propose the plan to Authority
- Organization must put the plan into practice for effective outcomes, and specify monitoring system and record system for the outcomes of the environment plans

Level 4: Green Culture-Practice Guidelines

- Organization must set up environment management system of the ISO 14001 standard or equivalent

Criteria of Green Industry Level 3

Revision and system maintaining Top management of organization must review environmental management system of organization to ensure that it is conformed to related provisions of law and the environmental management system which is appropriately and continuously effectiveness

Practice Guidelines

- Top management of organization must review environmental management system during defined time frame to ensure that the system is appropriate, sufficient and efficient
- Evaluate opportunity for improvement and necessity of environment management changes, environment policy and goals on environment
- Revision record storage
- Organization must have process for building organizational culture and implement effectively. Samples of organizational culture building process are - Process to inculcate common belief to personnel in organization on organization's ability in reducing impacts on environment, climate change mitigation, natural resource sustainable use
- Process in creating value and awareness on environment
- Activities to promote personnel participation which will reflect value demonstration on environment
- Practice guidelines to keep behavior which will become organizational culture in environmental concern
- Method set up for evaluating the persistence of organizational culture
- Organization must define methods in evaluating impacts from decision and operations of organization on community and environment, especially significant negative impacts
- Organization must evaluate significant negative impacts on community and environment in case of decision on product/service development and/or improvement machine/equipment production process venue business strategy
- Organization must provide action plans or measures for handling and preventing significant negative effects

5) Practice Guidelines for Green Industry Level 5: Green Network

Criteria

1. Organization must provide environmental management system and creation organization culture with respect to Green Industry criteria of Level 4 in all aspects

Practice Guidelines

- Organization must be accredited green industry, level 4

- Organization must prepare a report on results of operations in environment issues to communicate to public, which might be included in organization annual report or through electronic communication channels.

Organization must implement promotion, creation and interrelation of environmental activity with stakeholder throughout supply chain, community and consumer with substantial achievement and to develop continuously and sustainably by:

1. To promote supply chain that leading to Green Industry and implement effectively by operating throughout supply chain and to develop continuously and sustainably
2. To promote community participation, community development and cooperate with community in encouraging awareness and promote earning, good understanding in sustainable consumption by emphasis and attention to environment
3. To provide learning and awareness of consumer in sustainable consumption

Criteria and Conditions of Lean/Green Industry Accreditation

The Ministry of Industry gives service on green industry accreditation as the objectives are to promote, support and put forward organizations, industrial establishments, factories or mining establishment of Thailand to succeed sustainably in management of impact on environment, impact on climate mitigation, efficient and sustainable use of natural resources. Operations of Ministry of Industry accreditation aims at helping and stimulating and improving to upper level on environmental management and putting continuously into practice in order to be productive and effective Green Commitment means organization which has commitment demonstrated by policy, goals and action plans to reduce environmental impacts, and effective organizational internal communication. Green Activity means organization which carries on activities in compliance with policy, goals and plans which have been set to reduce substantially environmental impacts as commitment states. Green System means organization which has systematic environmental management including follow-up, assessment and revision aimed to continuous development as well as receiving a widely-recognized award on environment and accreditations on a variety of environments Green Culture means organization which has cooperation of employee in all level organization to implement friendly environment in all aspects of business operation until it becomes a part of organization culture Green Network means organization which demonstrates network extension throughout green demand chains by promotion business partners and allies entering into accredited green industry process working in local office will be assigned to process document verification according to the criteria of green industry, level 1 or level 2 or level 3 as per request and will summarize results of document verification to head of the central administration of the sector or head of local office who is assigned to approve the accreditation. In case of the accreditation application of green industry, level 4 or level 5, a committee will be appointed to process accreditation assessment of green industry level 4 or level 5 as per request, and summarize the result of the assessment to sub-committee for approval 3) When sub-committee or head of the central administration of the sector or head of local office consider for approval, the Ministry of Industry will issue an accreditation certificate

Certificate with duration of accreditation as follows:

- Accreditation Certificate of Green Industry

Level 1 duration of one year

- Accreditation Certificate of Green Industry

Level 2 duration of 2 years

- Accreditation Certificate of Green Industry

Level 3, 4 and 5 duration of 3 years

It cannot be transferred to others and Accreditation label must be shown

Follow-up and accreditation renewal

1) The Ministry of Industry must follow up accredited activity or system of each level at least once a year or at appropriate frequency. When the follow-up period is reached, if accredited persons do not allow to be assessed, the Ministry of Industry may terminate accreditation.

2) The Ministry of Industry may conduct the assessment before its usual assessment period for these following cases

(1) Any doubt on environment management deterioration which does not comply with level of accreditation obtained

(2) Any significant change which affects the activity and the procedures of accredited persons for example major change in structure of the organization

(3) When complaint or information is verified and it is found out that accredited persons do not follow these present regulations and conditions

3) For the follow-up assessment, the entire activity or system can be checked or partially as per suitability.

4) Accreditation Renewal

(1) Certificate of Green Industry level 1 cannot be renewed at the same level

(2) Certificate of Green Industry level 2 can be renewed at the same level, but the green industry operations must not be the same as the former accreditation

(3) Certificate of Green Industry level 3 to 5 can be renewed at the same level

Accreditation Repeal

If accredited persons cannot assure activity or environment management system as accredited and/or did not follow regulations and conditions, the Sub-Committee may consider for accreditation repeal for one of these following reasons:

(1) Accredited persons did not follow regulations and conditions that the Sub-Committee specified

(2) Accredited persons do not follow the significant criteria of the green industry level which was obtained

(3) Accredited received a complaint and the Sub-Committee agree that it will affect the accreditation

Accreditation Cancellation

Accreditation will be cancelled because of one of these following reasons 1) Accredited persons ceased business

2) Accredited persons are bankrupted

3) Accredited [persons request cancellation by written

- 4) The Ministry of Industry announces modification or cancellation of criteria of green industry level which was obtained
- 5) Accredited persons did not allow the Ministry of Industry to conduct the assessment follow-up within 30 days counting from the due date of the follow-up as informed in the letter of the Ministry of Industry

Petition, Appeal and Argument

- 1) Any petition to decision or any process which has an impact on applicants or accredited persons
 - 2) Applicants or accredited persons can submit a petition request within certain days, starting from the day where the authority informs the result or the progress. It must be a written request submitted to the Sub-Committee.
 - 3) Appeal and argument must be submitted in written to the authority or the chairman of sub-committee who will process accordingly to find out a conclusion.
- Cox suggests four ways that you can make your business more sustainable.

1. **Review your baseline energy usage.** Contact your utility company to get detailed records of what your energy usage is. Some utilities will also conduct an energy audit for you, assessing wasteful practices and suggesting ways to improve energy savings.
2. **Look for government programs to help.** There are many tax credits, rebates and other incentives for businesses that can make becoming energy-efficient more affordable.
3. **Take advantage of nature.** Use low-tech solutions to save energy. For example, if the sun blazes into your office windows at sunrise every morning, try closing the window blinds at night so the office will be cool when employees arrive. Have ample natural light? Turn off your lights during part of the day and rely on windows or skylights.
4. **Involve your employees.** As the survey shows, today's employees—especially younger ones—are passionate about sustainability. Pick their brains for ideas and suggestions about ways you can make your business more sustainable. Also encourage them to practice sustainable business with simple acts such as turning off lights when they leave the room, powering down their equipment at the end of the day, and using reusable things.

Adopting Green Banking Policy:

Now it is the high time for the banks to adopt a comprehensive Green Banking Policy in a formal and structured manner in line with global norms so as to protect environmental degradation and ensure sustainable banking practices. With a view to developing green banking practices in the country, an indicative Green Banking Policy and Strategy framework has been developed for the banks. A high powered Committee comprises of directors from the Board in case of scheduled Bangladeshi Banks and a high powered committee comprises Regional Chief of Global Office and members from the top management including CEO in case of Foreign Banks should be responsible for reviewing the banks environmental policies, strategies and program. Installation of energy efficient electronic equipment and automatic shutdown of computers, fans, lights, air coolers etc. will help reducing electricity consumption.

Introducing Green finance: Eco friendly business activities and energy efficient industries will be given preference in financing by bank. Environmental infrastructure such as renewable energy project, clean water supply project, wastewater treatment plant, solid & hazardous waste disposal plant, bio-gas plant, bio-fertilizer plant should be encouraged and financed by banks as a matter of preferential treatments

Green Building Standards and Certification Systems

A standard is a set of guidelines and criteria against which a product can be judged. Common standards related to building practices are created through consensus processes by organizations. ISO defines a standard as: "a document, established by consensus, approved by a recognized body that provides for common and repeated use as rules, guidelines, or characteristics for activities or their results."

Standards frequently serve as incentives for improved performance. Many of the green product standards available today are proprietary or regulatory standards that have been developed outside of the formal ANSI and ISO consensus process. These types of standards may be more or less stringent than consensus standards and can include some level of transparency and public comment. However, many of these types of standards are trusted because they are associated with a group that has strong environmental credentials.

Green Product Certifications

A **certification** is a confirmation that a product meets defined criteria of a standard. ISO defines certification as: "any activity concerned with determining directly or indirectly that relevant requirements are fulfilled."

Green product certifications are intended to outline and confirm that a product meets a particular standard and offers an environmental benefit. Many product labels and certification programs certify products based on life-cycle parameters, making them *multi-attribute* programs. These parameters include energy use, recycled content, and air and water emissions from manufacturing, disposal, and use.

A green product certification is considered most respected when an independent third party is responsible for conducting the product testing and awarding the certification. Third-party means they are independent of the product manufacturer, contractor, designer, and specifier. Third-party labels and green product certification programs can be helpful in evaluating the attributes of green products because they validate that the product meets certain industry-independent standards. They can also offer greater assurance to consumers, designers, specifiers, and others that a product's marketing claims accurately reflect its green attributes..

To fully understand what a green certification represents and the quality of information it provides, the details of its requirements need to be reviewed carefully. The ISO defines different types of labels that can be used for products. Below is an outline of the ISO-defined labels and

what is being claimed. Product certifications available in the U.S. are mostly Type I and Type II labels while Type III labels are now required in France and becoming more common in Europe and for those U.S. manufacturers with an international focus.

ISO-defined Types of Green Product Certification Labels

Type	ISO Number	What the label does
Type I	ISO 14024	Seal of approval for multi-attribute requirements
Type II	ISO 14021	Verifiable single-attribute environmental claims for issues such as energy consumption, emissions, or recycled content. Can be first-party, self-declared manufacturer claims. However many manufacturers are beginning to seek third-party verification of those claims in response to industry demand.
Type III	ISO >14025	Comprehensive environmental product disclosure and detailed product information. Similar to an Environmental Product Declaration (EPD)

Summary of Green Product Certifications

The following table, and the expanded information directly below it, outlines some of the most commonly used and respected green product certifications in the marketplace.

Product Certification	Single- or Multi-Attribute	Type of Standard or Certification	Managing Organization	Issue of Focus
<u>Energy Star</u>	Single-Attribute	Government certification relying on manufacturer-provided data or third-party testing	U.S. EPA and U.S. DOE	Energy consuming products
<u>Water Sense</u>	Single-Attribute	Government label based on third-party testing	U.S. EPA	Showerheads, toilets, faucets, urinals, and valves
<u>Forest Stewardship Council</u>	Single-Attribute	Third-party certification	Forest Stewardship Council (FSC)	Forests and forestry products
<u>SCS Global Services</u>	Multi-Attribute	Third-party certification	SCS Global Services	Wide range of products (i.e. carpets, textiles, wood products, insulation, and more)
<u>Green Seal</u>	Multi-Attribute	Third-party ISO Type 1 certification	Green Seal	Wide range of sectors (paints, adhesives, lamps, electric chillers, windows,

				window films, occupancy sensors)
<u>Cradle to Cradle</u>	Multi-Attribute	Third-party certification, Cradle to Cradle Certified Product Standard is managed and updated by the Institute's Certification Standards Board	Cradle to Cradle Products Innovation Institute C2CPII	Building materials, interior design products, textiles and fabrics, paper and packaging, and personal and homecare products
<u>Green guard</u>	Multi-attribute	Third party certification	UL Environment	Indoor air quality, children and schools focus

Summary of Green Building Rating and Certification Systems

The following table and the expanded information directly below it outlines several of the most commonly used and respected green building rating and certification systems in the marketplace.

Building Rating or Certification System	Single- or Multi-Attribute	Type of Standard or Certification	Managing Organization	Issues / Areas of Focus
<u>Energy Star</u>	Single-Attribute	Government certification using a benchmarking method	U.S. EPA and U.S. DOE	Building energy and water use
<u>Leadership in Energy and Environmental Design (LEED)</u>	Multi-Attribute	Green building rating and certification system through independent third-party verification for: New Construction (NC) Existing Buildings, Operations & Maintenance (EB O&M) Commercial Interiors (CI) Core & Shell (CS)	U.S. Green Building Council	Performance in: Sustainable Sites Water Efficiency Energy & Atmosphere Materials & Resources Indoor Environmental Quality Locations & Linkages Awareness & Education Innovation in Design Regional Priority through a set of prerequisites and credits

		Schools (SCH) Retail Healthcare (HC) Homes Neighborhood Development (ND)		
<u>Green Globes</u>	Multi- Attribute	Green building guidance and assessment program for: Existing buildings New construction	Green Building Initiative in the U.S. BOMA Canada	Environmental assessment areas to earn credits in: Energy Indoor Environment Site Water Resources Emissions Project/Environmental Management No prerequisites
<u>Living Building Challenge</u>	Multi- Attribute	Performance- based standard, and certification program for: Landscape and infrastructure projects Partial renovations and complete building renewals New building construction Neighborhood, campus and community design	International Living Future Institute	Performance areas include: Site Water Energy Materials Health Equity Beauty All areas are requirements.
International Programs				
<u>Beam (Hong Kong)</u>	Multi- Attribute	Comprehensive standard and supporting process covering all building types, including mixed use complexes,	Business Environment Council	Performance and assessment in: Site aspects Material aspects Water use Energy use Indoor environmental quality

		both new and existing to assess, improve, certify, and label the environmental performance of buildings		Innovations and additions
<u>BREEAM</u> (UK, EU, EFTA member states, EU candidates, as well as the Persian Gulf)	Multi-Attribute	Certification system is a multi-tiered process with pre-assessment, third-party consultant guidance through an assessment organization for: New Construction Communities In Use Buildings and EcoHomes	BRE Global	Assessment uses recognized measures of performance, which are set against established benchmarks in: Energy and water use Internal environment (health and well-being) Pollution Transport Materials Waste Ecology and Management processes
<u>CASBEE</u> (Japan)	Multi-Attribute	Building assessment tools for Pre-design New Construction Existing Building and Renovation	JSBC (Japan Sustainable Building Consortium) and its affiliated sub-committees	Assessment areas include: Energy efficiency Resource efficiency Local environment, and Indoor environment
<u>Green Mark Scheme</u> (Singapore)	Multi-Attribute	Benchmarking scheme that aims to achieve a sustainable built environment by incorporating best practices in environmental design and construction, and the adoption of green building technologies.	Building and Construction Authority (BCA)	Rates buildings according to five key criteria: Energy efficiency Water efficiency Environmental protection Indoor environmental quality, and Other green and innovative features that contribute to better building performance.

<u>Green Star SA</u> (South Africa)	Multi-Attribute	Green building rating system for: Office Retail Multi-unit residential	Green Building Council of South Africa administers program independent assessors to assess and score projects	Categories assessed in: Management Indoor Environmental Quality Energy Transport Water Materials Land Use & Ecology Emissions Innovation
<u>Pearl Rating System for Estidama</u> (UAE)	Multi-Attribute	Green building rating system for: Community Buildings Villas Temporary Villas and Buildings	Abu Dhabi Urban Planning Council	Assessment of performance in: Integrated Development Process Natural Systems Livable Communities Precious Water Resourceful Energy Stewarding Materials Innovating Practice

Statistically representative models are used to compare your building against similar buildings from a national survey. A rating of 50 indicates that the building, from an energy consumption standpoint, performs better than 50% of all similar buildings nationwide, while a rating of 75 indicates that the building performs better than 75% of all similar buildings nationwide. To receive an Energy Star rating, a project's energy usage must receive a score of 75 or more.

EMERGING ISSUES

New green technologies and materials are always being developed and entering into the marketplace to complement current practices in creating greener environments. Many of these technologies and materials have not been tested long enough in the built environment in order to fully verify their performance. Seek extensive testing and performance data before incorporating new technologies and materials into a project. Also, test beyond the product's green performance for safety, durability, and fire resistance standards. New and more stringent requirements will continue to be introduced to the standards and certifications process. Because of the toxicity of some pesticides and fire retardants, and additional means of exposure, testing and certifying beyond product emissions to product content is a trend that will likely increase.

Achievement target for 2017

Green Factory Certification Standards			
Objectives	Management Indicators	Level 1	Level 2

Green Factory Certification Standards				
Objectives	Management Indicators		Level 1	Level 2
Preventing global warming	CO ₂ emissions (per unit of production* ¹)		12% reduction* ⁵	20% reduction* ⁵
Supporting a recycling-oriented society	Zero waste activities	Waste discharged externally* ² (per unit of sales)	30% reduction* ⁵	50% reduction* ⁵
		Final disposal rate of total waste	0.5% or less	0.5% or less
	Petroleum-based resource waste* ³ (per unit of sales)		30% reduction* ⁵	50% reduction* ⁵
Reducing the risk of chemical substances	Atmospheric emissions of volatile organic compounds (VOCs)		Achievement of fiscal 2011 targets at each site based on Medium-Term Environmental Plan 2015	Achievement of fiscal 2015 targets at each site based on Medium-Term Environmental Plan 2015
	Guidelines for managing soil contamination risk		—	Consistent with guidelines
Restoring and preserving biodiversity	Guidelines for biodiversity preservation (consideration of water resources and wastewater, and proper management of greenery at factories)		—	Consistent with guidelines
Guideline-based activities	Achievement rate of implemented items* ⁴		70% or more	90% or higher

Green Factory Certification Standards

Objectives	Management Indicators		Level 1	Level 2
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	Guidelines for managing soil contamination risk		-	Consistent with guidelines
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Guideline-based activities	Achievement rate of implemented items* ⁵		70% or more	90% or more

From "Green Procurement Standards" to "CSR Procurement Standards"

The standards are a mechanism for supporting the development of environmental management systems by suppliers, and of evaluating the implementation of those systems. In January 2007, these standards were revised to become CSR Procurement Standards, to cover not only the environmental dimension but also all aspects of corporate social responsibility, including compliance with social norms and efforts to address human rights and labor issues. There are a number of important initiatives that are striving to create cleaner manufacturing practices that protect resources, the environment, and the workers. Among them are the Global Organic Textile Standard (GOTS) which provides organic certification for both products and manufacturers. Another service that really digs deep into safe chemistry for textile processing is blue sign, which is used by Eileen Fisher and Patagonia along with other brands. Finally, Cradle2Cradle is active in certifying materials and processes as sustainable, requiring that all inputs into a product are reusable or recyclable. Their initiative is called Fashion Positive. What are the key things to keep in mind when building an environmentally sustainable line? Do your homework. Where in

the sustainability continuum do you want to be? You can start small and focused or you can dive right in.

1. Be informed: ask your supplier questions.
2. Develop a relationship with your suppliers. Sustainability is evolving: there will be more choices and options as more designers request them and if your supplier knows you are looking for these options, they can be invaluable in helping source new products and materials. The OTA standard defines four levels of organic labeling:
 1. **“100% Organic”**. All components are organically grown and certified, including the sewing threads, and all processes used to manufacture the garment conform to the processing requirements stated in the standard;
 2. **“Organic”**. At least 95% (by weight) of the agricultural fibers are organically grown and all processing adheres to the environmental processing requirements given in the document;
 3. **“Made with organic (specified fiber products)”**. At least 70% (by weight) of the garment have been organically grown;
 4. **“Less than 70% organically produced constituents”**. Maybe it has some organic fiber content, maybe not. All non-organic garment components may be processed and handled without regard to the OTA standards. What you see is what you get.

Many small and medium accessory industries have grown here over the years, particularly to meet high demand from low-end garment makers. Two important industries — accessories and backward linkage — have flourished in Bangladesh to support the garments sector. Local accessory makers are going for fully automated production systems from semi-automation modes to meet demand from international buyers. BGAPMEA has set up a laboratory to test accessories at its office. Earlier, exporters had to have various accessories tested from Hong Kong, but now they can have it done in Bangladesh. A larger size testing lab is being setup in Tejgaon by BGAPMEA



Model of the "lean production" system

Lean manufacturing or **lean production**, often simply "**lean**", is a systematic method for the elimination of waste ("Muda") within a manufacturing system. Lean also takes into account waste created through overburden ("Muri") and waste created through unevenness in work loads ("Mura"). Working from the perspective of the client who consumes a product or service, "value" is any action or process that a customer would be willing to pay for.

Essentially, lean is centered on *making obvious what adds value by reducing everything else*. Lean manufacturing is a management philosophy derived mostly from the Toyota Production System (TPS) (hence the term Toyotism is also prevalent) and identified as "lean" only in the 1990s. TPS is renowned for its focus on reduction of the original Toyota *seven wastes* to improve overall customer value, but there are varying perspectives on how this is best achieved. The steady growth of Toyota, from a small company to the world's largest automaker, has focused attention on how it has achieved this success. Lean principles are derived from the Japanese manufacturing industry. Lean implementation is therefore focused on getting the right things to the right place at the right time in the right quantity to achieve perfect work flow, while minimizing waste and being flexible and able to change. The closest equivalent to Toyota's mentoring process is the concept of "*Lean Sensei*," which encourages companies, organizations, and teams to seek outside, third-party experts, who can provide unbiased advice and coaching.

In 1999, Spear and Bowen identified four rules which characterize the "Toyota DNA":

Rule 1: All work shall be highly specified as to content, sequence, timing, and outcome.

Rule 2: Every customer-supplier connection must be direct, and there must be an unambiguous yes or no way to send requests and receive responses.

Rule 3: The pathway for every product and service must be simple and direct.

Rule 4: Any improvement must be made in accordance with the scientific method, under the guidance of a teacher, at the lowest possible level in the organization.

A brief history of waste reduction thinking The avoidance of waste has a long history. In fact many of the concepts now seen as key to lean have been discovered and rediscovered over the years by others in their search to reduce waste. Lean manufacturing builds on their experiences, including learning from their mistakes. To link these three concepts is simple in TPS and thus lean. Firstly, *muri* focuses on the preparation and planning of the process, or what work can be avoided proactively by design. Next, *mura* then focuses on how the work design is implemented and the elimination of fluctuation at the scheduling or operations level, such as quality and volume. *Muda* is then discovered after the process is in place and is dealt with reactively. It is seen through variation in output. It is the role of management to examine the *muda*, in the processes and eliminate the deeper causes by considering the connections to the *muri* and *mura* of the system. The *muda* and *mura* inconsistencies must be fed back to the *muri*, or planning, stage for the next project. The original seven *muda* are:

Transport (moving products that are not actually required to perform the processing)

Inventory (all components, work in process, and finished product not being processed)

Motion (people or equipment moving or walking more than is required to perform the processing)

Waiting (waiting for the next production step, interruptions of production during shift change)

Overproduction (production ahead of demand)

Over Processing (resulting from poor tool or product design creating activity)

Defects (the effort involved in inspecting for and fixing defects)

Taking the first letter of each waste, the acronym "TIMWOOD" is formed. This is a common way to remember the 7 "muda". The discipline required to implement lean and the disciplines it seems to require are so often counter-cultural that they have made successful implementation of lean a major challenge. Lean is about more than just cutting costs in the factory.

In summary, an example of a lean implementation program could be:

With a tools-based approach	With a muri or flow based approach (as used in the TPS with suppliers). ^[24]
<ul style="list-style-type: none">• <u>Senior management</u> to agree and discuss their lean vision• Management brainstorm to identify project leader and set objectives• Communicate plan and vision to	<ul style="list-style-type: none">• Sort out as many of the visible quality problems as you can, as well as downtime and other instability problems, and get

<p>the workforce</p> <ul style="list-style-type: none"> • Ask for volunteers to form the lean implementation team (5-7 works best, all from different departments) • Appoint members of the lean manufacturing implementation team • Train the Implementation Team in the various lean tools - make a point of trying to visit other non competing businesses that have implemented lean • Select a Pilot Project to implement – <u>5S</u> is a good place to start • Run the pilot for 2–3 months - evaluate, review and learn from your mistakes • Roll out pilot to other factory areas • Evaluate results, encourage feedback • Stabilize the positive results by teaching supervisors how to train the new standards you've developed with TWI methodology (<u>Training Within Industry</u>) • Once you are satisfied that you have a habitual program, consider introducing the next lean tool. Select the one that gives you the biggest return for your business. 	<p>the internal scrap acknowledged and its management started.</p> <ul style="list-style-type: none"> • Make the flow of parts through the system or process as continuous as possible using <u>work cells</u> and <u>market locations</u> where necessary and avoiding variations in the operators work cycle • Introduce standard work and stabilize the work pace through the system • Start pulling work through the system, look at the production scheduling and move toward daily orders with <u>kanban</u> cards • Even out the production flow by reducing batch sizes, increase delivery frequency internally and if possible externally, level internal demand • Improve exposed quality issues using the tools • Remove some people (or increase quotas) and go through this work again (the Oh No !! moment)
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Lean leadership

The role of the leaders within the organization is the fundamental element of sustaining the progress of lean thinking. Experienced kaizen members at Toyota, for example, often bring up the concepts of Senpai, Kohai, and Sensei, because they strongly feel that transferring of Toyota culture down and across Toyota can only happen when more experienced Toyota Sensei continuously coach and guide the less experienced lean champions.

One of the dislocative effects of lean is in the area of key performance indicators (KPI). The KPIs by which a plant/facility are judged will often be driving behaviour, because the KPIs themselves assume a particular approach to the work being done. Similarly, commonly used accounting systems developed to support mass production are no longer appropriate for companies pursuing lean. Lean accounting provides truly lean approaches to business management and financial reporting.

Continuous Improvement breaks down into three basic principles:

1. **Challenge:** Having a long term vision of the challenges one needs to face to realize one's ambition (what we need to learn rather than what we want to do and then having the spirit to face that challenge). To do so, we have to challenge ourselves every day to see if we are achieving our goals.
2. **Kaizen:** Good enough never is, no process can ever be thought perfect, so operations must be improved continuously, striving for innovation and evolution.
3. **Genchi Genbutsu:** Going to the source to see the facts for oneself and make the right decisions, create consensus, and make sure goals are attained at the best possible speed.

Respect For People is less known outside of Toyota, and essentially involves two defining principles:

1. **Respect:** Taking every stakeholders' problems seriously, and making every effort to build mutual trust. Taking responsibility for other people reaching their objectives.
2. **Teamwork:** This is about developing individuals through team problem-solving. The idea is to develop and engage people through their contribution to team performance. Shop floor teams, the whole site as team, and team Toyota at the outset.

Differences from TPS

While lean is seen by many as a generalization of the Toyota Production System into other industries and contexts there are some acknowledged differences that seem to have developed in implementation.

1. **Seeking profit** is a relentless focus for Toyota exemplified by the profit maximization principle ($\text{Price} - \text{Cost} = \text{Profit}$) and the need, therefore, to practice systematic cost reduction (through TPS or otherwise) to realize benefit. Lean implementations can tend to de-emphasise this key measure and thus become fixated with the implementation of improvement concepts of "flow" or "pull". However, the emergence of the "value curve analysis" promises to directly tie lean improvements to bottom-line performance measurements.²⁰
2. **Tool orientation** is a tendency in many programs to elevate mere tools (standardized work, value stream mapping, visual control, etc.) to an unhealthy status beyond their pragmatic intent. The tools are just different ways to work around certain types of problems but they do not solve them for you or always highlight the underlying cause of many types of problems.
3. **Management technique rather than change agents** has been a principle in Toyota from the early 1950s when they started

emphasizing the development of the production manager's and supervisors' skills set in guiding natural work teams and did not rely upon staff-level change agents to drive improvements. This can manifest itself as a "Push" implementation of lean rather than "Pull" by the team itself.

4. **Lack of understanding** is one of the key reasons that a large share of lean manufacturing projects in the West fail to bring any benefit. In Factory Physics, Hopp and Spearman describe this as *romantic JIT*, where the belief in the methods is more important than the actual understanding and results. In this aspect, lean manufacturing is more of a religion than a science. Others have compared it to cargo cult science.

Goals and strategy

The espoused goals of lean manufacturing systems differ between various authors. While some maintain an internal focus, e.g. to increase profit for the organization, others claim that improvements should be done for the sake of the customer. Some commonly mentioned goals are:

- Improve quality: To stay competitive in today's marketplace, a company must understand its customers' wants and needs and design processes to meet their expectations and requirements.
- Eliminate waste: Waste is any activity that consumes time, resources, or space but does not add any value to the product or service.
- Reduce time: Reducing the time it takes to finish an activity from start to finish is one of the most effective ways to eliminate waste and lower costs.
- Reduce total costs: To minimize cost, a company must produce only to customer demand. Overproduction increases a company's inventory costs because of storage needs.

The strategic elements of lean can be quite complex, and comprise multiple elements. Four different notions of lean have been identified:^[34]

1. Lean as a fixed state or goal (being lean)
2. Lean as a continuous change process (becoming lean)
3. Lean as a set of tools or methods (doing lean/toolbox lean)
4. Lean as a philosophy (lean thinking)

The Lean Management Model

The Total Lean Management Model aligns ALL the pillars of Lean – TFM, TPM, TQM, TSM and THM in a systematic way under one umbrella, making Lean understanding, learning and execution a smooth methodology.

Creating WORLD CLASS ORGANIZATIONS – begins with the basic requirement of having a good 5S in the workplace, followed by identification, reduction and if possible elimination of the 7 Muda's across the value chain: customers to suppliers. Steps to achieve lean systems

The following steps should be implemented to create the ideal lean manufacturing system:

- Design a simple manufacturing system
- Recognize that there is always room for improvement
- Continuously improve the lean manufacturing system design

Design a simple manufacturing system

A fundamental principle of lean manufacturing is demand-based flow manufacturing. In this type of production setting, inventory is only pulled through each production center when it is needed to meet a customer's order. The benefits of this goal include:

- Decreased cycle time
- Less inventory
- Increased productivity
- Increased capital equipment utilization

There is always room for improvement

The core of lean is founded on the concept of continuous product and process improvement and the elimination of non-value added activities. "The Value adding activities are simply only those things the customer is willing to pay for, everything else is waste, and should be eliminated, simplified, reduced, or integrated" (Rizzardo, 2003). Improving the flow of material through new ideal system layouts at the customer's required rate would reduce waste in material movement and inventory.

Continuously improve

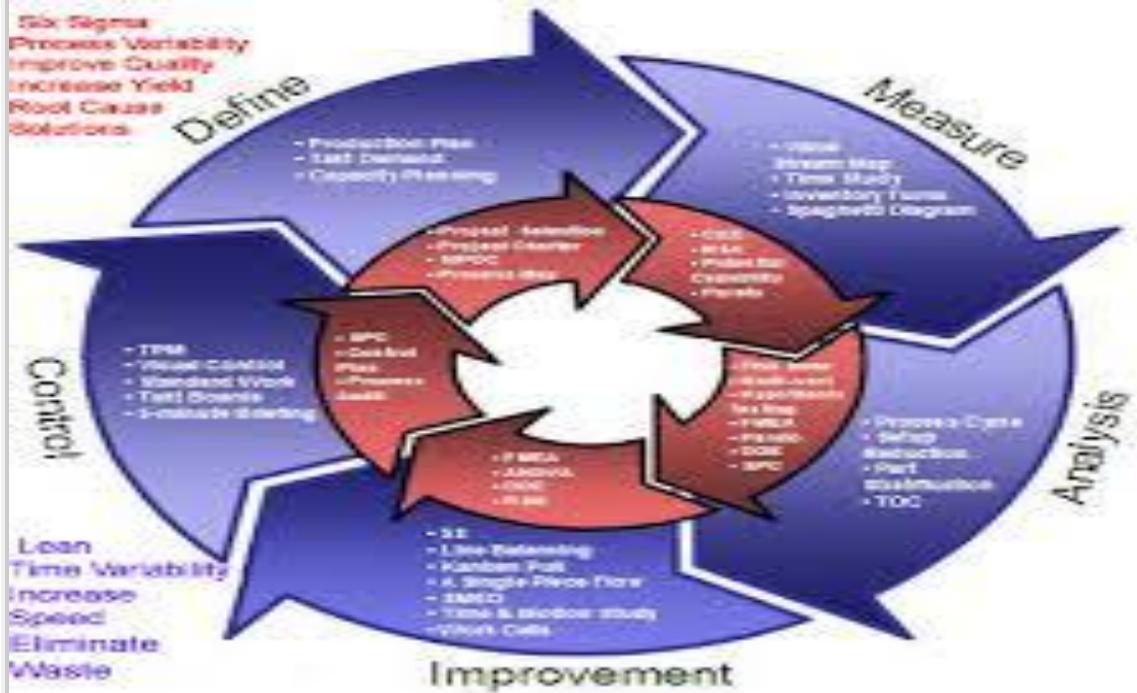
A continuous improvement mindset is essential to reach the company's goals. The term "continuous improvement" means incremental improvement of products, processes, or services over time, with the goal of reducing waste to improve workplace functionality, customer service, or product performance.

Measure

Overall equipment effectiveness (OEE) is a set of performance metrics that fit well in a lean environment. Also, PMTS, methods-time measurement, cost analysis and perhaps time study can be used to evaluate the wastes and IT effectiveness in the operational processes. With comparison between these two technologies, the statistical analysis results show a significant reduction on process times by adopting digital scanning technology. The results indicated a reduction of 54.5% in queue time, 32.4% in order entry time, 76.9% in outgoing delay time, and 67.7% in outgoing transit time with the use of digital scanning technology.

Nine Steps for Creating World Class Organization

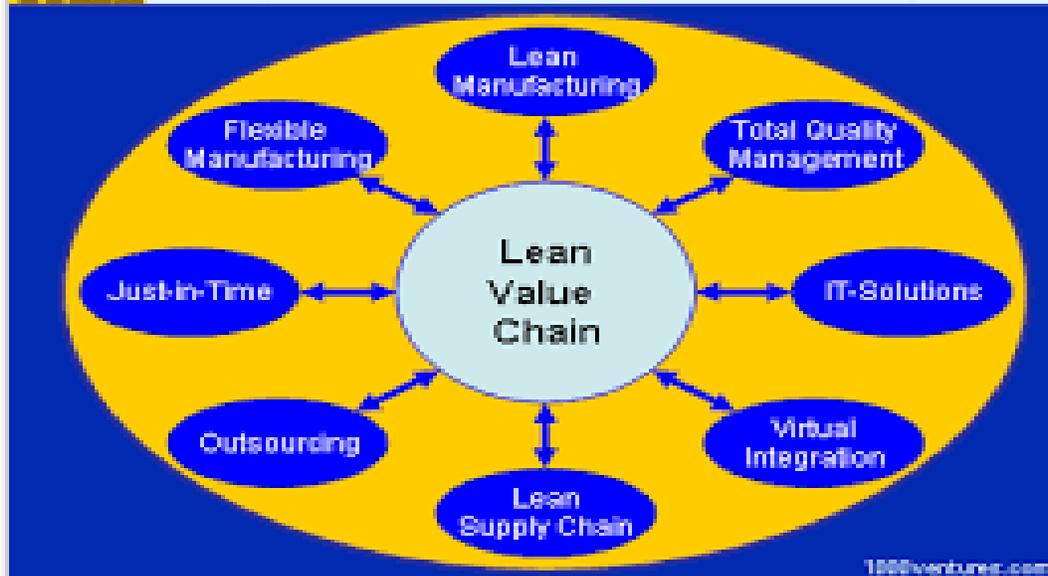
The nine steps make Lean Learning the easiest possible. Each is Muda can be reduced by Lean Pillars and tools though a step by step approach.





Lean Production

Components of Lean Production System







Lean Manufacturing



¿Qué es?

The text '¿Qué es?' is in large red font. A yellow arrow points from the left towards the text, and a grey arrow points from the right towards the text. In the bottom right corner, there are three interlocking gears: a green one, a blue one, and a yellow one.

Green Business Certificate Program-The advantages of “going green”:

- By "going green", your business will be in alignment with local and international initiatives focused on sustainability and climate change mitigation.
- Greening your business will keep you at per and one step ahead of future laws which will require eco-friendly business operations. At some point, your business will have to be green.
- Business will enjoy lower rate of interest
- Business will enjoy lower duty and taxes
- You will improve profitability with cost savings
- Your business will retain and attract local and foreign customers
- You will have access to Certified Green Business logo to use in your marketing and advertising
- You will receive special recognition through Business Directory, and eligibility for “Green Business of the Year” contest
- You will be recognized as a leader in environmentally-sustainable business
- You will be “part of the solution” by joining the effort to protect natural resources!
- You will attract more business!!!

Green governance: a proposal for collective governance towards local sustainable development

Sustainable development is a collective goal in which isolated actions have little effect. Therefore, the aim of projects across the globe is to align multiple isolated actions into collective action. Proposals such as Agenda 21 aim to build on efforts to improve social participation. It is known, however, that the governance of collective action is a challenge to both managers and researchers. The object of this paper is to propose and analyze a set of constructs which characterize collective governance in local sustainable development. This is an exploratory research employing multi-case studies. The empirical field encompasses four local forums in the state of Rio Grande do Sul, Brazil, located in the municipalities of São Lourenço do Sul, Gravataí, Ijuí and Vacaria. Data collection pointed to five constructs: common goals, norms, involvement, communication and resources. There is a high degree of interconnection between economic, social and environmental relations in sustainable development - a concept which considers all these spheres as equally relevant. However, there are difficulties in aligning these spheres in both local and global sustainable initiatives. Their coordination is too complex for all aspects to be drawn together with ease. Fragility of consensus and difficulties in coordinating social actors restrict joint action, making the path towards sustainability frequently impracticable. As observed in the Rio + 20 Conference (Rio20, 2012) and other events focusing on issues of sustainable development, weaknesses in the structure of collective governance showed the limits to an approach which continues to deal with individual symptoms instead of addressing their inter-relations.

Environmental Audits

The ISO 14001 family of standards addresses a wide range of items for environmental management, providing practical tools for organizations and companies looking to identify and control their environmental impact as well as constantly improve their environmental performance. Environmental Audit Program assesses factory compliance with local laws and regulations for environmental protection, as well as best practices based on ISO 14000 family of standards, which includes:

- Legal requirements and risk assessment
- Environmental management system
- Solid and hazardous wastes
- Waste water
- Air emissions
- Nuisance
- Energy use, water use, CO² emissions

Chemical Control Audits typically cover:

- Management systems
- Sub-supplier management
- Incoming materials
- Semi and finished products
- Chemical-related production

- Specific chemical controls
- Waste management

Water Testing

Waste water testing typically includes:

- Onsite gathering of waste water samples by trained AI auditors: influent water, water before treatment, effluent water
- Waste water testing prior to treatment of water and based on restricted substances list (ZDHC, Detox or your own list)
- If restricted substances are detected, samples of influent and effluent waters are verified to determine the source of the substances and whether treatment of water is effective.

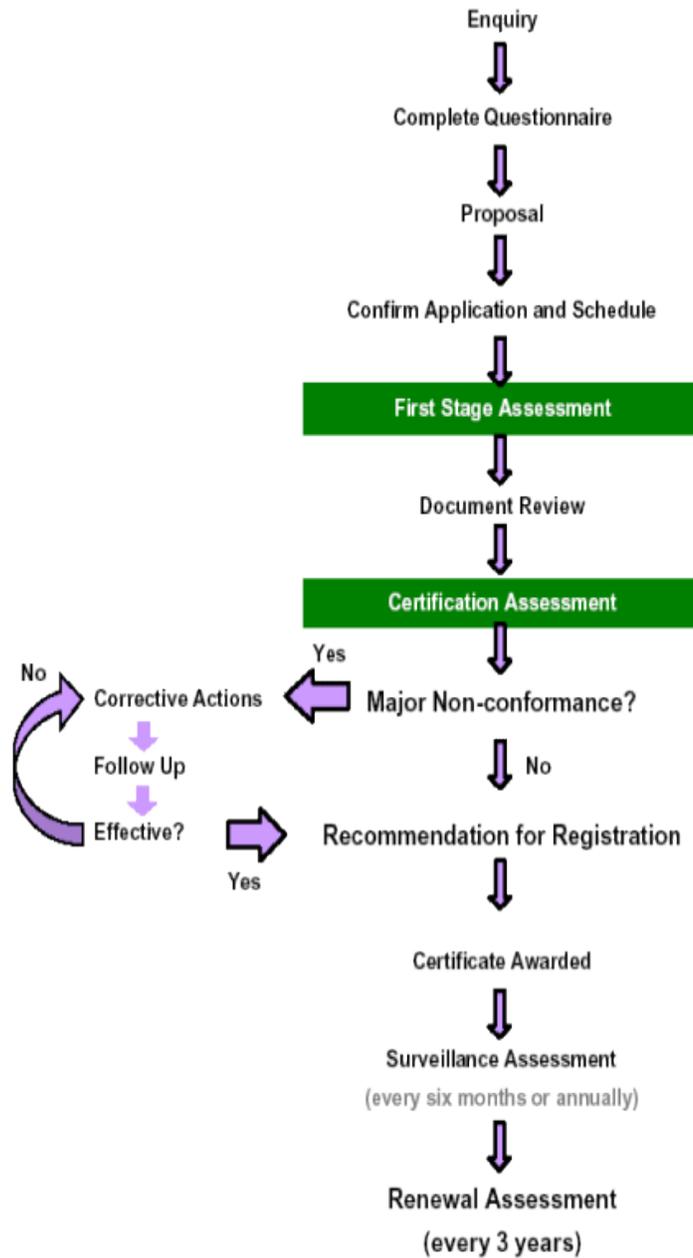
EMS ISO 14001 CERTIFICATION PROCESS:Third-party certification is performed by a registered external auditing organisation, normally referred to as a Certification Body (CB). An expert third-party audits the EMS for compliance with all elements of ISO 14001. Third-party certification of an organisation's EMS can help to establish credibility and inspire greater confidence in external stakeholders (e.g., customers, the public, regulators, governments, and other organisations) because of the perception that third-party certifiers act independently and audit an organisation's EMS in an unbiased manner.

General steps toward ISO 14001 Certification

<p>Step 1: Select Certification Body</p>	<p>Select your Certification Body (CB). Some CBs will pay an initial visit to clients to explain their certification process and to understand the potential clients' activities on site in order to give the client an accurate quotation for the certification.</p>
<p>Step 2 : Complete Questionnaire and Establish Contract</p>	<p>When applying for ISO 14001 certification, it is necessary to complete a questionnaire to allow CB to assess the nature, scale and complexity of your organisation. This will determine the skill and time allocation required to carry out a comprehensive and efficient assessment. From this a quotation will be produced confirming the cost of certification, ongoing surveillance and re-assessment. Following acceptance of the quotation, the CB will arrange certification schedule for your organisation.</p>
<p>Stage 3 : Document Review</p>	<p>CB will ask you to provide your organisation's EMS document for auditor review. The purpose of document review is to check that the documented EMS fully reflects all necessary requirements and is capable of delivering full compliance with ISO 14001.</p>
<p>Stage 4 : First Stage Assessment</p>	<p>The first stage assessment (FSA) consists of a site tour and system overview to establish that your EMS relates to your environmental aspects. A detailed plan is provided in</p>

	advance of the visit and a full report produced on-site, together with a plan for the certification assessment. Any nonconformity identified at this stage will require a corrective action plan.
Stage 5 : Certification Assessment	The certification assessment, which normally follows approximately one month after the FSA, is a review of the effectiveness of the implemented EMS against ISO 14001 Standard and your organisation's own requirements. A full report is prepared at the end of the audit. This is reviewed with you at a closing meeting, and a recommendation for registration will be made if there is no major nonconformity found. Where necessary you will be requested to provide a corrective action and preventive action plan or follow-up visit before a recommendation is made.
Stage 6 : Award Certification	If satisfactory, an independent review will be conducted on the report. Following a satisfactory review, CB will award certification. Certificates are valid for three years, subject to satisfactory surveillance visits.
Step 7 : Surveillance Visit	Following certification, routine surveillance is carried out on a six to twelve month basis. The final visit in the certification cycle is termed a renewal visit.
Step 8 : Renewal Assessment	A recommendation is made from this review on certificate renewal, together with any adjustment required to the ongoing surveillance plan. The renewal package is then reviewed independently and if satisfactory, certification is renewed for another three-year period.

ISO 14001 Certification Process:



Environmental Profile of Bangladesh

Limitations of the environment laws:

3.1 Need for a Sectoral Policy Approach

3.2 Addressing Policy Gap:

3.3 Regional and Bilateral Approach:

3.4 Public awareness campaigns and community involvement:

3.5 Changes in institutional, administrative and organizational arrangements:

3.6 Strengthening the legal system: Since many environmental problems are partly due to non-enforcement of existing laws, the legal system would be strengthened.

3.7 Strengthening fiscal measures (establishment of fiscal incentives or subsidies)

3.8 Strengthening the DOE technical Department and putting Technically qualified DG instead of a generalist.

Salient features of Bangladesh Environment Protection Act.

Power of entry etc. (1) Any person authorized by the Director General shall be entitled to enter, at all reasonable times any building or place for the following purposes:

- a) to perform duties conferred on him under this Act or rules;
- b) to inspect any activity in such building or place in accordance with this Act.
- c) to examine or test any equipment, industrial plant, record, register or any other important matter relating thereto;
- d) to seize any equipment, industrial plant, record, register, document or other matter punishable under this Act or the rules.

(2) The provisions of the Code of Criminal Procedure, 1988 (Act V of 1988) shall be applicable in respect of any search or seizure under this Act.

Power to collect samples etc.

Every person authorized by the Director General may, collect from any factory, premises or place samples of air, water, soil or of any other substance for the purpose of analysis.

Environmental clearance. - No industrial enterprise shall be established anywhere without obtaining a clearance from the DOE

Punishments-Offenses by companies. Where the person contravening any provision under the Act. are subject to punishment.

Different aspects of environmental pollution:

1. Industrial Discharge.
2. Industrial Waste and Effluent.
3. Noise Pollution.

Effect of environmental pollution

Severe environmental pollution is threatening human health and economic growth of Bangladesh. Bangladesh could avoid 10,000 deaths and save between 200 and 500 million dollars a year if indoor air pollution in four major cities can be reduced to acceptable limits. Industrial emissions cause different waterborne disease and damage to health. Noise pollution causes mental and physical illness among the people. Sound pollution causes deafness to heart attack.

Waste and Waste Management

What is Industrial Waste?

Waste is defined by public advisory panel of Chemical Manufacturing association USA as:

“Any gas, liquid or solid residual material at a facility, whether hazardous or non hazardous, that is not used further in the production of commercial product or provisions of a service and which itself is not a commercial product”. Waste is:

- A wrong substance
- At a wrong place
- At a wrong time
- In a wrong quality

Sources of Industrial Waste;

- in manufacturing operations
- rejected raw materials or products released as effluent
- Utility Operations

Approach of waste management

The initial steps to be taken by an industry is to introduce as an integral part of overall industrial management an Environmental Management System (EMS). Principles of EMS are:

- compliance
- pollution prevention
- continuous improvement

Elements of EMS:

- preparatory review: industry to identify strengths, weaknesses, risks and opportunities as basis for establishing an EMS
- Environmental Policy: Policy is to be developed by top management & get commitment from all-top to down the levels
- Organization and Personnel: Management & worker are to be made responsible for EMS implementation
- Environmental aspects & associated impacts: Identifying evaluation process for products, services& maintain records
- Environmental Management & Manual& documentation: This is permanent record and may be revised as required
- Environmental Objectives & targets: There must be clear objectives and targets to achieve
- Operational Control: Appropriate control & verification process should cover all functions, activities and process
- Environmental Management records: Records must be maintained in distinguished formats for EMS

UNEP concepts of cleaner production:

- Cleaner production is the continuous application of an integrated prevention environmental strategy to processes and products to reduce risk to human and the environment
- For production processes, cleaner production includes conserving raw materials and energy elimination toxic raw materials, and reducing the quantity and toxicity of all emissions and wastes before they leave a process
- For products the strategy focuses on reducing impacts along the entire life cycle of the product, from raw material extraction to the ultimate disposal of the product.

Means of achieving cleaner production

- Product designs
- Good housekeeping practices
- Equipment modification
- Process modification
- Raw materials substitution
- Innovative technology
- By products recovery from waste
- Recycling the waste
- Reuse of waste

Advantages of cleaner production

A cleaner production can typically result in the following economic benefits and significant competitive edge:

1. Raw materials consumption, hence cost reduction
 - Materials/Chemical consumption is reduced
 - Water consumption reduced
 - Energy consumption reduced
 - Raw material handling and storage cost reduced
2. Waste treatment cost reduced
 - Energy consumption in treating waste is reduced
 - Chemical required for waste treatment is reduced
 - Less manpower & equipment is required
 - Improves process efficiency
3. Process efficiency is Improved
 - Product yield is improved
 - Equipment availability
 - Energy requirement is reduced
 - Housekeeping is improved
 - Pollution potentiality is reduced
 - Reduction of waste disposal
4. Waste disposal cost is reduced
 - Quantity of waste generation is reduced
 - Less storage space is required, hence more production floor space
 - Wastes are segregated, hence less contamination
 - Less solid waste disposal area is required

Waste treatment classification

1. ETP which treats liquid wastes originating from industry
2. Treatment of gases emitted by an industry before released in the air
3. Treatment toxic or hazardous solids formed due to industrial activities before disposal

Modern technology from ttz Bremerhaven, Germany has invented low cost ETP in a much smaller area such as the space required by a 12 seater microbus in most of the cases.

Green banking

Green banking is like a normal bank, which considers all the social and environmental/ecological factors with an aim to protect the environment and conserve natural resources. It is also called as an ethical bank or a sustainable bank. They are controlled by the same authorities but with an additional agenda toward taking care of the Earth's environment/habitats/resources.

Ideal Benefits of Green Banking:

- * Basically Ethical (Green) banking avoids as much paper work as possible and rely on online/electronic transactions for processing so that you get green credit cards and green mortgages. Less paperwork means less cutting of trees.
- * Creating awareness to business people about environmental and social responsibility enabling them to do an environmental friendly business practice.
- * Green (Ethical) banks adopt and implement environmental standards for lending, which is really a proactive idea that would enable eco-friendly business practices which would benefit our future generations.
- * When you are awarded with a loan, the interest of that loan is comparatively less with normal banks because ethical banks give more importance to environmental friendly factors - ecological gains. Natural resources conservation is also one of the underlying principles in a green bank while assessing capital/operating loans to extracting/industrial business sector.

Green Banking as a concept is a proactive and smart way of thinking with a vision for future sustainability of our only Spaceship Earth - as design science explorer Richard Buckminster Fuller called our Earth. Industries and projects have been classified into four categories based on environmental impacts. They are GREEN category having only 22 types of industries, ORANGE- A category having 26 types of industries, ORANGE-B category having 69 types of industries and RED category having another 69 types of industries. Bangladesh bank is making mandatory requirement for green banking from 2015. The author of this paper spoke very loudly and clearly about equator principles of IFC about 15 years before, but no one was listening to him. 70 prime banks of the world's 34 countries officially declared not to finance any project above USD 10 million if it was not environmental friendly. They made 3 categories of industries based on environmental impacts. This means no industry shall be financed by banks unless it is environment friendly. Every industry now has to obtain Environmental clearance certificate from the DoE and renew the same every year against certain fees based on the amount of investment in the industry/project. The DG of DoE gives public hearing on last Thursday of every calendar month to hear public problems regarding environmental issues. Environmental clearance certification needs varied nature of documents for different categories of industry/project based on its environmental classification.

Equator Principles (EP)

The purpose of this study was to examine why companies “go green” and, in so doing, to refine a model that explains corporate ecological responsiveness by identifying motivations for adopting ecological initiatives and the underlying factors that lead to each motivation. For the purposes of

this study, we define corporate ecological responsiveness as a set of corporate initiatives aimed at mitigating a firm's impact on the natural environment. These initiatives can include changes to the firm's products, processes, and policies, such as reducing energy consumption and waste generation, using ecologically sustainable resources, and implementing an environmental management system. Our concept of corporate ecological responsiveness refers not to what a firm *should* do, but to the initiatives that reduce the firm's "ecological footprint". Prior literature on organizations and the natural environment provided an initial foundation for our conceptual model of corporate ecological responsiveness.

The Equator Principles (EPs) is a risk management framework, adopted by financial institutions, for determining, assessing and managing environmental and social risk in projects and is primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making. The EP apply globally, to all industry sectors and to four financial products 1) Project Finance Advisory Services 2) Project Finance 3) Project-Related Corporate Loans and 4) Bridge Loans. Currently 80 Equator Principles Financial Institutions (EPFIs) in 34 countries have officially adopted the EPs, covering over 70 percent of international Project Finance debt in emerging markets. EPFIs commit to implementing the EP in their internal environmental and social policies, procedures and standards for financing projects and will not provide Project Finance or Project-Related Corporate Loans to projects where the client will not, or is unable to, comply with the EP.

Scope

The Principles apply to all new project financings globally with total project capital costs of US\$10 million or more, and across all industry sectors.

Statement of Principles

EPFIs will only provide loans to projects that conform to Principles 1-9 below:

Principle 1: Review and Categorisation--When a project is proposed for financing, the EPFI will, as part of its internal social and environmental review and due diligence, categorise such project based on the magnitude of its potential impacts and risks in accordance with the environmental and social screening criteria of the International Finance Corporation (IFC).

Principle 2: Social and Environmental Assessment--For each project assessed as being either Category A or Category B, the borrower has conducted a Social and Environmental Assessment process to address, as appropriate and to the EPFI's satisfaction, the relevant social and environmental impacts and risks of the proposed project. The Assessment should also propose mitigation and management measures relevant and appropriate to the nature and scale of the proposed project.

Principle 3: Applicable Social and Environmental Standards-- For projects located in non-OECD countries, and those located in OECD countries not designated as High-Income, as defined by the World Bank Development Indicators Database, the Assessment will refer to the

then applicable IFC Performance Standards and the then applicable Industry Specific EHS Guidelines. Consequently, to avoid duplication and streamline EPFI's review of these projects, successful completion of an Assessment (or its equivalent) process under and in compliance with local or national law in High-Income OECD Countries is considered to be an acceptable substitute for the IFC Performance Standards, EHS Guidelines and further requirements as detailed in Principles 4, 5 and 6 below. For these projects, however, the EPFI still categorises and reviews the project in accordance with Principles 1 and 2 above. The Assessment process in both cases should address compliance with relevant host country laws, regulations and permits that pertain to social and environmental matters.

Principle 4: Action Plan and Management System-- For all Category A and Category B projects located in non-OECD countries, and those located in OECD countries not designated as High-Income, as defined by the World Bank Development Indicators Database, the borrower has prepared an Action Plan which addresses the relevant findings, and draws on the conclusions of the Assessment. Borrowers will build on, maintain or establish a Social and Environmental Management System that addresses the management of these impacts, risks, and corrective actions required to comply with applicable host country social and environmental laws and regulations, and requirements of the applicable Performance Standards and EHS Guidelines.

Principle 5: Consultation and Disclosure-- For all Category A and, as appropriate, Category B projects located in non-OECD countries, and those located in OECD countries not designated as High-Income, as defined by the World Bank Development Indicators Database, the government, borrower or third party expert has consulted with project affected communities in a structured and culturally appropriate manner. For projects with significant adverse impacts on affected communities, the process will ensure their free, prior and informed consultation and facilitate their informed participation as a means to establish, to the satisfaction of the EPFI, whether a project has adequately incorporated affected communities' concerns. In order to accomplish this, the Assessment documentation, or non-technical summaries thereof, will be made available to the public by the borrower for a reasonable minimum period in the relevant local language and in a culturally appropriate manner. The borrower will take account of and document the process and results of the consultation, including any actions agreed resulting from the consultation. For projects with adverse social or environmental impacts, disclosure should occur early in the Assessment process and in any event before the project construction commences, and on an ongoing basis.

Principle 6: Grievance Mechanism-- For all Category A and, as appropriate, Category B projects located in non-OECD countries, and those located in OECD countries not designated as High-Income, as defined by the World Bank Development Indicators Database, to ensure that consultation, disclosure and community engagement continues throughout construction and operation of the project, the borrower will, scaled to the risks and adverse impacts of the project, establish a grievance mechanism as part of the management system. This will allow the borrower to receive and facilitate resolution of concerns and grievances about the project's social and

environmental performance raised by individuals or groups from among project affected communities. The borrower will inform the affected communities about the mechanism in the course of its community engagement process and ensure that the mechanism addresses concerns promptly and transparently, in a culturally appropriate manner, and is readily accessible to all segments of the affected communities.

Principle 7: Independent Review--For all Category A projects and, as appropriate, for Category B projects, an independent social or environmental expert not directly associated with the borrower will review the Assessment and consultation process documentation in order to assist EPFI's due diligence, and assess Equator Principles compliance.

Principle 8: Covenants--An important strength of the Principles is the incorporation of covenants linked to compliance. For Category A and B projects, the borrower will covenant in financing documentation:

a) to comply with all relevant host country social and environmental laws, regulations and permits in all material respects;

b) to comply with the environmental requirements during the construction and operation of the project in all material respects;

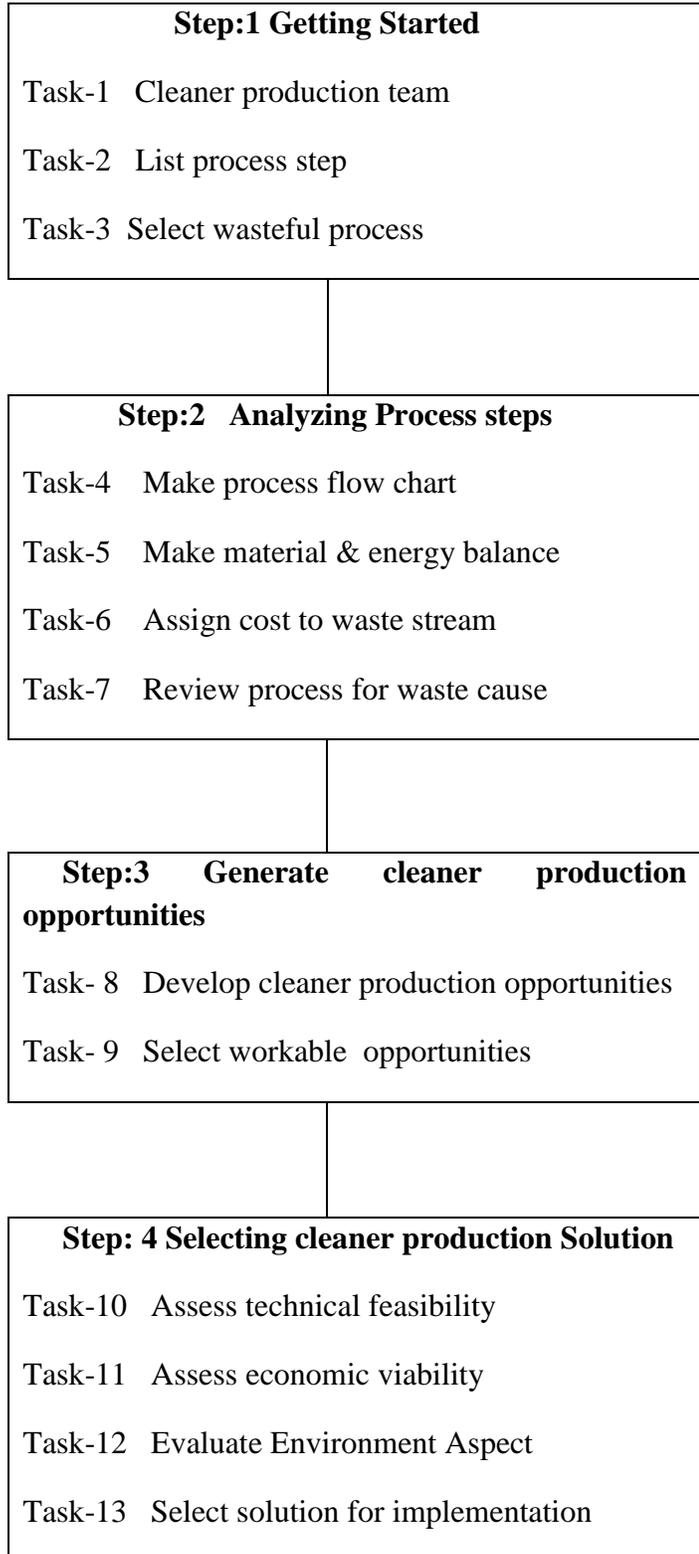
c) to provide periodic reports in a format agreed with EPFIs (with the frequency of these reports proportionate to the severity of impacts, or as required by law, but not less than annually), prepared by in-house staff or third party experts, that i) document compliance with the requirements and ii) provide representation of compliance with relevant local, state and host country social and environmental laws, regulations and permits; and

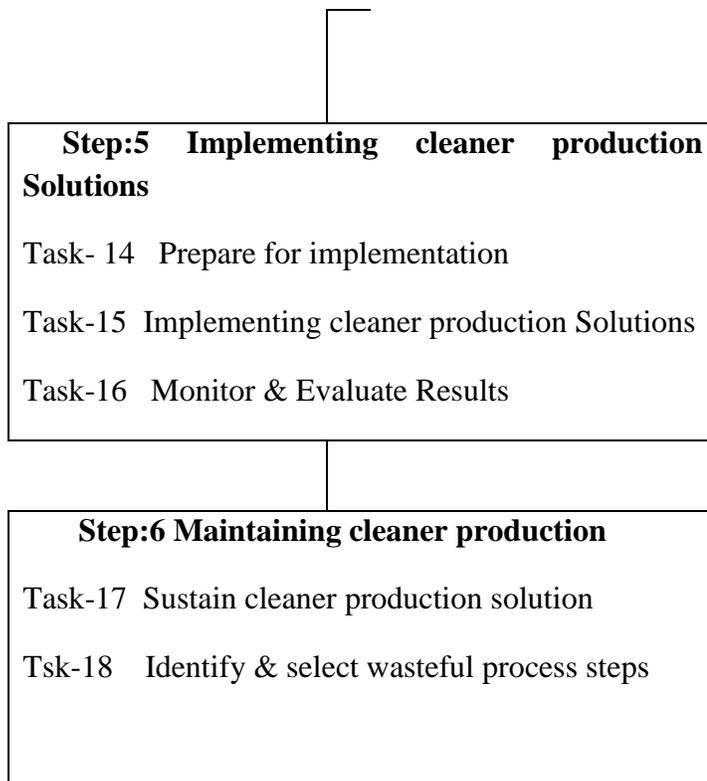
d) to decommission the facilities, where applicable and appropriate, in accordance with an agreed decommissioning plan. Where a borrower is not in compliance with its social and environmental covenants, EPFIs will work with the borrower to bring it back into compliance to the extent feasible, and if the borrower fails to re-establish compliance within an agreed grace period, EPFIs reserve the right to exercise remedies, as they consider appropriate.

Principle 9: Independent Monitoring and Reporting--To ensure ongoing monitoring and reporting over the life of the loan, EPFIs will, for all Category A projects, and as appropriate, for Category B projects, require appointment of an independent environmental and/or social expert, or require that the borrower retain qualified and experienced external experts to verify its monitoring information which would be shared with EPFIs.

Principle 10: EPFI Reporting--Each EPFI adopting the Equator Principles commits to report publicly at least annually about its Equator Principles implementation processes and experience, taking into account appropriate confidentiality considerations.

Systematic methodology for an effective cleaner production program:





Global aspects of /Lean Greening Industry-What is Cleaner Production?

Cleaner Production is an integrated approach which focuses on making the most efficient use of inputs such as energy, water, gas and other raw materials thus minimizing waste and pollution at the source. There is a large scope of implementing Cleaner Production in a country like Bangladesh, because there is huge inefficiency in the use of raw materials at the input phase in the factories, i.e., due to improper pricing of products, gas, water and other inputs are not used as efficiently as they could be. And as with every such failure, therein lies an opportunity. If a factory can properly implement Cleaner Production measures, they can reduce their cost of inputs, increase profitability and most importantly, increase energy efficiency and decrease emissions, thereby reducing their individual carbon footprint and lessening some of the intense pressure on themselves from the community, media and government. From the standpoint of the factories, this means that they have also managed to reduce operating cost, improve productivity and will be able to gain an improved image which will help them facilitate better market access in the future. Currently in Bangladesh, a number of factories are piloting Cleaner Production programs at the behest of some of the large brands in the region and in association with some development organizations. The initial results from one specific such program has been extremely encouraging.

Social Compliance

Definition and Coverage of Social Compliance:

Compliance is defined as code of conduct, specification and or standard that must be followed by the organizations. Social compliance covers a wide range of social issues, such as, labor standards, fair labor practices, working conditions, health and safety issues, child labor, forced labor, free association and collective bargaining, management system etc. The buyers are becoming cautious about the social compliance of the GAP Sector also. On analysis a list of standards, which are commonly followed are stated below:

- i) Working conditions are safe and hygienic.
- ii) Prohibition of Forced Labor.
- iii) Prohibition of Harassment or Abuse.
- iv) Living Wages are paid.
- v) Child labor shall not be used.
- vi) Working hours are not excessive.
- vii) No discrimination is practiced.
- viii) Regular employment is provided.
- x) No harsh or inhuman treatment is allowed.
- xi) Freedom of Association and Collective bargaining.

Environmental Aspects of GAP Industry Sector_What is Environmental Compliance?

Environmental Compliance means conforming to environmental laws, regulations, standards and other requirements. In recent years, environmental concerns have led to a significant increase in the number and scope of compliance imperatives. Being closely related, environmental concerns and compliance activities are increasingly being integrated and aligned to some extent in order to avoid conflicts, wasteful overlaps and gaps. Like all other industrial enterprises every member units belonging to GAP Sector should maintain a moderate working condition for their employees. Although most of the well-established units try to comply with the environmental issues, but there are still cases of non-compliant units. Here is the list of principal policy issues relating to environmental compliance, which are maintained fully or partially by the industrial units which are especially relevant to garment accessories and packaging industry:

1. Environment and Health Policy
2. Security Policy
3. Buyers' Code of Conduct
4. Health & Safety Policy
5. Environmentally Safety Canteen

Environment and Health:

1. A safe and healthy workplace (ISO 14000)
2. Availability of drinking water at least 4.5 L/day/employee
3. Availability of clean glass/cup for drinking water
4. Pure drinking water supply
5. Availability of hot and cold water in the canteen

6. Drinking water signs in local language at working place.
7. Ensuring cleanliness of water vessel
8. Suggestion box register

Environmentally Sound Sanitation:

1. Separate toilet for women & men with exhaust fan
2. Toilet with proper privacy and lock facility
3. Urinal accommodation with exhaust fan
4. Effective water sewage system
5. Soap toilet together with water tap & exhaust fan
6. Dust bins
7. Daily cleaning log sheet
8. No smoking signs
9. Ladies/ gents toilet signs both in local language
10. Disposal of wastes and effluent

Environmentally Sound Safety Guard:

1. Metal glows in good condition
2. Rubber mats for ironers
3. First aid box
4. Ironers wearing sleepers
5. Trained employees
6. Motor / needle guard
7. Eye guard
8. Doctor and Nurse
9. Medicine and Medicine issuing register
10. Welfare officer

Sustainable Physical Environment:

1. Standard room temperature
2. Standard level of sound
3. Standard lighting facilities

So, compliance of the above requirements ensures the working environment of the industry. To protect the human rights every management should ensure the above compliance policy.

Critical Issues of Environmental Compliance in GAP Sector

Different global supply chain operators has their own environmental Code of Conducts, which they impose on the manufacturers of garment as well as accessories & packaging materials. To clarify the issue, we have summarized below a number of critical environmental issues suggested by the selected certification agencies & global supply chain operators working in Bangladesh, namely, International Standardization Organization (ISO) 14000 series, EU Eco-Label, Oeko-tex standard 100/1000, C&A, Carre four, H&M, Levis etc. Knowledge about the environmental requirement of these organizations and compliance of these standards are critically important for survival and expansion of the products of GAP sector in the international market.

The European Eco-label:

The European Eco-label was established in 1992 and is a certification scheme to help European consumers distinguish more environmentally friendly products and services. All products bearing the Eco-label, the “flower” has been checked by independent bodies for complying with strict ecological and performance criteria. There are currently 23 different product groups, among which textile products are important. More than 250 licenses have so far been awarded of which 63 for textile products.

Building Safety, Accidents and First Aid, Working Environments, Housing Conditions, Environmental issues.

Unilever Its approach to responsible packaging takes into account environmental, social, and economic considerations. In 2007, the company formed a Responsible Packaging Steering Team to create a new strategy. The team focuses on five packaging principles:

1. Remove: Eliminate, where possible, unnecessary packaging layers, such as outer cartons and shrink-wrap film. "By changing the shipping case of Wishbone salad dressing, for example, we were able to save 2,100 metric tons of corrugate each year," says Garcia.

2. Reduce: Shrink packages to the optimal size and weight for their contents. Unilever's redesigned Suave shampoo and conditioner bottle is 16 percent lighter with a 12-percent lighter cap, reducing the amount of resin each year by 670 tons in the United States alone.

3. Reuse: Reuse packaging from the materials Unilever receives at its factories. "Some cap suppliers ship product in reusable totes," says Garcia. "When we are done, we return the totes to the suppliers to reuse."

4. Renew: Maximize the proportion of packaging from renewable resources, and investigate the technical feasibility of biodegradable and compostable material.

5. Recycle: Increase the use of recycled, recyclable, and single-material components in packaging for easy sorting and recycling at the end of its use.

Environment Magic word: Environmentally friendly = recycling

Recommendations vis-à-vis Suggested Measures:

The units under GAP Sector are engaged in the production of items which are used in RMG industry as well as many other sectors of the economy. The RMG and other sectors, which use our products and market their commodities to the worked market through the global supply chain operators must comply with their Code of Conducts otherwise, they will lose their market. And loss of market by RMG Sector means loss of market of GAP Sector. So, we must be cautious about the codes of conducts in respect of environmental standards. A number of suggested measures are listed below:

- i) Awareness Building

- ii) Green Building for Factory
- iii) Installation of Effluent Treatment Plant (ETP)
- iv) Industrial Estate for GAP Sector

Greening the packaging & Accessories Industries:

Rethink> Reduce> Recycle> Reuse=FR4 Principle

The environmental protection agency in collaboration with the Ministry of Environment has also instituted measures aimed at reducing, re-using and re-cycling of “used packaging materials” in order to reduce the impact of packaging waste on the environment. To encourage companies to invest in activities that will assist in Bangladesh’s efforts to introduce efficient waste management systems, companies which establish factories whose principal activity is waste processing including re-cycling of plastic and polyethylene material will pay no corporate tax say for the first 5 years of their operations irrespective of location should be introduced. Currently disposed mono films and bags are recycled by converting into small pellets and sold to outside vendors/third parties who use them for manufacturing a variety of items. Pet bottles waste chips are made locally and exported.

Suggested steps for pollution control

The government has taken some steps to improve the pollution control of Bangladesh. But the steps are not adequate. As such, few more steps may also be taken to improve the environmental degradation:

Use of Environmental Technologies and Methods.

Environmental technologies and methods such as Geographic Information Systems (GIS), remote sensing and environmental impact assessment might be used for integrated policy formulation, decision-making, evaluation and monitoring of environment.

Development of Environmental Database.

A comprehensive environmental database may be made and the environmental planners might have the access for environmental up-gradation, planning and management The database is to be updated regularly.

Environmental Education and Awareness.

Formal and informal methods of education might be adopted through local media, seminars, celebrations, workshops, walks and student competitions to aware the people regarding the process of environmental degradation.

Industrial and Solid Waste Management.

The government might take appropriate measures to monitor emission limits and Market Based Incentives (MBI) for reducing pollution control. The industries might be given both technical and financial support for introducing mitigation measures, promoting green technologies, using less pollution technologies and recycling the waste.

Enforcement of Rules and Regulation.

Environmental Conservation Rules of 1997, traffic rules and other relevant environmental laws might be enforced further to punish the violation of the emission limits.

An Increased Focus on Minimizing Consumption

What I find most encouraging is the change of attitude that is more back to basics; packaging design that is green by default. Don't misunderstand, I am not at all critical of this approach, in fact I am convinced it is the only way we can drive positive, long term change. It will be successful because it is based in economics, not guilt and because in most cases the savings they produce are immediate *with minimal upfront investment*.

Even though this economically driven change may not have the green banner on it, the results happen to be basic in regards to sustainability. Many of the products I now see being promoted can easily and accurately be categorized in the three basics R's of sustainability.

Reduce – the new focus is on thinner, stronger materials able to do the same job with less material. This is consistent not only in paper products but especially in plastics after another turbulent year of resin prices, negatively impacting all forms of transparent, flexible packaging, and non-film products like plastic strapping, and carton sealing tapes. We are most definitely using less, not necessarily for the sake of the planet but for the sake of the bottom line.

Reuse – I see a lot more products that permit or encourage their reuse. Paper products such as boxes with specialty coatings designed to extend life and the increased popularity of returnable, reusable packaging such as totes, mailers, and other containers designed for multiple reuse. Companies love the economics of packaging that is not designed to be used and tossed, and they are taking full advantage of closed loop or internal return/reuse capabilities.

Recycle – if there is a long term positive impact to what appears to be for many companies a short term interest in sustainability, it is in this most important area. More products than ever before are being made with a large percentage of recycled content and even more are able to be easily recycled and are labeled as such. I would also say that most of the manufacturers I know use recycled materials because it saves them money and allows them to minimize the impact of multiple price increases on new or virgin materials.

Sustainable design brings it all together

Imagine being able to use less packaging, that is 50% recycled content and is 100% recyclable after many repeated uses? Those types of goals are being met every day and that is good for the bottom line and for the environment.

The best eco friendly packaging solutions are those that are appealing to the company or consumer using them and also make economic sense. Yes, in some cases a compromise is made and perhaps it is not as green as some would like or the motives are not as pure as others would protest. However, positive change is positive change even if it is not perfect.

Green Packaging: Waste Not, Want Not

By moving beyond conventional packaging methods and materials, companies can reduce their carbon footprints as well as their transportation spend and warehousing costs.

Whether they call it eco-friendly, sustainable, biodegradable, or natural, companies are looking for ways to "go green" with their packaging.

While helping the environment is one benefit of eco-friendly packaging, packing products using fewer and more sustainable materials reaps additional rewards:

Saving money. Reducing excess packaging results in lighter and smaller shipments that cost less to transport. And greater quantities can fit on pallets, in shipping containers, in warehouses, and on retail shelves.

Maintaining business. Switching to green materials can help meet or anticipate customer demands for eco-friendly suppliers.

Attracting consumers. Many shoppers will choose an environmentally friendly product over a conventional package.

"While eco-friendly packaging is a recent phenomenon, it is already a large and rapidly growing trend," observes Susan Selke, Ph.D., acting and associate director of the School of Packaging at Michigan State University, USA.

"Source reduction in packaging has been going on for decades as a way to reduce costs. Until recently, however, few companies were doing it to increase sustainability." Packaging specialists are also investigating new ways to recover materials. Packaging should be designed to optimize materials and energy consumption, while maximizing the use of renewable or recycled materials.

Weaknesses of the GAP sector of Bangladesh

□ Packaging associations seem to be a little reluctant in their role to bring packaging industry together in discussing their problems, sharing their achievements and working on creation of common facilities like a testing and training centre

- Packaging associations should not work in water tight compartments to share common views and intent regarding the strategies and plans for the growth of the packaging sector as a whole. They also should collaborate in optimizing their costs
- Packaging converters have a limited understanding of what it takes to compete in demanding markets such as the EU. As a result, they are not able to advise their export customers, leading to a fundamental gap in the ability for Bangladesh to succeed on exports
- Inadequate efforts and resources to prepare packaging standards, provide testing facilities to the industry, conduct local R&D, train personnel etc
- Lack of harmonize packaging standards with regional and international standards
- Shortage of skilled manpower to run high end packaging manufacturing operations, develop designs, run test equipments etc
- Lack of packaging policy and exclusive Packaging Industrial parks
- Knowledge gap in packaging science and technology
- Most of the industries work with sub optimal technologies

Though weaknesses and threats exists but opportunities are there too for GAP locally and internationally Packaging converters in general have been performing and responding to the relatively “simple” requirements of the RMG sector and are not geared up to address the complex issues of food preservation: mastering hygiene, preventing oxidation, aroma loss, UV degradation, transport worthiness etc

CONCLUSION:

However, the biggest change agent, or at least the most influential, have been the buyers and from the buyers, the message is loud and clear: we want more environmentally compliant sourcing. So, this is a critical time for the industry. With the tri-partite pressure points of the buyers, the government and the media, the time is rife for some change and many entrepreneurs are starting to see that in order to make their business sustainable, these are the measures that need to come sooner rather than later. The first step to greater compliance from the perspective of a factory is possessing a functioning effluent treatment plant (ETP). But unfortunately most of the industries in the country do not possess effluent treatment plants. Latest figures state that the 1,700 washing-dyeing finishing units alone discharge 98,000 cubic meters of waste water into surrounding water bodies and land. This is because a large percentage of those factories do not possess ETPs or do not properly use them.

Recently, the concept of cleaner production has rapidly emerged across other significant markets in the region and with excellent results. As it stands, if proper “cleaner production” methods are implemented across the industry then it leads to cost savings which can not only cover the cost of compliance but at the same time also create a better working environment and increase

profitability. Going green in packaging offers multiple benefits reducing the costs associated with creating packaging, decreasing weight and volume to reduce transportation costs, making it easier for customers to unpack products, and creating less packaging-related waste.

The implementation of the Environment Policy is handicapped by some institutional limitations and thus appears to be less effective in responding to the demand side of the service and interventions. If such institutional issues are not rightly addressed, the Policy and the Act therefore, as one observer noted that it served the “rhetoric purposes only for the central politicians and bureaucratic leadership”. The National Environmental Policy does not clarify the measures needed for integrated efforts for environmental protection. It also fails to address the need for policy guideline concerning issues like, bio-safety, intellectual property right, watershed management and trans-boundary movement of hazards and environmental problems. However with some modifications the National Environment Policy of Bangladesh can still be considered as a good foundation to bring about necessary changes to address and mitigate the major challenges of environment and to further improvement. Therefore, a broad based consensus among various stakeholders to implement the Environment Policy with necessary modifications, will be crucial- with highest political will, as a pre requisite.

Garment accessories and packaging industry is an emerging SME Sub-Sector which has grown in response to the increasing demands of the RMG Sector. Therefore the units are located in the nearby location of the garment factory. The problems and challenges of social and environmental compliance are almost similar to those of RMG Sector. RMG Sector is already facing serious criticism worldwide for various non-compliance of social and environmental standards. Time has come for the member units of GAP Sector to be vigilant about compliance issues; otherwise this sector will face even worse consequences. The BGAPMEA with its limited resources has already started campaign to compliance issue. The INSPIRED Project, funded by EU, is one of the most important steps to achieve the goal of social and environmental compliances by the GAP sector. Govt. and other donor agencies should continue their support to strengthen this process through compliance monitoring capacity building

Recommendations:

- 1 There must be a Accessories & Packaging Training Institute offering 2 years post graduation diploma course to cater for the dearth of trained manpower in the sector. Ministry of commerce and industry may jointly take the lead for the sake of making fit and proper professionals for this export oriented fast growing important sector
- 2 There should be a Accessories & packaging research center and well equipped testing laboratory to facilitate all kinds of packaging testing, research, local and foreign information dissemination etc.
- 3 “Green Fund” should be created in the BPGMEA and in the Ministry of Industry and Commerce Separately to cater for the global need of Green Industry.
- 4 Special and discounted rate of interest should be for Green Industry

- 5 Green Industry should have Tax Holiday for 10 years
- 6 Preferential treatment like Green Industry Commercially Important Person(GICIP)
- 7 Green Industry Registration, implementation, monitoring & evaluation cell should be in the Ministry of Industry as an statutory body
- 8 Green Reporting should be a part of Annual Report, which should be audited by the Green Auditors(ISO-1400, 50001 SA 8000 etc.) only
- 9 Sustainability Reporting and Auditing should be another part of the Annual report
- 10 Facilitate the sector for exporting of high end packaging products as well as low end
- 11 Resolving all trade barriers prevailing in the sector such as VAT, TAX, customs, bond, bank loan, high borrowing rate of interest
- 12 There must be packaging policy and exclusive accessories and packing industrial park
- 13 The global packaging market is about USD 600 billion and growth rate is 10% pa for which the country must aim this market to catch fast very fast
14. The sector deserves cash incentives like other export sectors and budgetary provision must be made in the budget
15. Government must go for low cost motive power for lean/green industry
16. Why the UP is hanged despite minister's approval, which must be practically implemented immediately. Ministers themselves should follow up implementation of their instructions personally.
17. Auditors credibility is highly questionable, open up this service sector for foreign audit firms
18. Avoid double taxation in RMG and Accessories and Packaging sector
19. Pre-budget opinion meetings with various trade bodies mostly turned to be another pretention as some clever people always down play with the suggestions and in their own way.
20. Productivity improvement is a joint effort of the employers and employees and technology improvement is one of the pre-condition for productivity improvement. Towards this end we should be seriously mindful for improvement of both technology and productivity.
21. BPR must be there in the business and the government offices starting with customs office
22. Since Association is permitted to renew bond license for 2 years, why the raw materials import permission per 60% of installed capacity is in the hands of NBR, as a result the whole matter is half-baked and hence no/ little use. It should also be allowed to the Association to reap the real benefits
23. There are audits from bond, revenue (AGB), Bangladesh Bank etc. This type of duplication triplication, quadruplicating of the same thing is just wastage of money ,energy and time, and turned to be sheer harassment
24. Loan classifications should be like before not the prevailing Special mentioned Actt(SMA) for 1, SS for two months default.
25. Though electricity supply has improved but gas and electricity is still problem, that must be resolved soonest
26. Loan conditions are significantly not business friendly; it should be at par with other export industries like RMG and so.

SAMPLE GREEN INDUSTRY CERTIFICATION

Annexure 01

THIS CERTIFIES THAT..... XYZ COMPANY.....
LOCATED AT ABCD.....

ACHIEVE

THE GREEN INDUSTRY CERTIFICATION:LEVEL 1/2/3/4/5

GREEN COMMITMENT/GREEN ACTIVITY/GREEN SYSTEM/GREEN CULTURE/GREENNETWORK

- 1.An organization shall have policy and commitment to reduce environmental impact and effectively communicate to the various levels of the organization
- 2.An organization shall establish and implement program(s) to reduce environmental impacts based on the policy and commitment from the green industry Level 1Green Commitment.
3. An organization shall have either systematic approach to environmental management or well recognized environmental management award/certificate
4. An organization shall demonstrate everyone’s accountability on environmental and social concerns as an integral part of the organization’s culture
5. An organization shall incorporate entities of their supply chains into the green industry umbrella

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Authority

Issued on.....

Expiry.....

BIN/TIN.....

VAT REG.#.....

SAMPLE GREEN INDUSTRY APPLICATION FORM

Annexure 02

- a. Name of organization.....
- b. Address.....
- c. Telephone.....
- d. Factory Address.....
- e. E-mail.....
- f. BIN/TIN #.....
- g. VAT#.....
- h. Contact Person.....
- i. Fax #.....

Wish to avail accreditation at level

- 1- Green Commitment
- 2- Green activity
- 3- Green System
- 4- Green Culture
- 5- Green Network

and attach the following documents:

- 1- Green Commitment: Policy on environment & evidences of communication on the policy
- 2- Green activity: Certified environmental activity of -----

Action plan on environment & outcome report

- 3- Green System: Certified environmental activity of -----
- 4- Green Culture: Certified document of level 3 accreditation

Report on Organization culture building on environment

- 5- Green Network: Certified document of level 4 accreditation

Certified environmental activity of -----

Report on Organization culture building on environment

Report on environment activities, which is communicated to public

Report on promotion, creation & interrelation of environmental

activity with stakeholders & published outcome report

I certify that Information indicated in the application form and attached documents are correct. I will follow criteria and conditions for green industry accreditation.

For official Use only:

Application#..... Signature.....

Received on..... Name.....

Receiver's Name..... Position.....