



Sustainable Textile Guide

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1 | INTRODUCTION

The Rio 2016 Organizing Committee for the Olympic and Paralympic Games is committed to developing a sustainable transformation in the Olympic and Paralympic Games, with the integration of sustainability criteria throughout the management cycle of the Games, from design and planning to implementation, review, and post-event activities.

Sustainability will be achieved through the implementation of three sustainable development principles ratified by the United Nations Conference on Environment and Development (UNCED) - Earth Summit, which are being utilized as a basis for Rio 2016:

- Planet: reduction of the environmental impact caused by the projects related to the Rio 2016 Games, thereby enabling a reduced environmental footprint.
- People: planning and execution of the Rio 2016™ in an inclusive manner, delivering games for everyone.
- Prosperity: contribution to the economic development of the state and the city of Rio de Janeiro, planning, managing, and reporting the projects involved in the Rio 2016 Games, with accountability and transparency.

Within the context of sustainability, the Committee developed the Sustainable Supply Chain Guide that considers the environmental, social, ethical, and economic aspects present throughout the products and services life that will be the object of procurement processes and licensing cycle, integrating them into our business practices¹.

¹ The Guide to Sustainable Supply Chain is available at the Portal Supplies in Rio 2016: <http://portaldesuprimentos.rio2016.com>.



In the context of sustainable procurement, Rio 2016 TM understands that the adoption by Management Systems of suppliers, sponsors and licensees related to sustainability and duly certified by accredited bodies facilitates the adoption and maintenance of best business practices for the company.

Thus, this Sustainable Textiles Guide for the Industry aims to inform and assist the potential products supplier to the Rio 2016 TM to meet legal compliances of the industry, to obtain certification of their products and to apply best practices in the development of materials.

The Guide is divided into two main parts: the first one is the textile industry profile in Brazil, in Rio de Janeiro and its relation to the activities of the Games; the second one is a presentation of measures that the company should adopt to comply with the legislation, that is, measures to obtain certifications of Management Systems; measures to obtain certifications for sustainability and sustainability integrated into corporate objectives (showing how the industry can adopt a cleaner production and which alternative materials are feasible).

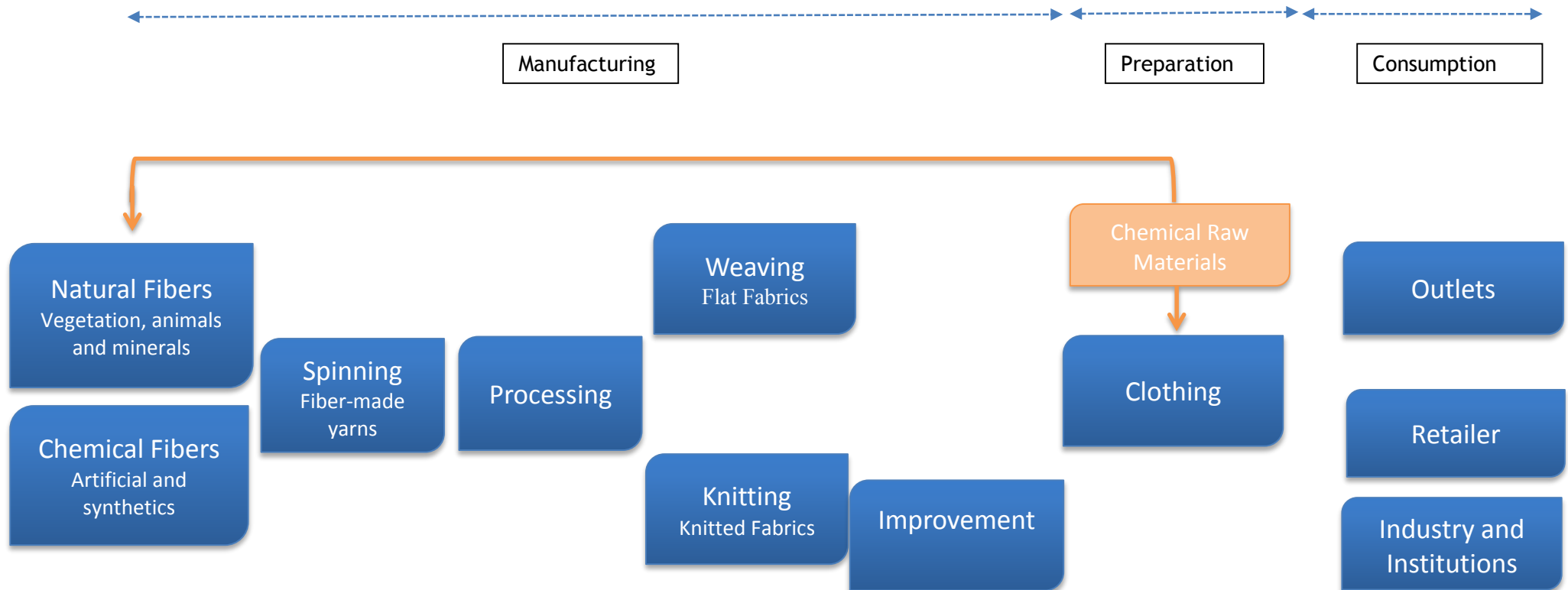
2 | PROFILE OF THE TEXTILE AND CLOTHING SECTOR

The textile and clothing industry is very broad and consists of several stages of production:

- Spinning: getting the yarn from the textile fibers that can be sent to processing or directly to weaving and knitting,
- Processing: preparing the yarn for final use or otherwise, involving dyeing, sizing, twisting and special treatment,
- Weaving and / or knitwear: preparation of flat fabric, knit circular or linear, from yarn,
- Refining: preparation, dyeing, printing and finishing of woven, knitted or crocheted articles,
- Preparation: drawing, patterns, railing, fitting, sewing.

The figure below shows the structure of the supply chain and distribution of textiles and clothing.

Textile Productive Chain Structure



2.1 BRAZILIAN TEXTILE AND CLOTHING SECTOR

According to the publication "Textile and clothing manufacture: Innovate, Develop and Sustain"², developed by the National Confederation of Industry (CNI) and the Brazilian Association of Textile and Clothing Industry (ABIT), Brazil is one of the best and largest producers in the textile and clothing sectors.

The Brazilian states that concentrate textile and clothing activities are: Ceará (Grande Fortaleza, Maracanaú), Minas Gerais (Belo Horizonte, Divinópolis, Cataguases and Juiz de Fora), Paraíba (João Pessoa and Campina Grande), Pernambuco (Caruaru region), Rio Grande do Norte (Grande Natal), Rio Grande do Sul (Serra Gaúcha), Santa Catarina (Vale do Itajaí) and São Paulo (Americana and surroundings, Serra Negra, Águas de Lindoia).

2.2 TEXTILE AND CLOTHING INDUSTRY IN RIO DE JANEIRO STATE

The State of Rio de Janeiro textile industry has a strong tradition in the national market for the manufacturing of fabrics, cotton, knitwear, mixed and synthetic silks, lace, embroidery, trimmings, and flax, and nonwoven cleaning fabric. The sector serves much of the clothing and apparel industry in general and consists of about 400 companies, generating about 8000 jobs.

The State of Rio de Janeiro has 10 fashion sectors, encompassing approximately 3000 businesses and generating more than 140,000 jobs in manufacturing and in the supply chain.

Niterói is a major hub, with about 100 clothing companies, which generate approximately 900 direct jobs. Production in Niterói is diverse and multi-sectorial, with mostly small businesses.

² In Portuguese: Têxtil e Confecção: Inovar, Desenvolver e Sustentar

The Local Productive Arrangement located in the Northwestern region of Rio de Janeiro has 150 businesses and generates approximately 1,500 direct jobs, excelling particularly in the lingerie segment.

The Nova Friburgo lingerie industry is the largest in the country, representing 25% of the domestic market, with about 900 products, which generate more than ten thousand jobs.

The industry located in the South region of Rio de Janeiro comprises more than 100 small, medium, and micro businesses, which together employ nearly two thousand people. The main product of the region is denim, especially swimwear, fitness, lingerie, children's wear, and couture.

The Petropolis fashion industry currently consists of about 400 factories employing more than 5000 workers and it produces 100 million pieces per year, representing 14% of the city's GDP.

The Cabo Frio industry is composed of about 40 companies specializing in swimwear, employing 200 staff.

The municipality of Rio de Janeiro is home to about a thousand companies, employing more than 20,000 employees. São Cristóvão district is responsible for 35% of Rio's production, and comprises around 300 companies that produce 8.5 million pieces per year, with a turnover of R\$ 750 million.

2.3 TEXTILE AND CLOTHING INDUSTRY AND RIO 2016 OLYMPIC AND PARALYMPIC GAMES

Considering the operations for the Olympic and Paralympic Games - Rio 2016, the following activities will require suppliers of the textile industry:

ACTIVITIES	PRODUCTS OF THE TEXTILE AND APPAREL CLOTHING INDUSTRY THAT WILL APPLY TO THE OLYMPIC AND PARALYMPIC GAMES
Stands and Seats	Seats upholstery Carpets
Security Services	Uniforms
Flags	Fabric for Flags
Temporary Arenas	Carpets Geotextile Material
Furniture, Fixtures and Equipment	Upholstery Carpets Carpet Curtains Towels
Medals and Diplomas	Tape that involves medals
Waste Collection and Cleaning Services and Materials	Special garments Cleaning fabric
PPEs and Safety Equipment	Uniforms Boots Safety belts
Uniforms	Uniforms
Kimonos, Doboks and other clothing for combat sports	Clothing
Uniforms for Reporters and Photographers	Uniforms

3 | RIO 2016 REQUIREMENTS FOR THE TEXTILE SECTOR

Potential suppliers of products related to the textile sector must meet the general requirements contained in the Sustainable Supply Chain Guide and the specific requirements indicated below:

Requirements for Materials:

- Prioritize recyclable and recycled materials as itemized below, as well as alternative materials;
- To develop a reduction schedule to reduce water consumption during the production process;
- To develop quality control of effluent water according to the programme by CONAMA Regulation No. 357/2005;
- To develop an energy efficiency programme during the production process;
- To develop a Solid Waste Management Programme, following the National Solid Waste Policy (PNRS), with the following hierarchy: avoiding, reducing, reusing, recycling, incineration with energy recovery, and finally, performing proper waste disposal;
- To develop programs to reuse leftovers and waste from the production process;
- To develop a methodology for the inventory of greenhouse gas (GHG) emissions, according to the ISO 14,064;
- To prioritize locally or regionally manufactured products;

Requirements for Employment Practices:

To adopt the minimum requirements defined in the Ethical Trading Initiative Base Code (ETI) for workers:

- Employment is freely chosen by the employee (There is no forced, bonded or involuntary prison labor);
- Freedom of association and the right to collective bargaining are respected;
- Working conditions are safe and hygienic;
- Child labor shall not be used;

- Living wages are paid;
- Working hours are not excessive;
- No discrimination is practiced;
- Regular employment is provided;
- No harsh or inhumane treatment is allowed;
- Ensure that all workers are legally registered in accordance with the Brazilian labour legislation;
- To develop training and education for the local workforce;
- The supplier shall submit the QUAL SEAL Certification;

General Requirements

- To present a corporate sustainability report for the preceding fiscal year, or failing that, the Ethos Indicators Report for Sustainable and Responsible Business or Global Reporting Initiative (GRI) and Global Compact;
- To follow the guidelines contained in the Guide to Solid Waste Management, developed by Rio 2016 and available on <http://portaldesuprimentos.rio2016.com>;
- To follow the guidelines in the Packaging Guide developed by Rio 2016 and available on <http://portaldesuprimentos.rio2016.com.br>;
- To follow the Guide to labor outsourcing developed by Rio 2016 and available on <http://portaldesuprimentos.rio2016.com.br>;

Avoid the use or supply of products manufactured, distributed and disposed of with materials harmful to humans or to the environment, following the “Substances and Hazardous Materials Guide”, developed by Rio 2016 and available on <http://portaldesuprimentos.rio2016.com.br>.

4 | RIO 2016 RECOMMENDATIONS FOR BEST SUSTAINABILITY PRACTICES IN THE TEXTILE SECTOR

1. Replacement of sulphuric acid used in the process with CO₂ produced by the boilers (to reduce GHG emissions);
2. New techniques to be used in digital textile printing with high yield pigment dyeing with no damage to the environment, and with no steaming or scouring processes (an environmentally friendly and sustainable process);
3. Collection of clothing manufacture leftovers (discarded tissues after cutting), and shipping these chips to families to weight, sort and catalogue the scraps by color. The separated patches by color are then sent to spinning, where they are stored as per production schedule and then placed in shredding machines, to undergo a process of tearing, so it will return to its original cotton fibers form;
4. Use of PET yarn in knitting composition produced by reducing the amount of waste;
5. Recovery of re-evaporation latent heat, reusing thermal energy to heat the water to be used in the process, so as to reduce fuel consumption;
6. The heat captured from the boilers' chimney is used for drying sludge generated in the wastewater treatment station. Sludge drying is important because the industrial sludge is sent to landfills;
7. Implementation of a reverse logistics programme, to stimulate consumers to make proper disposal of unserviceable old textiles, minimizing environmental impacts and contributing to the Brazilian National Solid Waste Policy (PNRS, in Portuguese). The products are returned to the supplier to a reverse logistics and environmental management company, a partner in the programme, are disassembled and become an energy source, feeding cement kilns;
8. Development of a natural finish obtained by using a fruit of the Brazilian Amazon rainforest called *cupuaçu*. The natural finish containing no silicone is

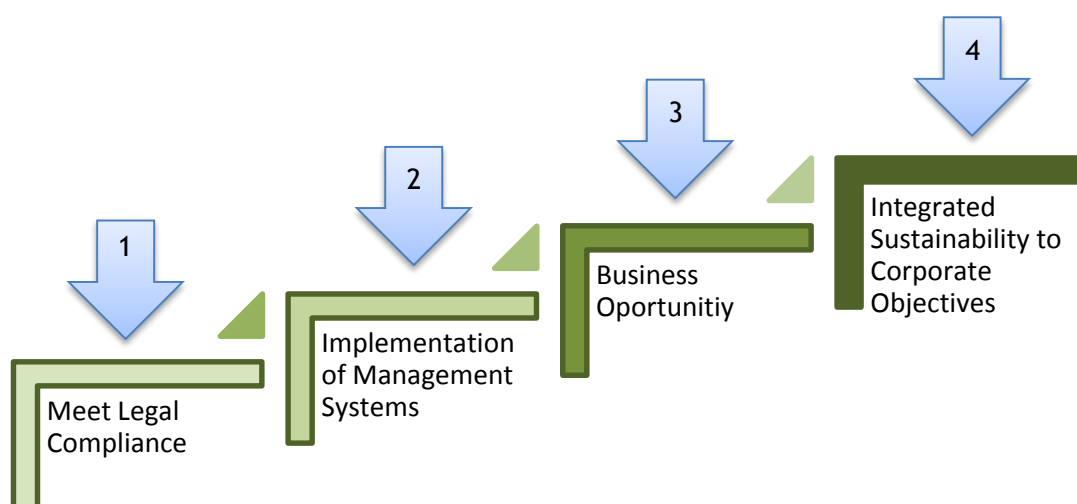
hypoallergenic and produces an effect that increases comfort by absorbing moisture and sunlight. The technology is also accompanied by a collaborative project for the development of local communities in the Amazon Region, with 700 families benefited;

9. Realization of carbon footprint and determining the impact of six material used in the company's products. The realization footprint involved a detailed study of the supply chain of materials, from source to end of life and its result was the establishment of proposed improvements in different processes, incorporating sustainable production and mitigation measures to minimize environmental impacts;
10. Definition of a precautionary approach to chemicals management, a clear timetable for achieving zero release and elimination of all releases of hazardous chemicals throughout their supply chain and product life cycle;
11. Evaluation and monitoring of the supply chain, through inspection of working conditions, in order to prevent any form of unlawful work as well as surveying issues related to the environment, health and safety of workers, infrastructure and organization of production areas;
12. Preparation of monitoring, development and management of supply chain policy through the implementation of a robust set of political strategies, practices and procedures that include training buyers and other staff that interfaces with suppliers, development of codes of conduct, internal policies selection and evaluation of suppliers, among others.

5 | STEP-BY-STEP GUIDE TO SUSTAINABILITY OF TEXTILE INDUSTRY

In this chapter are the presented good practices implemented in the textile industry to achieve sustainability on different levels, starting with the call to legal compliance through implementation of environmental management and cleaner production systems and the integration of sustainability into day-to-day business.

Systematic guide to sustainability of the textile industry



5.1 LEGAL COMPLIANCE

The first step is to meet legal compliance in the environmental and social spheres.

Regarding environmental issues, the Brazilian Constitution of 1988, in its article 225, paragraph 3, states that:

"Procedures and activities considered harmful to the environment will subject violators, individuals, or entities, to penal and administrative sanctions, regardless of the obligation to repair the damage."

The National Environmental Policy Act, introduced by Federal Law No. 6.938/81 also establishes the "polluter-pays" principle, according to which the polluter is obliged to recover and / or indemnify the damage caused by their activities.

According to the National Environmental Policy Act, the textile and clothing chain is classified as a potentially medium risk polluting activity.

In Annex 1, a table of the main environmental impacts of the textile industry, as well as the applicable law in Brazil and the measures that companies should implement to comply with the legislation are presented.

Regarding the social area, it is necessary that the company observes the Constitution and Decree-Law No. 5.452/43 (Consolidation of Labor Laws - CLT), the main regulatory tools of individual and collective labor relations, and follows all requirements due in the Outsourcing Guide Hand-to-Work Organizing Committee of the Olympic and Paralympic Games - Rio 2016, available at <http://portaldesuprimentos.rio2016.com>.

5.2 MANAGEMENT SYSTEMS

After compliance with legal requirements, the next step is the implementation of management systems and obtaining certifications or seals.

There are various management systems to manage and continuously improve policies, procedures, and processes of an organization. The main systems are listed below and will be presented in this chapter:

Quality Management System (ISO 9001)

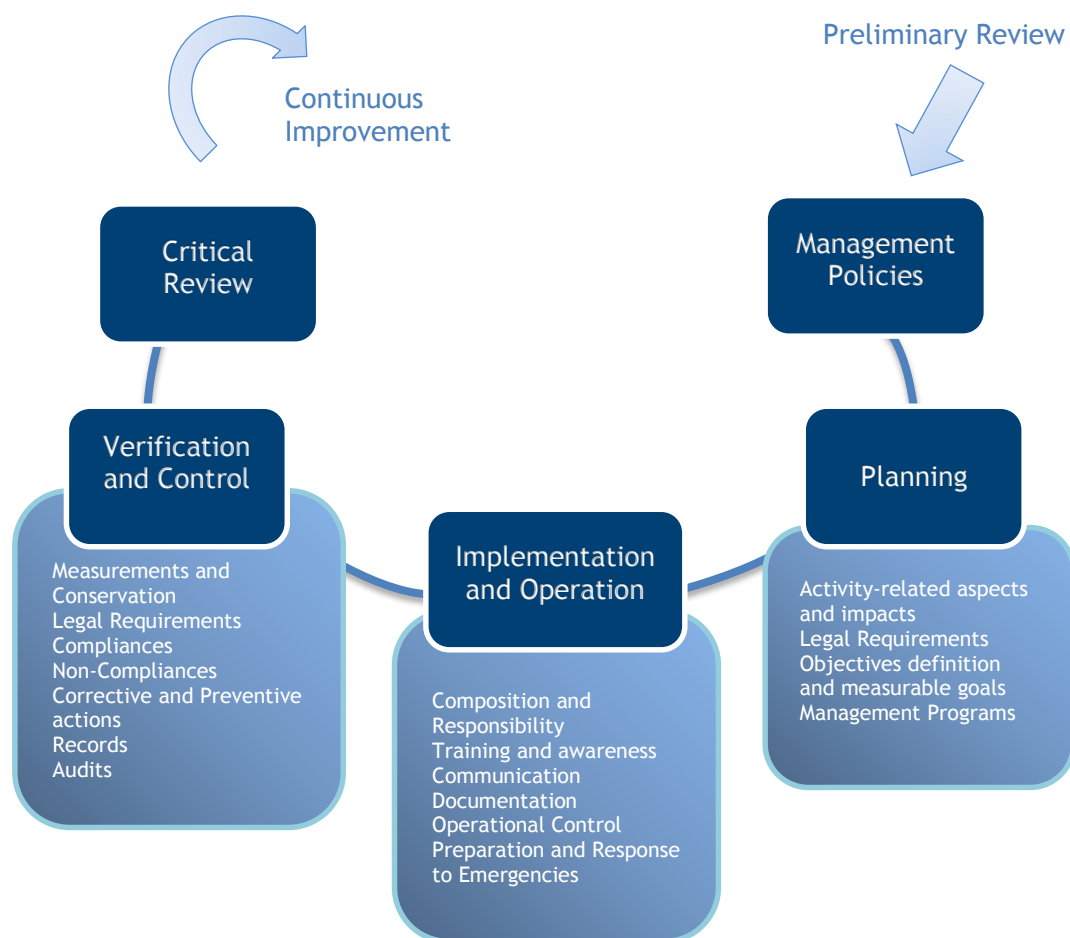
Environmental Management Certification (ISO 14001)

Social Responsibility (ABNT NBR 16001 and ISO 26000)

QUAL SEAL Certification

All management systems have a similar structure and implement a cycle of continuous improvement, called Plan-Do-Check-Act.

The main points of these processes are detailed in the image below:

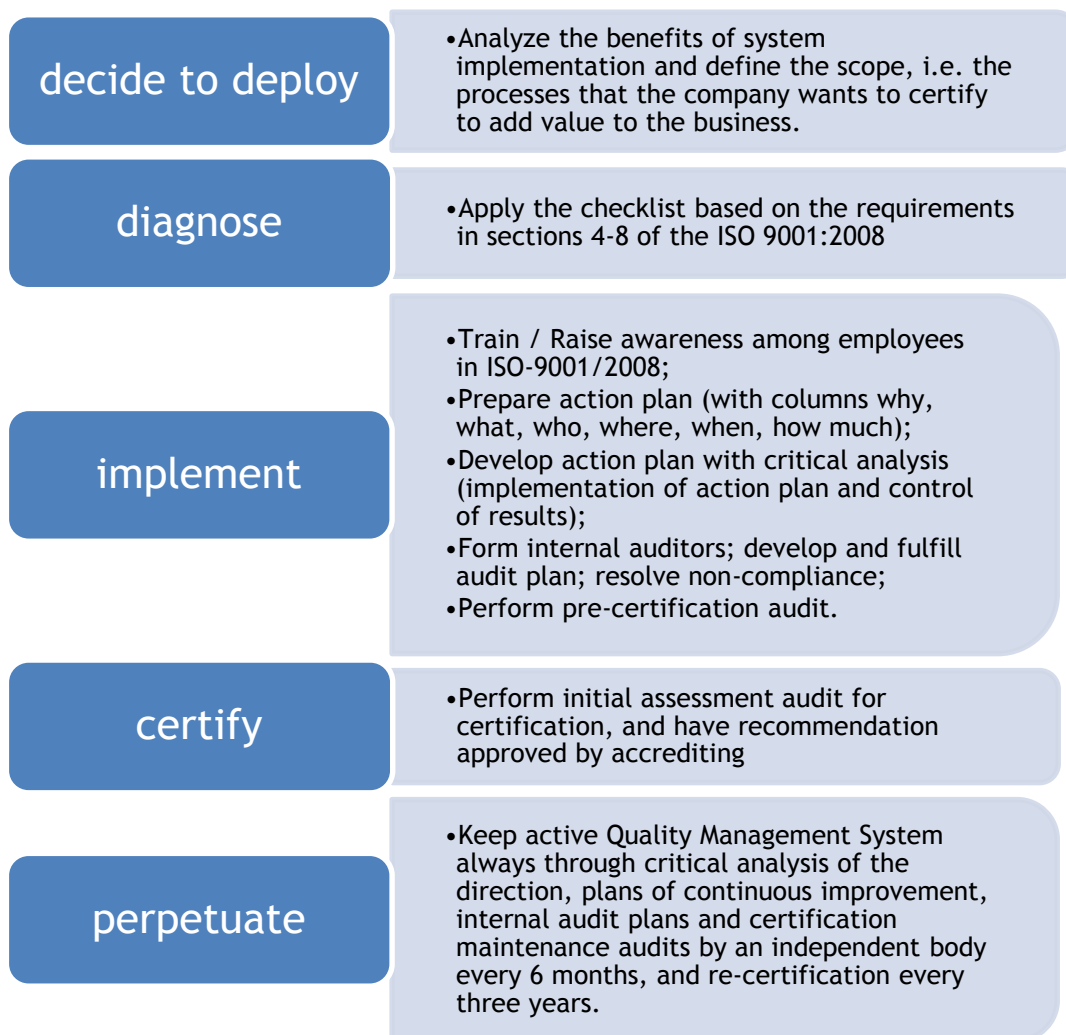


For a management system to reach its goal, it is necessary that all stakeholders in the supply chain are aware of its importance and committed to its implementation.

Below are the following key management standards:

ISO 9001 - Quality Management System

The company that decides to implement a Quality Management System based on ISO 9001 should follow the following steps:



The main benefits of implementing a QMS and subsequent certification of the system are:

- Improved internal organization with clear responsibilities,
- Awareness and involvement of officials and employees in quality improvement,

- Reduction of waste, tailings, spoilage, scrap, and complaints, which helps improve productivity and reduce costs,
- Customer satisfaction by preventing nonconformity,
- Increased value attributed to the product,
- Improving the company's competitiveness,
- Improving the company's image.

EXAMPLE OF A COMPANY CERTIFIED IN ISO 9001

Case study of the implementation of a model of QMS based on ISO 9000 standards in a flexible plastic packaging industry:

- The programme started with the implementation of motivational programs, with the goal of awakening the interest among employees for quality. We also sought to disseminate new forms of communication between employees and the senior management.
- Then the Standardization Sector was created, aiming at issuing, managing, distributing, and updating quality documents.
- The next step was the creation of procedures describing the control of processes, from procurement of resins to the functioning and operation of machines, creating work instructions.
- After 6 months of implantation, the Policy and Quality Objectives were established, with targets and indicators for which the main processes were developed, targeting the activities of the entire company.
- Then a group of internal auditors was established in order to conduct audits of the system, where several opportunities for improvement were found.
- The last step was the development of a system for corrective control of non-conformities.

(ISO 14001) - Environmental Management System (EMS)

ISO 14001 is an internationally accepted standard that defines the requirements for establishing and implementing an EMS standard. The standard requires companies to

commit to pollution prevention and continual improvement as part of the usual cycle of business management. The application of the standard is a way to controlling costs, reducing risks and improving the company's performance.

The main benefits of implementing an EMS and subsequent certification of the system are:

- Improved internal organization with clear responsibilities,
- Compliance with environmental expectations of customers,
- Access to new markets,
- Good relationship with the community,
- Waste minimization,
- Materials and energy conservation,
- Process improvement / increase in productivity,
- Better environmental performance

EXAMPLE OF A COMPANY CERTIFIED IN ISO 14001

The company has had an EMS since 1999, following the regulatory requirements of ISO 14001. The company employs the methodology of PDCA (Plan, Do, Check and Act), and aims to increase its competitiveness in the domestic market through the quality of its products and environmental responsibility. The main actions of the environmental management of the company are:

- Waste is managed through a selective collection plan, reducing the generation, recycling and disposal of non-recyclable waste to industrial landfill;
- Oil waste collection by a company specializing in re-refining. Liquid effluents from the production and general business processes (restaurant, toilets, and floor cleaning) are treated in the effluent treatment plant.
- Deposits and stocks of chemicals are controlled by containment basins (programs to reduce water consumption, and energy inputs of the process are implemented.)
- Environmental audits are conducted to ensure that the EMS is maintained accordingly.

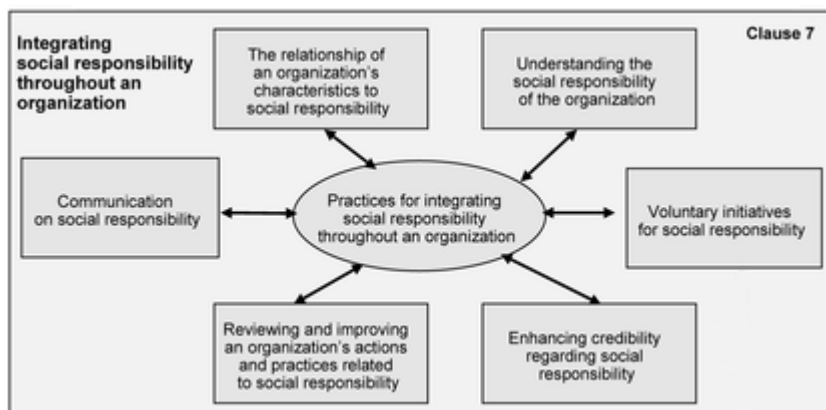
- Environmental education programme that advocates: the continuous improvement of environmental management, the promotion of courses and related environmental responsibility lectures; operational training for managing environmental aspects of activities and processes; integration for new employees and contractors and training of environmental leaders.

ISO 26000 - Guidance on Social Responsibility

ISO 26000 is the first international standard for corporate social responsibility (SR) with guidelines to help companies deploy and develop policies based on sustainability.

The firm must establish, implement, and maintain documented procedures for the management, considering the following central themes: human rights, labor practices, the environment, fair operating practices, consumer issues and community involvement and development. In addition, the company must conduct a due diligence in order to prevent, avoid, and mitigate significant negative impacts of its decisions and activities on the environment.

The diagram below illustrates the activities related to ISO 26000.



The main benefits of implementing a Corporate Social Responsibility Management System (CSR) and subsequent certification of the system are:

- Promotion of citizenship, sustainable development, and transparency of business activities;
- Improvement of labor relations in the company,
- Improvement of internal procedures and labor income,
- Improved company image - gained competitiveness,

- Development of the community,
- Legal compliance

QUAL SEAL Certification

Another important management tool is the voluntary adoption of the QUAL SEAL Certification.

This stamp is the Brazilian Programme for Self-Regulation of Professional, Military and School Apparel and Clothing, established by ABIT in partnership with the Brazilian Agency for Industrial Development (ABDI). The initiative aims to provide mechanisms for sustainability and quality to become business strategies for companies in the textile and fashion industry, increasing their competitiveness and their participation in the international market.

This certification is important to ensure that a company:

- Has products in accordance with leading international and national industry standards;
- Produces in a socially responsible and ethical way;
- Adds value to the products;
- Has a high level of processes efficiency ;
- Has the ability to enter new strategic markets;
- Has high quality products;
- Strengthens the image of the sector as a sustainable industry.

The QUAL SEAL Certification process is simple and covers all companies in the textile and clothing industry. The assessment is based on national and international standards, and the requirements of the QUAL SEAL Certification Programme.

There are three certification levels: Gold, silver and bronze.

The level at which the company should start the certification is determined by the maturity of the quality, environmental and social responsibility management practices. The company can evaluate its practices and determine what level it is prepared to start in QUAL SEAL Certification through a self-diagnosis available at the programme website. To facilitate and expedite the certification process in the QUAL

SEAL Certification, Abit / TexBrasil regularly promotes training courses that address sustainability best practices, the QUAL SEAL certification process and requirements.

The table in Annex 2 shows the levels of QUAL Seal Certification, as well as management requirements assessed at each level.

The certification is valid for one year and may be renewed through maintenance reviews. After obtaining the certification, the company can use the QUAL Seal to inform buyers and the public that their products are quality assured and that the company produces in accordance with good sustainability practices.

5.3 BUSINESS OPPORTUNITY

The next step to be adopted by textile companies is the implementation of tools aimed at the realization of social responsibility in the business environment, such as cleaner production and adoption of more sustainable alternative materials.

5.3.1 ALTERNATIVE SUSTAINABLE MATERIALS

The following table shows some alternative materials that can be used by the textile industry:

MATERIAL	FEATURES	BENEFITS
Organic cotton	Cotton grown in sustainable systems through the management and protection of natural resources, without the use of pesticides, chemical fertilizers or input harmful to human health and the environment. This initiative also demands products with features that meet environmental requirements of a social nature.	<p>Biodegradable;</p> <p>Protects the soil and groundwater quality, as it avoids the presence of toxic contaminants in runoff;</p> <p>Reduces the occurrence of insects and realizes the control of diseases by replacing insecticide with the manipulation of ecosystems;</p> <p>Prevent pests in the long run, through planting beneficial habitat;</p> <p>Conserves biodiversity and eliminates the use of toxic products, which represent a benefit for the health.</p>
Coloured cotton	Coloured cotton was developed and produced in northeastern Brazil and is adaptable to the conditions of the Brazilian <i>cerrado</i> . It has been cultivated in 5 colours obtained through conventional breeding methods.	<p>The coloured cotton culture reduces production costs for the textile industry;</p> <p>Moreover, as it waives the use of dyes, it reduces the release of chemicals and toxic effluents from the textile industry.</p>

Recycled PET mesh	<p>Meshes created by the recycling of polyester fibres, PET plastic bottles and the surplus of the cotton industry.</p> <p>For the production of yarns, PET bottles are separated by color, then grounded and decontaminated. After this process, they are melted at 300 degrees Celsius for filtering impurities. Finally, they are moulded into filaments for weaving knitting.</p> <p>It is estimated that for every eco shirt made from 50% polyester from PET bottles and braided with 50% cotton, 2.5 PET bottles are removed from the environment.</p>	<p>Reducing the volume of waste in landfills and improving the processes of decomposition of organic materials, because the PET affects the decomposition, since it waterproofs certain layers of garbage, not allowing the movement of gases and liquids;</p> <p>Saving energy and raw materials to produce new plastics;</p> <p>The fabric has the same quality of the cotton and it is quite comfortable;</p> <p>The polyester yarn imparts certain properties to the fabric such as its dimensional stability, which prevents the fabric from warping or shrinking; solid colour; strength and durability.</p>
Fairtrade cotton	<p>Cotton production with an emphasis on social issues, with a guaranteed minimum price for the collection and payment of premiums.</p> <p>The price of the crop is calculated to cover the costs of production in a sustainable way, and the prizes are for cotton producers to invest in their communities. This award will be invested according to the most urgent need, whether in schools, security, or other equipment.</p>	<p>The certification for fair-trade cotton influences better working economics and conditions for producers.</p>
Cotton Made in Africa	<p>Initiative of the Aid by Trade Foundation and it seeks to connect smallholder African farmers with large retail brands, to secure their market.</p>	<p>The programme ensures the lowest use of water, soil improvement, increasing the number of children in schools and better yields for African farmers.</p>
Recycled tires-soled sandals	<p>To manufacture used tire-soled sandals. The tire is grounded and re-vulcanized with natural rubber to produce sandals.</p>	<p>Reducing waste to landfill;</p> <p>Reducing the need for raw material.</p>

Fabric made from bamboo fibre	Fibre made from 100% bamboo pulp, which is considered as a superior and soft fibre.	Bamboo is a fast growing plant. It is reproduced in abundance without the use of pesticides and fertilizers and its fibre is naturally anti-bacterial, biodegradable and extremely soft.
Better Cotton Initiative (BCI)	It is an initiative that brings together producers, processors, weaves, merchants, manufacturers, retailers, and civil society organizations in a global partnership whose goal is to reduce the negative impacts of cotton production through the continuous improvement of production practices, fair labour relations, transparency, and traceability.	Cotton production with less environmental impact; Ensuring decent work for workers and quality of life for farmers.

Cleaner Production - (Produção mais limpa - P+L)

The Cleaner Production (CP) tool applies an integrated technical, economic, and environmental strategy to processes and products in order to increase efficiency in the use of raw materials, water, and energy through non-generation, minimization, or recycling of waste and the reduction of emissions and pollutants generated in a production process.

Environmental and economic benefits of the CP programme:

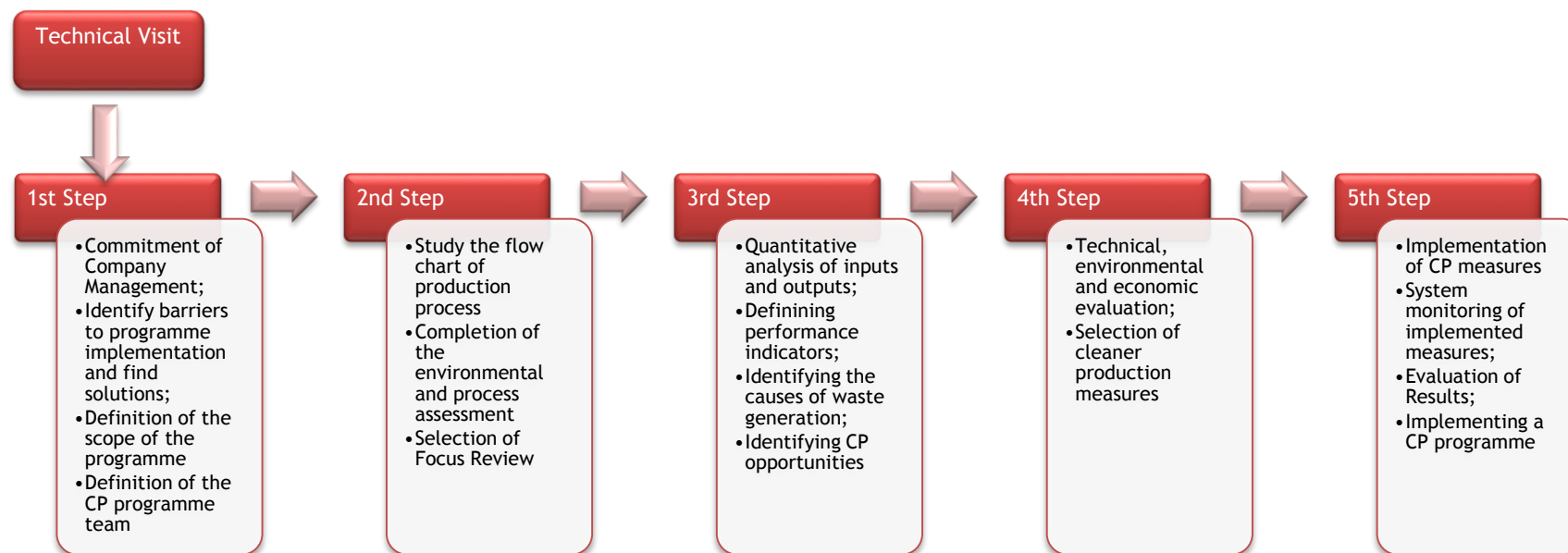
- waste elimination;
- minimization or elimination of raw materials and other inputs impacting the environment;
- increased energy efficiency;
- reduction or elimination of waste and emissions;
- reducing pollution, reducing costs of waste management;
- minimizing environmental liabilities;
- increasing health and safety;
- development of environmentally friendly products;
- strengthening the company's image, and increasing productivity thereof;
- higher employee awareness;
- reducing expenditures with fines and other penalties.

Implementing a CP programme

It is essential that the company wishing to implement a CP programme develop a programme including a commitment from the company's senior management with the principles of the programme as well as its assessment. At the end of the programme, new goals should be established, seeking continuous improvement of processes. Moreover, it is necessary that all company employees be informed about the process implementation progress so they can assimilate and apply the necessary steps.

The company may launch a CP programme by itself using its own methodology or through institutions that can support its efforts.

The sequence suggested for the CP programme development is as follows:



First Step:

- Commitment of company management,
- Identify barriers to programme implementation and find solutions,
- Definition of the scope of the programme: it is necessary to define what is the scope of the programme (if the entire company will participate or only one critical sector, etc.).
- Definition of the CP programme team that will lead the CP programme. The team will be responsible for planning and implementing the programme measures, as well as the establishment of priorities, goals and objectives, and the evaluation and maintenance of the programme, according to the company's needs.

Second Step:

- Study the flow chart of the production process: This study allows viewing and setting the qualitative flow of raw materials, water, energy, and waste generated in the production process, serving as a database to develop a strategy for minimizing the generation of waste, effluents, and emissions.
- Completion of the environmental and process assessment: gathering the quantitative data from existing production and environmental assessment: quantification of inputs (raw materials, water, energy and other inputs); quantification of outputs (waste, effluents, emissions, by-products); data of the environmental situation of the company and data relating to storage; storage and packaging products.
This analysis will serve as a basis for creating a spreadsheet that will include the company's environmental aspects and impacts as mentioned above.
- Selection of Focus Review: choosing the focus should take into account the regulations; the amount of waste generated; the toxicity of the waste and the costs involved.

Third Step:

- Quantitative analysis of inputs and outputs: detailed survey of quantitative data about steps. The assessed items must be the same as those of the process and environmental diagnoses, enabling a comparison between the data existing before the implementation of the cleaner production programme and the data collected by the programme.
- Defining performance indicators: indicators should be measurable and measured before and after the implementation of the CP measures, allowing a comparative assessment of the situation. The table below presents some suggestions for indicators that can be used by companies in the textile sector.

ENVIRONMENTAL INDICATORS FOR THE TEXTILE SECTOR	
Environmental Indicator	Unit/measurement mode
Water consumption	m3 / product produced
Water re-use	percentage
Total energy consumption	kWh / product produced
Specific organic load / specified flow (raw waste), desizing process, dyeing, printing, bleaching and mercerizing	kg DBO _{5,20} / t or m3 / product produced
Total waste generation	kg / product produced
Class I Total waste generation - Hazardous	kg / product produced
Total waste generation Class II - non-hazardous	kg / product produced
Recyclable waste	kg / product produced

- Identifying the causes of waste generation,

- Identifying CP opportunities: detailed evaluation of production processes of the company, with emphasis on points that contribute to waste generation and evaluation of aspects related to the toxicity of the waste. Measures that seek to eliminate or minimize waste, effluents and emissions in the production process should be prioritized.

The CP approach can occur in two ways: by minimizing waste, effluents and emissions (source reduction), or by recycling (internal and external recycling). On the table below some examples of the two approaches are presented.

REDUCTION AT SOURCE	INTERNAL AND EXTERNAL RECYCLING
<p>Change in Product: full replacement of the product, increasing longevity, substitution of raw materials, product design modification, and use of recyclable raw materials and recycled, replacement of critical components, reducing the number of components, enabling the return of products, replacement of product items or changing dimensions for a better utilization of raw materials.</p> <p>Change in Process: Good operating practices such as careful use of raw materials and auxiliary materials, proper equipment operation and improved internal organization, substitution of raw materials and auxiliary materials and technological changes, training and skills-development of the people involved in the programme; improving logistics purchasing, storage and distribution of raw materials</p> <p>Substitution of raw materials and auxiliary materials: substitution of raw materials and auxiliaries with high toxicity or generate waste, effluents and emissions or hazardous non-inert, replacement of organic solvents by aqueous agents materials; by biochemical petrochemical products; choice of raw materials with less impurity content, use of substances free of heavy metals, replacing suppliers, use of wastes as raw materials for other processes.</p>	<p>Internal recycling: Refers to all the processes of raw materials recovery, auxiliary materials, and inputs that are made within the industrial plant. Examples: use of raw materials or products again for the same purpose or for a different purpose, additional use of a material for a goal below its original use, etc.</p> <p>External recycling and biogenic cycles: This option should be implemented only when the other options are technically discarded. Examples: external recycling or reinstatement to biogenic cycle, such as composting. The recovery of raw materials with the highest value and the reinstatement to the economic cycle is a less recognized method of integrated environmental protection through waste minimization.</p>

Technological modification: Replacing thermo-chemical processes with mechanical processes, use of counter current flows, technologies that perform the segregation of waste and effluents, change in process parameters, use of residual heat, complete replacement of technology. It is recommended to consult the competent environmental agency for guidance on changes in site conditions or operations of the company that need prior environmental license, replacement, or modification of raw materials and inputs.

CP Opportunities specific to the textile sector are detailed in Annex 3.

Fourth step:

- Technical, environmental, and economic evaluation: the technical, environmental and economical technologies must be evaluated. Assessment criteria to be considered include:

TECHNICAL EVALUATION	ENVIRONMENTAL ASSESSMENT	ECONOMIC EVALUATION
<p>Properties and requirements of raw materials and other materials and equipment modifications without changing the quality of the product;</p> <p>Impact of the proposed measure on the process, productivity, safety, etc.</p> <p>Laboratory essays or tests, if the option significantly changes the existing process;</p> <p>Experiences of other companies with the analyzed option;</p> <p>Employees and departments affected by the implementation of the options;</p>	<p>Environmental benefits to be gained by the company;</p> <p>Amount of waste, effluents and emissions to be reduced;</p> <p>Amount of waste, effluents and emissions that have been eliminated;</p> <p>Reduction in the use of natural resources and raw materials</p>	<p>Scale of investment required, considering the technical and environmental costs;</p> <p>The operating costs and revenues of the existing process and the actions to be implemented;</p> <p>The company savings with the reduction / elimination of fines.</p>

Need for personnel changes, additional operations and maintenance personnel, plus additional training of technicians and others involved.		
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- Selection of cleaner production measures: this selection should consider the benefits of the implementation of the measures and their significance for the company.
The review should consider the benefits of environmental gain if there are going to be improvements in product quality, process efficiency or the worker's health, and if it will be easier to meet the legal requirements, and the financial returns in the short, medium or long term.

Fifth step:

- Implementation of CP measures: according to the goals and objectives established by the programme. It is important to consider the detailed technical specifications, the adequate plan to reduce installation time, items of expenditure to avoid exceeding the budget, carefully install the equipment, perform an adequate control over the installation, and prepare the team to start the operations.
- System monitoring of implemented measures: At this stage, it is important to consider: when certain activities must be carried out, who is responsible for such activities; when expected the results are; when and how long the changes should be monitored; when progress should be assessed, how long should the period of testing be, etc...
- Evaluation of results: The purpose of this step is to verify the environmental and economic benefits and gains that result from the implementation of the CP programme and assess the problems and barriers encountered during implementation. Results evaluation is performed by comparing the performance indicators.
- Implementing a CP programme: To maintain the programme, it is necessary that all employees be aware of and participate in the actions for a cleaner production. At

the end of the programme, it is necessary to seek actions that ensure its continuity by applying the methodology and the creation of tools that allow improvement of the programme. This way, the company may update and promote the improvement of efficiency in their production processes.

5.4 INTEGRATED SUSTAINABILITY TO CORPORATE OBJECTIVES

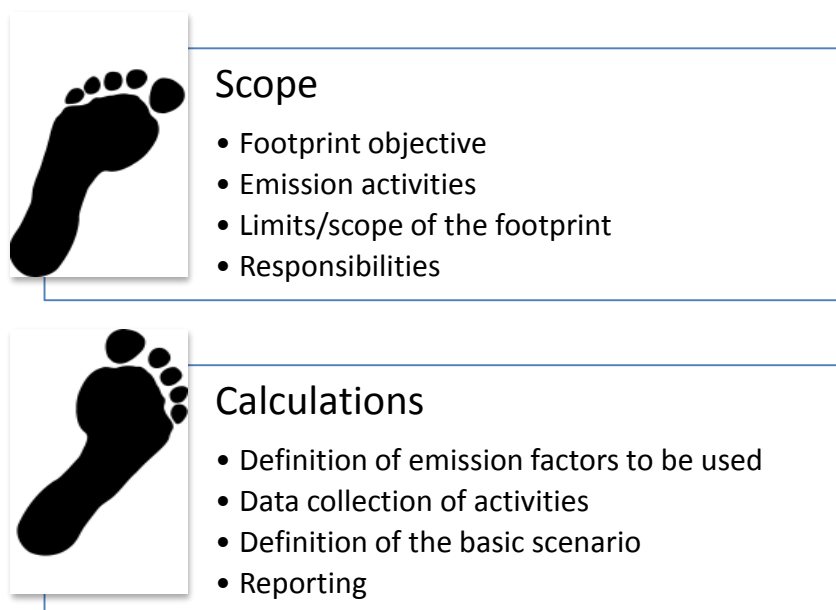
After legal compliance, Management Systems and CP, the company can start implementing more sophisticated and broader income strategies. Such initiatives are recognized around the world as setting sustainability standards, such as the deployment of technical quality requirements, safety, environmental, and social responsibility.

This chapter will detail initiatives concerning climate change (Carbon Footprint) and Corporate Sustainability (GRI).

5.4.1 Carbon Footprint

A carbon footprint refers to the total GHG emissions associated with the life cycle of a product, from production of raw materials to the final disposal, based on Life Cycle Analysis (LCA) methodologies and protocols.

To perform the carbon footprint the following steps should be followed:



The preparation of the carbon footprint of a textile product is a complex process that involves the participation of many actors throughout the lifecycle of the product. It comprises at least:

Preparation of the carbon footprint of a textile product

Production and Distribution of Raw Materials	Products Manufacturing and Distribution	Products Selling	Products Used and Final Distribution
<ul style="list-style-type: none"> • Emissions from the lifecycle of fertilizers, pesticides and chemical products used in the production of textile fibers and the transportation of raw material. 	<ul style="list-style-type: none"> • Emissions from the lifecycle of fossil fuel used in textile industries, emissions from buying electric energy used in the textile industries and offices, emissions from waterplant treatments, emissions from lifecycle of chemical products used in the production chain, emissions from refrigeration systems, emissions of lifecycle and fuel combustion used in the transportation of the product, emissions from the decomposition of the waste generated in the productive chain, emissions from the decomposition of biological sludge in wastewater treatment plant. 	<ul style="list-style-type: none"> • Emission from stocking units (electricity and fuel consumed by warehouses) and resellers (electricity, cooling gas) emissions from shipping of the product from Brazil to external markets (fuel wasted by sea, rail and air transportations). 	<ul style="list-style-type: none"> • Emissions from chemical products and electricity, used in washing, drying; shipping of the packages and discarded clothes to final disposition.

5.4.2 Sustainability reports

The development of a sustainability report is an important step in the pursuit of corporate sustainability. It combines long-term economic benefits to ethical behavior, social justice, and environmental concern.

The three sustainability reports that can be submitted to the Rio 2016 are indicated below.

Global Reporting Initiative - GRI:

The Global Reporting Initiative was created in 1997 as a non-governmental organization that brings together more than 800 major companies around the world. Its main purpose is to spread internationally practical sustainability reporting practices in a level equivalent to financial reports, seeking comparability, credibility, accuracy, timeliness, and legitimacy of the information provided.

According to the GRI, besides involving aspects related to economic, social, and environmental sustainability of organizations, the report should also present the values and the model of governance of the organization, demonstrating the connection between their strategy and their commitment to a globally sustainable economy.

To draw this report, a cycle of analysis must be organized, with a programme including data collection, communication, and responses. This process will be continuously monitored and improved, and will serve as a basis for making business decisions.

The benefits of preparing a full sustainability report include:

- greater understanding of the risks and opportunities associated with corporate activities, emphasis on the connection between financial and non-financial return;
- influence on governance strategy and business plans;
- cost reduction and increasing the efficiency of the supply chain;
- reducing the impact of the company and implementation of mitigation measures;
- improved company reputation;
- transparency values to stakeholders.

The GRI provides the basic content that should appear in a report and sets the guidelines for how to accomplish it, through the determination of principles for defining the content, quality, and limit of the report and a set of performance indicators protocols to be used (economic, environmental and social - labor, direct human, society, and product liability).

Ethos Indicators for Sustainable and Responsible Business:

Ethos Indicators are a free management tool developed to support the socially responsible management processes to incorporate sustainability and corporate social responsibility (CSR) into their business strategies, so that they will be sustainable and responsible. The tool consists of a questionnaire for self-testing of a company management and an on-line form to be completed to obtain the reports. Such reports enable the planning and management of goals to ensure progress towards the CSR / Sustainability issue.

The current generation of Ethos Indicators presents a new approach to business management and seeks to integrate the principles and behaviors of CSR with the goals for sustainability, based on the concept of sustainable and responsible business still in development. Moreover, it has a greater integration with the sustainability reporting guidelines of the Global Reporting Initiative (GRI), with the ABNT Social Responsibility Standard, ISO 26000, CDP, and other initiatives.

The Ethos Indicators for Sustainable and Responsible Business are focused on evaluating how sustainability and social responsibility have been incorporated in the business, which defines strategies, policies, and processes to be developed. While providing performance measures for sustainability and social responsibility, this tool is not intended to measure the performance of companies nor to recognize businesses as sustainable or responsible.

Global Compact:

The United Nations Global Compact is an initiative to encourage businesses committed to aligning their operations and strategies with ten universally accepted principles in the areas of human rights, labor, environment, and anti-corruption initiative.

Ten universally accepted principles

Principle 1 - Businesses should support and respect the protection of internationally proclaimed human rights;

Principle 2 - Businesses should make sure they are not complicit in human rights abuses;

Principle 3 - Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;

Principle 4 - Businesses should uphold the elimination of all forms of forced and compulsory labour;

Principle 5 - Businesses should uphold the effective abolition of child labour;

Principle 6 - Businesses should uphold the elimination of discrimination in respect of employment and occupation;

Principle 7 - Businesses should support a precautionary approach to environmental challenges;

Principle 8 - Businesses should undertake initiatives to promote greater environmental responsibility;

Principle 9 - Businesses should encourage the development and diffusion of environmentally friendly technologies;

Principle 10 - Businesses should work against corruption in all its forms, including extortion and bribery.

The Global Compact is a basic framework for the development, implementation, and dissemination of sustainability policies and practices, offering participants a wide range of workflows, management tools and other resources.

The Global Compact has two complementary objectives: Integrate the ten principles in business activities around the world and catalyze actions in support of broader UN development goals, including, for example, the Millennium Development Goals (MDGs).

6 | FINAL CONSIDERATIONS

Rio 2016 expects to spread good practices related to sustainability in the textile sector industry, always tied to technical excellence and cost efficiency for companies - whether small, medium or large corporations.

Thus, this guide aims at helping companies to seek alternative and more sustainable solutions for their selection process. Importantly, these solutions are aimed at continuous improvement of the company, considering environmental, social, and economic aspects.

7 | APPENDICES

7.1 ENVIRONMENTAL IMPACTS OF THE TEXTILE INDUSTRY, APPLICABLE LEGISLATION, AND SUPPLIER'S COMPLIANCE.

ENVIRONMENTAL IMPACT	PRODUCTION CHAIN STAGE	GOVERNING LAW - BRAZIL	HOW TO ADAPT
Effluent generation: the textile industry uses various types of dyes or anilines, chemical auxiliaries which, when processed, generate a liquid effluent that require special treatment to meet environmental legislation. The productive sectors of dyeing, printing and sizing / desizing are the main generators of wastewater with high organic load concentrations per raw materials.	<p>Processing (Singeing, purging / cleaning, bleaching, mercerizing and causticising, printing, compression, softening, anti-flame finishing)</p> <p>Weaving / Knitting (sizing, knitting)</p> <p>Ennoblement (singeing, desizing purging / cleaning, bleaching, mercerizing and causticising, printing, silk effect, drying, compacting, shrinking, softening,</p>	<p>CONAMA Regulation 430/11: Provides for the conditions and standards for effluent discharge. It complements and modifies regulation No 357 of 2005:</p> <p>CONAMA Regulation 357/05: Provides for environmental classification and guidelines for the classification of bodies of surface water, and establishes the conditions and standards for effluent discharge.</p> <p>NT 202.R-10: Criteria and standards for the launching of liquid effluent.</p>	<p>The supplier must observe and comply with the standards for effluent discharge established by CONAMA 430/11 and NT-202.R-10. It also has to control the effluent toxicity level, as established by 213.R NT-4.</p> <p>The supplier shall meet the parameters of organic matter removal in the effluent, as established by DZ-205.R-6.</p>

ENVIRONMENTAL IMPACT	PRODUCTION CHAIN STAGE	GOVERNING LAW - BRAZIL	HOW TO ADAPT
	<p>water and oil repellent, anti-crease and thickening)</p> <p>Dyeing</p> <p>Clothing (scouring parts)</p> <p>Utilities (steam generator, air compressors, chemical kitchen, Water Treatment Plant - WTP, Wastewater Treatment System - WWTS)</p>	<p>NT 213.R-4: Criteria and standards for the toxicity control of liquid effluent.</p> <p>DZ-205.R-6: Industrial Wastewaters Organic Load Control Guideline</p>	<p>The effluents must not give the receiving water bodies any features different from their legal framework as defined by CONAMA 357/05.</p> <p>Those who are responsible for the polluting sources of water resources must conduct a self-monitoring control for regular monitoring of effluents discharged into the receiving waters, based on samples in accordance with specific standards.</p>
<p>Enzyme oil odor: When heated, enzyme oils used to lubricate textile fibers threads volatilize and cause a strong odor and can become a nuisance to people around the company.</p>	<p>Spinning</p> <p>Processing (textile printing)</p>	<p>To date, there is no specific legislation in the State of Rio de Janeiro on controlling odors generated in industries.</p>	<p>The supplier can prepare for possible future legislation, as there is a 54/2006 SEMA Regulation, in Minas Gerais, which states that generating activities odoriferous substances with emission rate above 5,000,000 UO / h (and Odor Units per hour) should promote the installation of equipment aimed at removing the odor.</p>
<p>Solid waste generation: Various types of waste are generated along the textile chain. One should pay attention mainly to the management of hazardous waste from packaging or the use</p>	<p>Processing (printing, calendering, softening)</p> <p>Weaving / Knitting (sizing, knitting)</p> <p>Ennoblement (printing, calendering, finishing scouring)</p>	<p>Federal Law 12,305/10: Provides for the National Solid Waste Policy</p> <p>State Law 4191/03: Provides for the State Solid Waste Policy</p>	<p>The supplier is responsible for the proper management of waste from generation to final disposal, aiming at reducing and preventing pollution and following the hierarchy of non-generation, reduction, reuse,</p>

ENVIRONMENTAL IMPACT	PRODUCTION CHAIN STAGE	GOVERNING LAW - BRAZIL	HOW TO ADAPT
of chemicals, as the biological sludge treatment.	Utilities (steam generator, thermal fluid heater, air compressors, chemical kitchen, WTP WWTS)	<p>CONAMA Regulation 313/02: Provides for the National Industrial Solid Wastes Inventory NBR 10.004/04: Solid waste-waste - classifies waste as to their potential risk level.</p> <p>NBR - 12,235/92: Storage of Hazardous solid waste;</p> <p>NBR-11,174/90: Solid Waste Class II Storage - not inert and III and - inert;</p> <p>DZ-1310.R7: Waste Manifest System INEA Regulation No. 15. Lubricating oil packaging management</p>	<p>recycling and treatment and environmentally sound disposal. The company should develop a Plan for Solid Waste Management.</p> <p>The company must license all stages of waste management with INEA, and post a nameplate at the entrance of the company, indicating the toxic waste generated, as well as its form of management.</p> <p>The company must submit the information on generation, characteristics, storage, transportation, and disposal of solid waste to INEA, according to CONAMA Regulation 313/02.</p> <p>The classification of waste should be done in accordance with the NBR 10,004</p> <p>The supplier should pay attention to waste storage, as specified in NBR 12,235 and 11,174</p> <p>For every residue generated, the company must fill out the copies of the Waste Manifest, as specified in the DZ-1310.R-7.</p> <p>More specifically, the companies must comply with the criteria set out in INEA Regulation No. 15</p>

ENVIRONMENTAL IMPACT	PRODUCTION CHAIN STAGE	GOVERNING LAW - BRAZIL	HOW TO ADAPT
			concerning the management of lubricating oil used packaging.
Air pollution: Various stages of the textile production chain emit odoriferous substances that may cause nuisance to the population. They also emit particulate material and particles such as SOx, NOx, and VOCs waste chemicals volatilized at high temperatures, which may cause air pollution.	<p>Spinning</p> <p>Processing (singeing, purging / cleaning, bleaching, mercerizing and caustification, printing, drying, compaction, calendaring, towelling, softening)</p> <p>Weaving / Knitting (warping, sizing, knitting)</p> <p>Ennoblement (singeing, desizing purging / cleaning, bleaching, mercerizing and caustification, printing, silk effect, drying, compacting, calendaring, towelling, trimming, grinding, smoothing)</p> <p>Dyeing</p> <p>Clothing manufacture</p> <p>Utilities (steam generator, heat exchanger with a heat transfer fluid, air compressors, LPG storage, HVAC system, chemical kitchen, ETA WWTS, storage of hazardous products)</p>	<p>Federal Law 1,413/75: Provides for the control of environmental pollution caused by industrial activities.</p> <p>CONAMA Regulation 005/89: Provides for the National Programme for Air Pollution Control (PRONAR) (Supplemented by CONAMA Regulations 003/90, 008/90 and 436/11).</p> <p>CONAMA Regulation 382/06. Establishes the air pollutants emission ceilings for stationary sources. (Supplemented by CONAMA Regulation 436/11).</p> <p>CONAMA Regulation 436/11: Establishes the air pollutants emission ceilings for stationary sources already installed or with permit application prior to 2007.</p>	The supplier must ensure that the atmospheric pollutants emission is within the limits established by CONAMA Regulation 382 and 436. A monitoring of emissions must be carried out in accordance with the environmental agency and following the criteria established in CONAMA Regulation 382.
Noise and Vibration: The equipment used in the textile chain can generate noise and vibration,	Spinning	CONAMA Regulation 001/90. Provides for criteria emissions standards for noise	The supplier should pay attention to the activities that generate high noise impact, and are accompanied



ENVIRONMENTAL IMPACT	PRODUCTION CHAIN STAGE	GOVERNING LAW - BRAZIL	HOW TO ADAPT
which in turn can cause discomfort to the nearby population.	<p>Processing (mercerizing and caustification, towelling)</p> <p>Weaving / Knitting (knitting)</p> <p>Ennoblement (mercerizing and caustification, towelling, trimming, grinding)</p> <p>Utilities (steam generator, air compressors)</p>	<p>resulting from any industrial, commercial social or recreational activities.</p> <p>State Law 4,324/04: Establishes guidelines aimed at ensuring the hearing health of the State of Rio de Janeiro population.</p> <p>NBR - 10.151/00: Assessment of noise in populated areas.</p>	<p>by noise studies and noise control measures, in compliance with the limits established by the NBR 10,151.</p> <p>Although there is no specific legislation in relation to vibration, it is necessary to adopt control measures whenever potential health risk is found, such as the use of personal protective equipment, change the machine design, reorganization of the workplace, and change the time exposure.</p>



7.2 TYPES OF QUAL SEAL CERTIFICATION

STAMPS / ITEMS ASSESSED AT EVERY LEVEL	QUALITY	NATURAL ENVIRONMENT	SOCIAL RESPONSIBILITY
QUAL SEAL Certification Bronze: Certification of lower complexity and requirements	<p>Enforcement of laws relating to the product;</p> <p>Enforcement of requirements by the customer at time of purchase;</p> <p>Conducting periodic inspection;</p> <p>Verification and control of the conformity of raw materials received in relation to the request.</p>	<p>Identification and environmental compliance required for its facilities and operation;</p> <p>Identification and control of company activities that may have environmental impacts;</p> <p>Actions for waste disposal and pollution prevention, reducing the consumption of energy and water and reducing solid waste.</p>	<p>Identification and enforcement of legislation related to social responsibility aspects, such as child labor, forced labor, discrimination and clean company;</p> <p>Performing actions internally to employees in addition to the mandated benefits.</p>
QUAL SEAL Certification Silver: Intermediate level of certification. To be awarded this certification, companies must meet all management systems and product requirements for the Bronze level plus the Silver level requirements. The company is assessed as to its structured quality management, environmental and social responsibility best practices.	<p>In addition to the requirements for the Bronze QUAL SEAL Certification the following items are tested:</p> <p>Processes and products measuring and monitoring;</p> <p>Creation of a technical specification guide with information on the products characteristics;</p> <p>Systematic actions carried out to prevent recurrence of defects in products and other quality problems;</p> <p>Planning and production control;</p> <p>Continuous improvement for increased efficiency and the</p>	<p>In addition to the requirements for the Bronze QUAL SEAL Certification the following items are tested:</p> <p>Control of document and records relating to environmental management and impacts of activities on the environment;</p> <p>Identifying and implementing actions to reduce the environmental impacts of business activities, as well as the activities performed by its suppliers;</p> <p>Conducting preventive and appropriate action in the event of environmental problems arising from the business activity.</p>	<p>In addition to the requirements for the Bronze QUAL SEAL Certification the following items are tested:</p> <p>Identification of aspects of social responsibility that the company can control or influence, and that are related to its activities and products, to determine those which have or may have significant impact;</p> <p>Concrete social actions to provide sustainable development;</p> <p>Conducting training and awareness of the company's employees to increase social responsibility;</p>



STAMPS / ITEMS ASSESSED AT EVERY LEVEL	QUALITY	NATURAL ENVIRONMENT	SOCIAL RESPONSIBILITY
	<p>satisfaction of internal and external customers;</p> <p>Identification of products throughout the production;</p> <p>Planning of the stages of product development and presentation to employees through documents;</p> <p>Internal audits at planned intervals to determine whether the quality management system conforms to what is planned by the company;</p> <p>Possession and control of records and documents related to production.</p>		<p>Taking corrective and preventive actions if the company's activities negatively influence some social aspect.</p>
<p>QUAL SEAL Certification Gold: Certification of higher complexity. For gold-level certification, companies must meet all QUAL SEAL Certification requirements of product and quality management systems, environmental and social responsibility. This certification will be awarded to companies that have sustainability and quality as their business strategy.</p>	<p>In addition to the requirements for the Bronze and Silver QUAL SEAL Certification, the following items are tested:</p> <p>Possession and distribution of a quality policy and objective, and the people in charge of their implementation and results;</p> <p>Maintenance of infrastructure (equipment, buildings, processes, materials and support services) needed to achieve the objectives of quality of products and processes;</p> <p>Management of the work environment (such as noise, temperature, humidity, lighting or weather) which is needed to achieve</p>	<p>In addition to the requirements for the Bronze and Silver QUAL SEAL Certification, the following items are tested:</p> <p>Establishing an environmental policy including a commitment to continual improvement and environmental goals;</p> <p>Identification and planning of operations related to environmental aspects that impact the company, or are related whatsoever;</p> <p>Creation of procedures for employees and suppliers to control environmental aspects related to products, processes and business services, communication and requirement of this process;</p>	<p>In addition to the requirements for the Bronze and Silver QUAL SEAL Certification, the following items are tested:</p> <p>Creation of a policy of social responsibility objectives and goals and developing social responsibility programs internal and external to the company;</p> <p>Identification and control, including the record of documents and aspects related to social responsibility that may be impacted by its activities and its suppliers;</p> <p>Creation, implementation and maintenance of documented</p>



STAMPS / ITEMS ASSESSED AT EVERY LEVEL	QUALITY	NATURAL ENVIRONMENT	SOCIAL RESPONSIBILITY
	<p>the goals of product quality and process management;</p> <p>Establishment of a structured communication system with the client;</p> <p>Performing a selection and evaluation of (new and old) suppliers;</p> <p>Conducting a periodic review of its quality system to ensure its continuing suitability, adequacy and effectiveness;</p> <p>Creation of a quality manual detailing the procedures of the quality management system and their interactions;</p> <p>Training of company employees to better perform the actions established in the quality management system.</p>	<p>Creating, implementing and maintaining procedures to identify potential emergency situations and potential accidents that may impact the environment and how to respond to them;</p> <p>Creation, implementation and maintenance of procedures to regularly monitor and measure the key characteristics of its operations that can have a significant environmental impact;</p> <p>Training its employees and suppliers in order to make the actions related to the company's environmental policy more effective.</p>	<p>procedures to regularly monitor and measure the key characteristics of their relationships, processes, products and services that may have an impact on internal and external social issues.</p>

7.3 CP OPPORTUNITIES SPECIFIC TO THE TEXTILE INDUSTRY

ELEMENTS	CP OPPORTUNITIES	IMPLEMENTATION DESCRIPTION	ENVIRONMENTAL BENEFITS	ECONOMIC ASPECTS.
Reduction, recovery and reuse of water	Reduction of water consumption in cleaning operations	<p>Production Process</p> <p>Use counter-current scouring waters;</p> <p>Avoiding standardizing the amount of water in the process with reference to the worst condition;</p> <p>Using several washings with less water, rather than a single wash with a large amount;</p> <p>Reuse the rinse water of alkali processing operations in the textile scouring after desizing operations</p> <p>Reuse the water for scouring for bleaching operations in the washes of the textile material after alkali treatment operations.</p>	<p>Reducing natural resources consumption;</p> <p>Water re-use reduces the consumption of water during washes by nearly 50%;</p> <p>Optimization of the WWTS operation</p>	<p>Reducing the use of chemicals;</p> <p>Reducing the cost of the abstraction and discharge volumes portions relating to the Payment for Water Use.</p>
		<p>Water Treatment Plant - WTP</p> <p>Recover and reuse of scouring water from WTP decanters and filters;</p> <p>After previous treatment, use in the scouring of floors or even to recirculate to the WTP inlet.</p>		

Reducing water consumption in cooling operations	Recirculating in the equipment itself, through the cooling system; Reuse in processes that do not require drinking water	Reducing natural resources consumption; Reduction in the consumption of drinking water (between 15 and 20%); Optimization of the WWTS operation	Reducing the use of chemicals; Reducing the cost of the abstraction and discharge volumes portions relating to the Payment for Water Use.
Reduction of water consumption in dyeing operations	Dyeing medium to dark colors It is possible to eliminate the preparation step (purge) using specific compounds that provide for the simultaneous system of purge and dyeing, applicable to any type of fiber. Polyester dyeing: Reuse clear washes to wash equipment (1st or 2nd scouring) and in dark washes dyeing. Reuse clear washes to wash equipment (1st or 2nd scouring) and in dark washes dyeing.	Reducing natural resources consumption; Optimization of the WWTS operation	Reducing the use of chemicals; Reducing the time spent in the process; Reducing the cost of the abstraction and discharge volumes portions relating to the Payment for Water Use.
Reduction of water consumption in hydraulic systems	Replacement of hydraulic parts for bathrooms, garments, kitchens, etc.	Reduction in water consumption.	Initial investment with revision of the hydraulic system and repairs to the buildings; Reduction in cost for water consumption and the rate of drinking water.
Use of rainwater	Collection and storage of rainwater in cisterns; Use the first few dyeing washings or	Reduction in water consumption. Contribution to minimizing floods peak in	Estimated reduction of 2% to 10% in water consumption yearly; Reducing the use of chemicals and energy consumption;

		other less noble purposes.	the local community.	Reducing the cost of the abstraction volumes portions relating to the Payment for Water Use.
	Reuse of treated wastewater from public systems	Installation of a pipe connecting the company to the treatment plant or the use of water trucks to transport water; Adequacy of treatment plant to meet the needs of water quality parameters for the processes; Construction of water tanks for receipt and storage of water for reuse.	Reducing natural resources consumption;	Cost reduction process (reuse water is cheaper than drinking water); Reducing the cost of the abstraction volumes portions relating to the Payment for Water Use.
Energy conservation / reduction	Steam generation facilities	Thermal insulation of pipes; Identification of vapor leakage	Reducing energy consumption and consequently energy reducing Reducing natural resources consumption;	Reduction in costs of raw materials and energy consumption.
	Reuse of heat generated from washes	Installation of pipelines to collect the discharge of hot washes from the dyeing machines and installation of a heat exchanger system before final disposal for the WWTS.	Reducing natural resources consumption; Reduction in the consumption of fuel for steam generation; Eliminating the need for cooling of the effluent at the WWTS inlet; Reducing the temperature of the effluent, improving efficiency and	Reducing steam consumption and electric energy; Reducing the time of dyeing processes, bleaching, scouring, etc...

		stability of the WWTS.	
Other measures to reuse heat	Using the heat of the bottom outlet of the boiler to heat the incoming water boilers; Heat recovery from the air compressors and other equipment	Reducing natural resources consumption; Reduction in the consumption of fuel for steam generation;	Reduction in costs of raw materials; Reduction in consumption and electricity rate; Reduction in operating costs.
Operating procedure for reduction of energy consumption	Programming equipment to avoid excessive consumption of electricity; Measurement and monitoring of electricity consumption; Revision of electrical facilities	Reducing natural resources consumption;	Reduction in consumption and electricity rate;
Overhauling of equipment and engines	Installation of variable speed drives and soft starter in the equipment; Overhauling of electric engines and use of high yields engines	Reducing natural resources consumption;	Reducing energy consumption, Reducing production costs,
In the compressed air equipment	Operate correctly and implement an efficient maintenance system, paying special attention to the pneumatic cylinders and the control valves. Position the air intake point of a place of the low incidence of heat and choose a compressor appropriate to the needs of the production process; To use regulators for the automatic compressors operation and	Reducing natural resources consumption;	Reducing energy consumption,

		install records in the distribution lines;		
	Lighting	Using translucent tiles to maximize the use of natural light; Temporary delete lighting of some sectors and / or to install motion detectors; Use of fluorescent or metal lamps.	Reducing natural resources consumption;	Reducing energy consumption,
Dry Cleaning	Dry Cleaning	Replacement of equipment with better technology for use of perchlorethylene.	Reduce use of chemicals; Improved equipment efficiency.	Cost reduction generated with perchlorethylene (return on investment in about 36 months).
Reducing emissions of odoriferous substances	Reducing emissions of odoriferous substances	Review the characteristics of the fibers. It is recommended to purchase yarn with thermostable enzyme oils easily emulsified by purging process; Monitoring processes that can generate odors.	Reduction or elimination of odor and reducing nuisance to local residents.	Increase in the cost of the fiber; Reducing the possibility of environmental fines due to nuisance to the local residents.
Reduction of noise and vibration emissions	Reduction of noise and vibration emissions	Carry out the equipment maintenance; Promote sound insulation of equipment emitting noise.	Reduction of noise emission.	Reduction of administrative, civil, and labor claims.
	Reduction of vibration particles emissions	Install damping system and insulating flooring and verify equipment base.	Reduction of vibration particles emissions	Increase the useful life of equipment and buildings; Reduction of administrative and labor claims.
Input Recovery	Sizing	Filter the desizing wash, in order to reuse it in the sizing process (applicable to synthetic and	Reduction in the amount of waste generated;	Reduced consumption of chemicals and energy used in the

		artificial sizing process). If the company has more than one sizing storage tank it is recommended to interconnect them to enable the sizing to be reused by another sizing machine	Optimization of the WWTS operation	WWTS reduction in the logo generated.
	Caustic soda	To recover and recirculate the caustic soda completing the following steps: the effluent mercerizing machine, storage tank, filter, evaporator, settling tank, concentrated soda tanks.	Reduction of waste generated.	Reduced consumption of chemicals and energy used in WWTS; Recovery of approximately 80% of the caustic soda during mercerization; Cost reduction in neutralization and effluent treatment; Depreciation period of the equipment one to 2 years.
Reduction, reuse and recycling of waste generated	Reducing the generation of packaging waste	Develop study of alternatives to minimize packaging; Establishment of criteria for suppliers; Control of storage conditions; Staff Training Establishment of operating procedures	Reduction in the amount of waste generated; Reducing natural resources consumption;	Lower consumption of packaging material; Lower cost of packaging waste management; Additional costs for the minimization and market studies and for the modification in operations and storage.
	Reuse of waste	Reuse within and outside the production process and / or marketing of solid waste generated. Examples: losses of reuse of carded spinning and combed spinning processes;	Reduction in the amount of waste generated; Reducing natural resources consumption; Reducing the volume of biological sludge and other non-hazardous	Reducing fuel consumption, Reduction in the costs of sludge disposal and other organic waste.

		Use of biological sludge generated in WWTS as fuel for biomass boilers.	waste generated in the industrial plant; Reducing fuel consumption,	
Chemicals	Control of incoming raw materials and auxiliary products and replacement of chemicals and auxiliaries	Establishment of criteria for acceptance of materials; Implementation of quality testing; Control of storage conditions; Staff training; Establishment of operating procedures	Reduction in the amount of waste generated; Reducing natural resources consumption; WWTS Optimization	Reduction in raw materials costs; Reduction in costs of treatment/disposal of waste; Costs of equipment for testing; Investment in human resources.
	Replacement of manual color for automated color procedures	Acquisition of the automated dyeing solutions; Computer system for the operational management and software development for online process monitoring for optimization; Training of operators; Use of powder and liquid dyes; Installation of hydraulic piping for direct supply of production equipment and adequacy of equipment in the productive sectors.	Reduction in the amount of solid and semi-solid waste generated; Reducing the discharge of dye solutions in the wastewater treatment system; Reduced dye consumption due to the process optimization.	High initial investment but quick returns; Reduction in the purchase of chemicals; Reducing the costs of final disposal and waste transportation; Reducing the cost of the abstraction and discharge volumes portions relating to the Payment for Water Use. Human resources investment. Reduced operational variations and optimization of quality;
	Reusing scouring water in finishing processes	The finishing processes for impregnating practically do not change as the concentration of the components in the residual washes, it is re-usable.	Reducing natural resources consumption; Optimization of the WWTS operation	Reducing the use of chemicals; Reducing energy consumption, Reducing the cost of the water abstraction portion relating to the Payment for Water Use.

	Reusing scouring water in dyeing processes	Reuse scouring of dyeing processes in equipment with a high scouring ratio (such as pipes and flows).	Reducing natural resources consumption; Optimization of the WWTS operation	Reducing the use of chemicals; Reducing energy consumption, Reducing the cost of the water abstraction portion relating to the Payment for Water Use.
Modification of equipment:	In the printing process	Reduce the length of the print paste supply hose to reduce the quantity of remaining paste; Use a pump as a reversal resource to send the residual process paste to the feeders' containers.	Reduction in the consumption of resources (water, energy); Reduction in the amount of waste generated; Optimization of the WWTS operation	Reducing the use of chemicals; Reduction of costs related to the consumption of water and energy.
	In the Production Process	Install automatic metering and a dilution system to measure the exact amount of the products.	Reduction in the consumption of resources (water, energy); Reduction in the amount of waste generated; Optimization of the WWTS operation	Reducing the use of chemicals; Reduction of costs related to the consumption of water and energy.
Reducing the generation of air pollutants	Measures in steam generation equipment	Boilers' preventive maintenance Periodic sampling of emissions; Establishment of operating procedures Visual inspection of the smoke; Staff training; Annual Monitoring of the emissions in the chimney.	Reduction in emissions of gaseous pollutants; Reducing fuel consumption, Decreased conflict with the local residents; Facility renewal of OP	Reducing fuel consumption, Additional costs for sampling and analysis of emissions; Additional costs for the training of personnel; Decrease in fixed costs on the operation of air pollution control Equipment.

	Replacing the fuel used in the boilers	<p>Replacing the biomass fuel for biological sludge generated in WWTS; Boilers' preventive maintenance Periodic sampling of emissions; Establishment of operating procedures Visual inspection of the smoke; Staff training; Annual Monitoring of the chimney emissions</p>	<p>Reduction in emissions of gaseous pollutants; Reduction in the volume of biological sludge and other non-hazardous waste generated in the industrial plant; Opportunities to use waste generated by third parties; Reducing fuel consumption, Easier to renew the OP</p>	<p>Reducing fuel consumption, Reduction in the costs of disposal of sludge and other organic waste; Business opportunities with the use of waste generated by third parties; Additional costs for sampling and analysis of emissions; Additional cost for staff training; Decrease in fixed costs on the operation of air pollution control Equipment.</p>
	Replacement fuel for steam generation and thermal fluid heater	<p>Replacing the fuel type oil with natural gas or liquefied petroleum gas; Boilers' preventive maintenance Establishment of operating procedures Staff training; Conduct annual or bi-annual monitoring of emissions into the chimney.</p>	<p>Reducing the risk of emissions of particulate matter and black smoke; Removing the risk of storage and oil spill; Easier to renew the OP Important to check the need for Risk Management Plan for LPG storage.</p>	<p>Possible increase in operating costs due to fuel; Reduction in cost of maintenance and operation of the equipment; Possible removal of Air Pollution Control equipment; Additional costs for sampling and analysis of emissions; Additional costs of staff training.</p>
Storage of hazardous products under appropriate conditions	Storage of hazardous products under appropriate conditions	<p>Determine the specific area for storage of such products; Floor Waterproofing; Staff training to manage such products; Establishment of contingency plan for accidents; Proper identification of products with symbols and descriptive tags;</p>	<p>Prevention of accidents and impacts; Possible reduction in the waste generated.</p>	<p>Reduction in costs of waste treatment; Additional costs for preparation of the storage area; Additional costs of staff training; Risk reduction of administrative violations with environmental agency, in the event of an accident.</p>

	Establishment of criteria for the purchase and acceptance of materials in the production line; Establishment of operating procedures	
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