GUIDEBOOK

Enhancing the Low Carbon Competitive Advantage across the Manufacturing Sector of the Hong Kong Apparel Supply Chain through Effective Carbon Disclosure & Carbon Emission Reduction

製衣業訓練局
CLOTHING INDUSTRY TRAINING AUTHORITY

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Foreword by Steering Committee Chairman

Resource scarcity problem gets more severe by day as we consume and produce wastes much faster than the environment can regenerate. The carbon footprint of the textile industry is just as suffocating as the elephant breathing in the store room. This is a collective problem which can only be amended through collective effort. At the core of the movement is the endeavor towards sustainability which every responsible corporation should uphold. In the past, without clear industry guidelines, not all initiatives were properly valuated. Since the aspiring move of establishing the first carbon accounting guidebook with Clothing Industry Training Authority (CITA), a common set of pollution calculation matrix has been in use to strengthen the courtesy and communication of sustainability across the value chain. It is proven to be not only a trigger but also a comprehensive, sustainability road-map for the collective industry to embark on a new generation for environmental awareness.

Despite efforts spent on reducing production waste, water usage and energy consumption, it was not gratifying when it came to reporting such dispersion. The first try with a well-structured Global Reporting Initiative (GRI) effectively translated our efforts into tangible comparable which can be easily comprehended and measured across the value chain, unlike before without standardized measurement. While the industry language is synchronized, we also work on pushing forth a new culture which benefits our future generations.

Since the founding of the steering committee, we are grateful to have received supporting from the industry and funding from the Sustainable Development Fund from the HKSAR government. Previously, the piloting of the Low Carbon Manufacturing Program (LCMP) from the WWF has already elevated our aims to encouraging sustainable business practice through

accreditation. LCMP significantly helps apparel and textile manufacturers translate and consolidate different carbon reduction efforts through a unified pollution scoring: the lower the emission the higher the score. Continuous effort is also encouraged as a portion of the score is determined by the improvement in yearly emission. An award of Certified, Silver, Gold or Platinum is subsequently assigned in accordance to the score as a recognition from WWF for low-carbon manufacturing The WWF-recognised unified scoring system becomes a universal industry language for sustainable manufacturing.

The integration so far has brought us a highly meaningful all-round improvement on carbon management. Industry integrity is now well-blended throughout the production process. Yet the thoroughness of our assessment further broadens the impact across the value chain beyond standalone production processes. Each discipline is now independently aware of their carbon reduction target and contributes collectively to bring us a step closer to realistically raising awareness of the true cost behind a purchase at a consumer level.

Genuine sustainability should be an encompassing principle which is both timeless and boundless. It is a continuous refinement of business integrity beyond profitability. Over a quarter of the companies that joined LCMP have already been accredited with labels in 2012, reducing over 14,000 tons of carbon while maintaining a collective business growth of 32%. We are pleased to be part of this pioneering global initiative and are honored to further promote this collective effort for lasting industry integrity.

Anderson Lee

Steering Committee Chairman

Chapter 1: About the guidebook

Hong Kong, as one of the major apparel sourcing hubs, has a part to perform in the fashion world. As costs rising, market changing to diversity, increasing challenges from sustainable development, e.g. environment protection, how to keep the market portion with competitive advantages in the new times, is a task of top priority to be faced and solved by parties in Hong Kong apparel industry.

For example, climate change has been identified as one of the most significant sustainability issue of our time and excessive emission of Greenhouse Gas (GHG) is widely regarded as one of the major root causes of the problem. Terms like GHG emission and carbon footprint, as quantified measurements to the impact of human activities, come to the field of our vision.

A government project *Enhancing the Low Carbon Competitive Advantage across the Manufacturing Sector of the Hong Kong Apparel Supply Chain through Effective Carbon Disclosure & Carbon Emission Reduction (SDF425)*, funded by Sustainable Development Funding (SDF), and had been launched by Clothing Industry Training Authority (CITA) in 2011.

Great supporting from the industry has expressed the importance and historical mission of this project. During the project period, the project team had acquired professional suggestions and comments from Steering Committee: Chairman - Mr. Anderson Lee of Hong Kong Intimate Apparel Industries Association; Members: Mr. Pat-nie Woo of Hong Kong Cotton Spinners Association, Dr. Gordon Yen of Hong Kong Association of Textile Bleachers, Dyers, Printers and Finishers, Dr. Roger Ng of Hong Kong Chinese

Textile Mills Association, Mr. Kelvin Cheuk of Hong Kong Institution of Textile and Apparel, Ms. Karen Ho of WWF- Hong Kong, and the project external consultant Prof. Ding Xuemei of Dong Hua University. Pilot factories from the Hong Kong Apparel Supply Chain have contributed their time, professions and experiences to the project with great enthusiasm and responsibility.

The methodologies and practices on effective assessment and disclosure of Carbon Footprint of Product (CFP) for factories managed by Small and Medium-sized Enterprises (SMEs) across the manufacturing sector of the Hong Kong Apparel Supply Chain have been thoroughly presented in this guidebook, which aims to enhance the low carbon competitive advantages of the whole apparel industry, by means of carbon knowledge popularization and experiences sharing of carbon emission reduction opportunities.

The guidebook, in bilingual versions, are posted on CITA's web site (www.cita.org.hk) and allow the industry to download free of charge. Owing to the limitation of our knowledge, the guidebook may have unavoidable faults which can be further updated. Any suggestions and feedbacks are sincerely welcome to improve and perfect the guidebook in the future.

Clothing Industry Training Authority

Chapter 2: Understanding Greenhouse Gas

Concepts of Greenhouse Gas (GHG)

Climate change has been identified as one of the most significant sustainability issues of our time and excessive emission of GHG is widely regarded as one of the major root causes of the problem.

Greenhouse gas

gaseous constituent of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere,and clouds[1].

GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6)[1].

Concepts of GHG emission

GHG emission is an index which can be used to quantify and monitor the volume of GHGs, especially for those released from human activities. To limit the concentration of GHGs in the atmosphere, different types of initiative and specification have been developed for GHG emissions and removals' assessment, communication and verification, including organization level, project level, and product or service level.

GHG emission

total mass of a GHG released to the atmosphere over a specified period of time[1].

GHG emission assessment at organization and project level

The GHG emission of an organization/ project measures the GHG emissions from all the activities across the organization/project, including energy used in buildings, industrial processes and company vehicles.

The Greenhouse Gas Protocol - A Corporate Accounting and Reporting Standard (GHG Protocol Corporate Standard) released by World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD) in 2001, is a widely used international accounting tool for organizations to understand, quantify, and manage GHG emissions[2]. It serves as the foundation for other GHG standards and programs in the world.

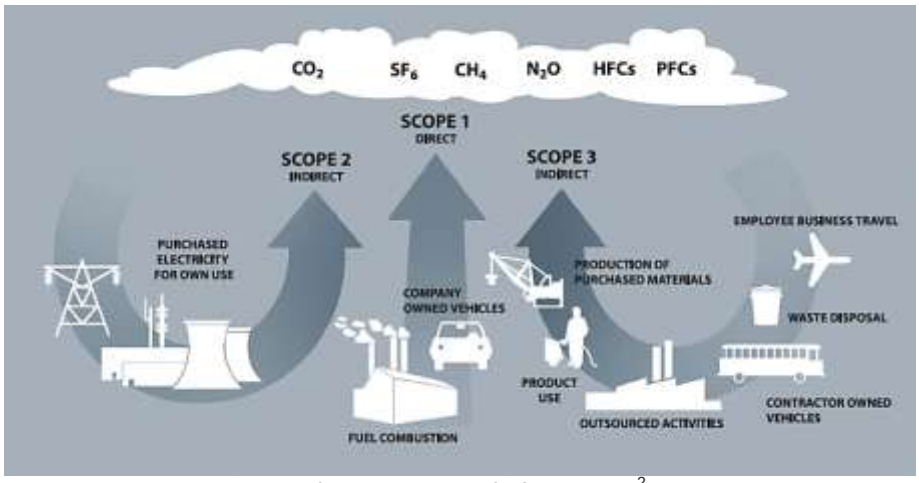


Figure 1 GHG emission scopes[2]

The International Standards Organization published ISO 14064 series standards in 2006 to provide guidelines for the quantification, monitoring, reporting and verification of GHG emissions and/or removals at the organization and project level[1]. These standards have specifically set up principles and requirements for organizations, corporate and project-based activities to reduce GHG emissions and increase GHG removals.

NOTE GHG removal: total mass of a GHG removed from the atmosphere over a specified period of time[1]

GHG emission assessment at product and service level

A term Carbon Footprint of a Product (CFP) or Product Carbon Footprint (PCF) was used to sum up greenhouse gas emissions and removals at product and service level, expressed as CO_2 equivalent and based on a life cycle assessment[3]. CFP measures the GHG emissions over the whole life of a product, from the extraction of raw materials and manufacturing right through to its use and final re-use, recycling or disposal.

Figure 2 Life cycle of a product system

NOTE Product system: collection of unit processes with elementary and product flows, performing one or more defined functions, and which models the life cycle of a product[4].

NOTE Life cycle: consecutive and interlinked stages of a product system, from raw material acquisition or generation from natural resources to final disposal[4].

'Carbon Footprint' is used to measures the total GHG emissions caused directly and indirectly by a person, organization, event or product[5]. Carbon footprint is initiated from the point of view of consumers at consumption level. At organization level, including a corporate, a country, a city, the terms GHG emission is widely adapted as the popular expressions.

Standards and guidelines of the assessment of Carbon Footprint of Product (CFP)

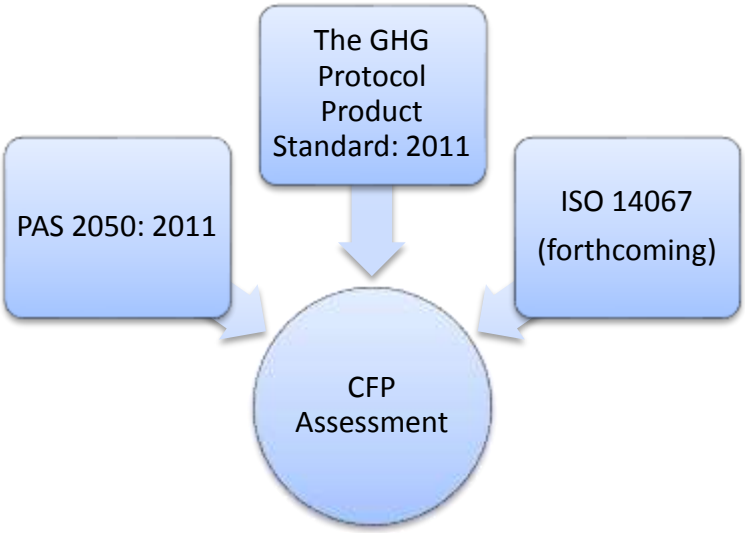


Figure 3 Standards and guidelines of CFP assessment

Publicly Available Specification (PAS) 2050 - Specification for the assessment of the life cycle GHG emissions of goods and services was developed in 2008 and revised in 2011 by the British Standards Institution, in partnership with the UK Department of Environment Food and Rural Affairs (Defra) and the Carbon Trust. *PAS 2050* is the first consensus-based and internationally applicable standard on CFP. It is providing a method for assessing the life cycle GHG emissions of good and service (jointly referred to as "products"), which has been used as the basis for the development of other standards internationally[6].

NOTE In this guidebook, *PAS 2050* will be the major theory foundation of effective carbon disclosure & carbon emission reduction for the Manufacturing Sector of the Hong Kong Apparel Supply Chain.

The GHG Protocol Product Life Cycle Accounting and Reporting Standard (GHG Protocol Product Standard) is one of a suite of accounting tools of the GHG Protocol developed by World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD) in 2011, which

encourage users to understand, quantify, and manage products' GHG emissions from the point of life cycle[7].

The forthcoming ISO 14067 will detail principles, requirements and guidelines for the quantification and communication of the CFP (including both goods and services), based on GHG emissions and removals over the life cycle of a product[3].

Benefits of CFP assessment

CFP assessment and disclosure concepts are the foundation of CFP label. For the benefits of CFP in supply chain, see Figure 4. The 1st CFP label in the world was founded by in the UK in 2006 by the Carbon Trust, which showed the CFP in a product's label. This is a good communication tools between products providers and the public, also is an effective self-reminder of carbon reduction in the manufacturing process. Till now, more than 10 countries and regions have set up CFP label that arouse the consumers to make low carbon buying decisions and protect the environment.

NOTE CFP label: means of marking products with their CFP within a particular product category according to the CFP communication program requirements[3].

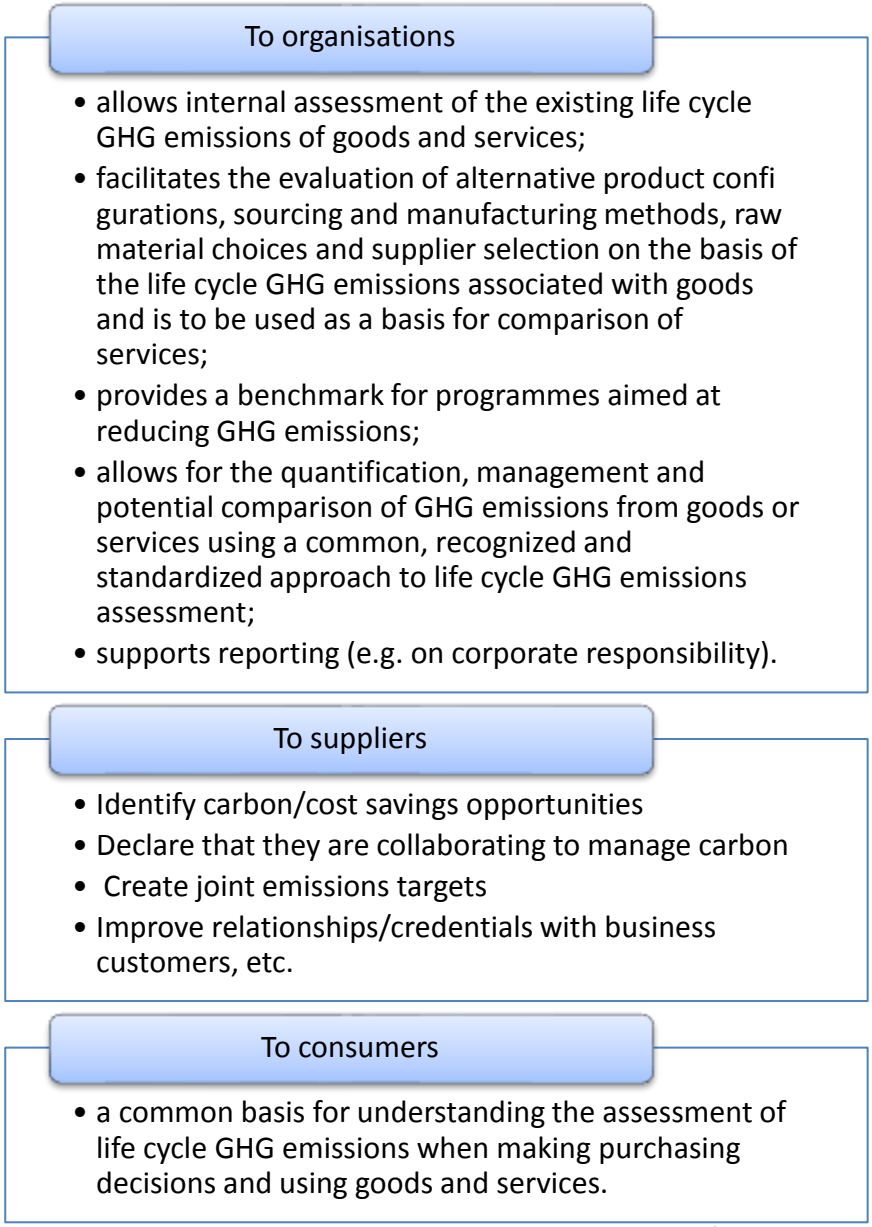


Figure 4 Benefits for CFP assessment and disclosure[6]

Challenges of CFP assessment

The assessment of CFP is a little bit complicated as the boundary will cover the whole life cycle of a product. All the input and output in the product life cycle, such as raw material, manufacturing, transportation, distribution, usage and disposal or recycling, would be reviewed by means of method Life Cycle Assessment (LCA) and interpreted to the impact to climate change.

NOTE Life Cycle Assessment (LCA): compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle[4].

Account an entire CFP needs researchers and consultants having good understanding of technical knowledge's and LCA analytical skills. Besides, the data, database and information from a product's upstream and downstream are necessary to make sure the life cycle's entirety. This is a big challenge to products providers, such as brands and their suppliers in supply chain. But it is also an inspiring foresight and opportunity for them in the near future, especially with the pushing power from international and national level.

For the suppliers in the manufacturing sector of Hong Kong Apparel Supply Chain, self-assessment of GHG emissions will help them to get in-depth carbon understanding and find good low carbon solutions on adaptation to local condition. Prospective actions on carbon assessment and management help manufactures to control the cost from the point of view of GHG and strengthen their business in the context of international trends of sustainability, such as environmental protection and energy saving which are important principles of Corporate Social Responsibility (CSR).

Chapter 3: Briefing on how to assess CFP

PAS 2050 is adopted as the basic principle to assess CFP of tangible goods or intangible services. For the manufacturing sector of the Hong Kong Apparel Supply Chain, it is necessary to digest the theory basis and to conduct the applications in this specific industry. Based on *PAS 2050* and its *Guide*, the steps on how to assess the CFPs are summarized in 10 steps[6 & 8] for quick understanding and practice.

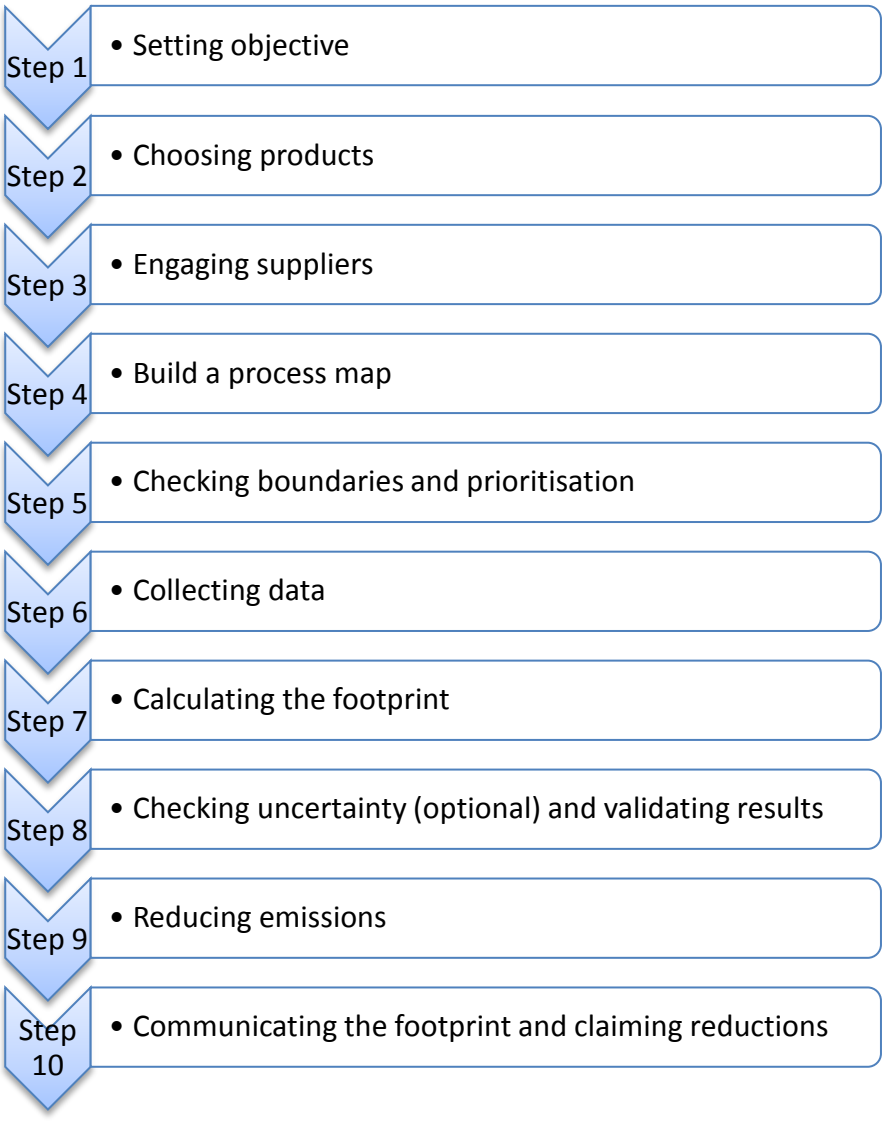


Figure 5 Steps for assessment of CFPs[6 & 8]

Step 1: Setting objective

For organizations conducting CFP, the major objective is to assess and reduce the overall GHG emissions of the product being assessed. The results of carbon assessment can be used for external communication and internally monitoring. Effective carbon assessment would be good tools for internally within the company and externally to buyers or consumers.

It is important that the Board and senior management of the organization fully support carbon assessment and disclosure. A task force shall be established within the organization. A team of support members shall also be appointed, for helping to collect or measure, data and information from different sources. Sufficient knowledge on GHG emissions and CFPs are necessary to be equipped to the internal carbon assessment team.

Figure 6 Internal carbon assessment team[8]

NOTE It is common for some companies to invite the professional third-party consultants to lead a CFP assessment project. The decision would be made depending on the purpose of carbon assessment and internal resource supporting.

Step 2: Choosing products

According to ISO 14040, the product can be categorized as follows:

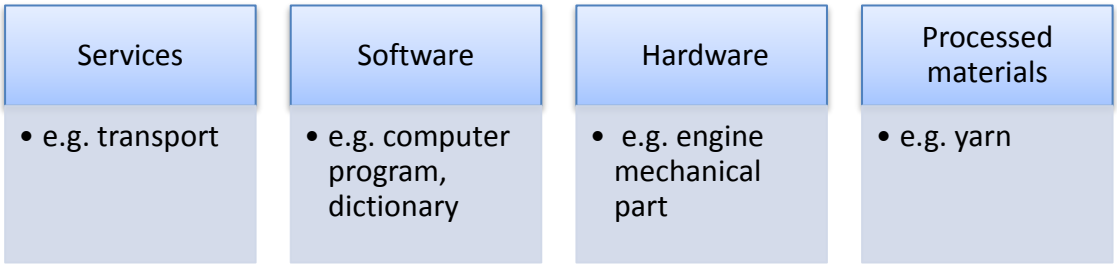


Figure 7 Product categorization[4]

When evaluating the products for carbon assessments, several criteria as follows are set for choosing the products.

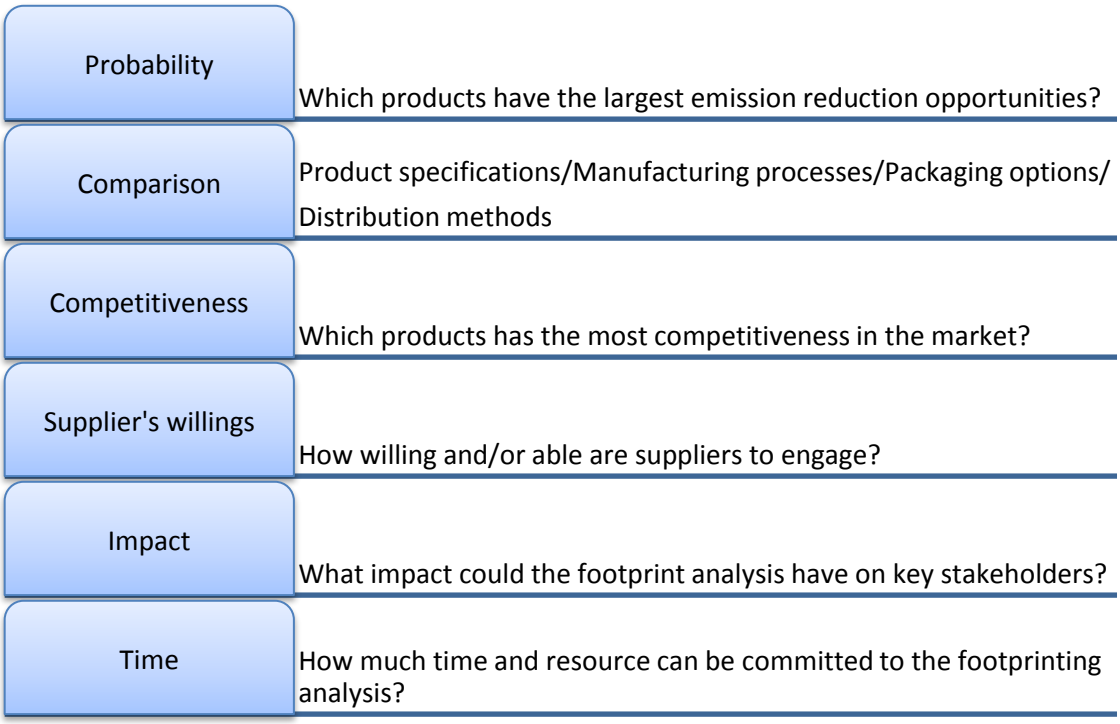


Figure 8 Criteria for product selection[6]

After selecting the products, it is essential to define the functional unit, which makes a platform for comparison of products in the same categorization.

NOTE Functional unit: quantified performance of a product system for use as a reference unit[4].

Step 3: Engaging suppliers

Suppliers play a vital role in the carbon footprint assessment. In the life cycle of one product system, the raw materials and manufacturing process are closely tied up with the suppliers. The activity data and information must be collected from them. Especially when the products have a large number of components and sophisticated manufacturing process, it is necessary to trace all the raw materials and manufacturing process in the supply chain.

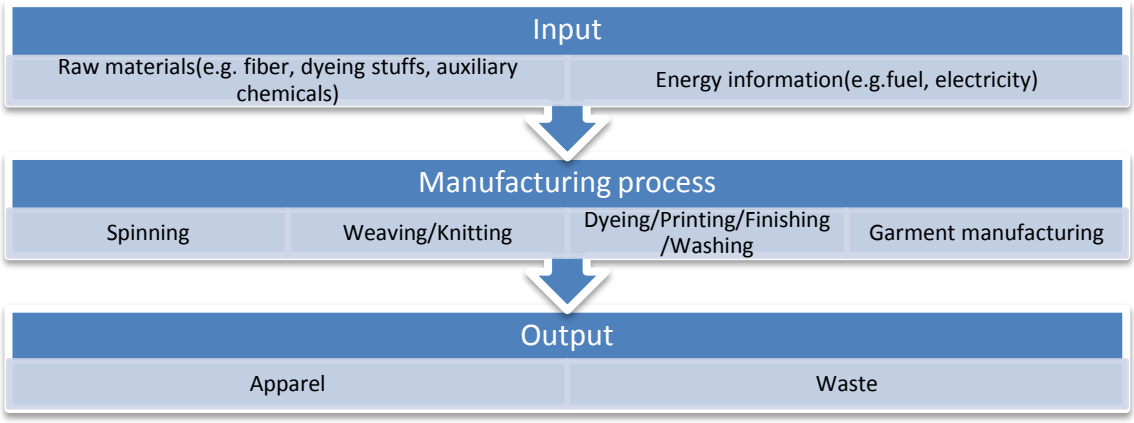


Figure 9 A simplified input-output model for manufacturing sector in apparel supply chain

On the other hand, the suppliers advancing their actions on carbon assessment will help them to gain the competitive advantages. For example, internal carbon assessment will act as a compass for suppliers to find out the energy consumption hot spot and control the manufacturing cost. Besides, they can provide professional information and data for their buyers to estimate and compare a product's potential impact to climate change even the whole environment in the stage of product development, which called eco-design.

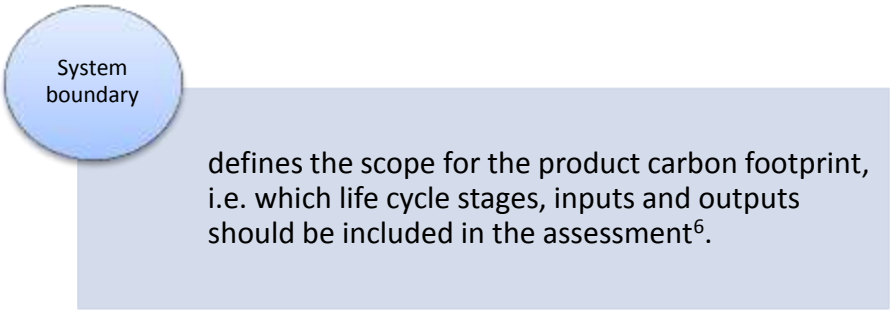
Step 4: Build a process map

The target of building a process map is to trace all the contributions to a selected product system. From raw materials to disposal, including all material,

energy and waste flows, the process map can be separated to some small unit process, such as activities, process or components, based on the analyst' sufficient product experiences and knowledge. Identifying all the input and output to a unit process helps to build a clear and detailed process map, which can guide the development of a checklist tailored made to the chosen product.

NOTE Unit process: smallest portion of a life cycle for which data are analyzed when performing a life cycle assessment[6].

Step 5: Checking boundaries and prioritisation



The scope of GHG emissions and removals in a product system identified in *PAS 2050* 5.1.1, including but not limited to the contents of the system boundary outlines in Figure 11. The scope indicates the GHG emission types of each unit process.

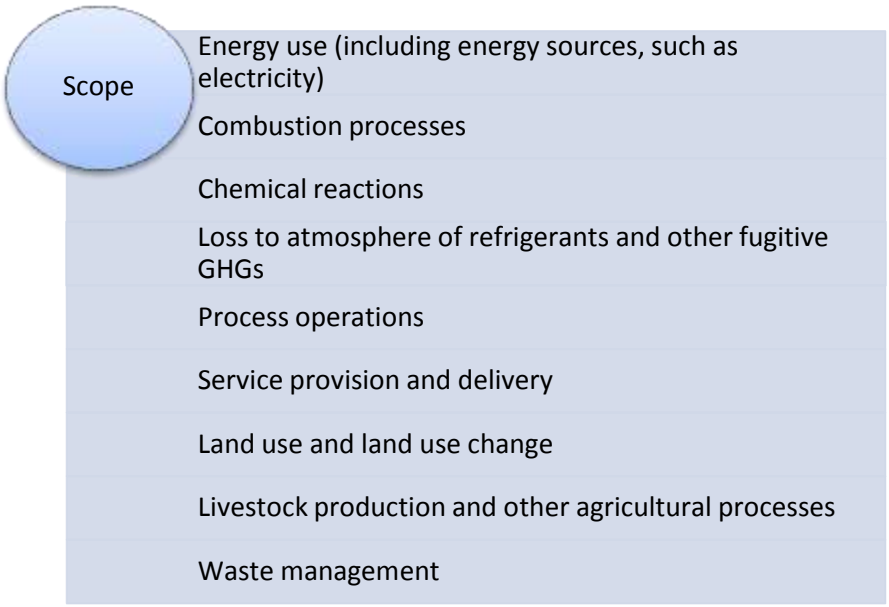


Figure 10 Scope of GHG emissions and removals[6]

The system boundary defined by *PAS 2050* highlights the range of data collecting for CFP assessment, which is in view of the life cycle of a product system. In other words, the boundary draws out the unit processes that should be included in a CFP assessment.

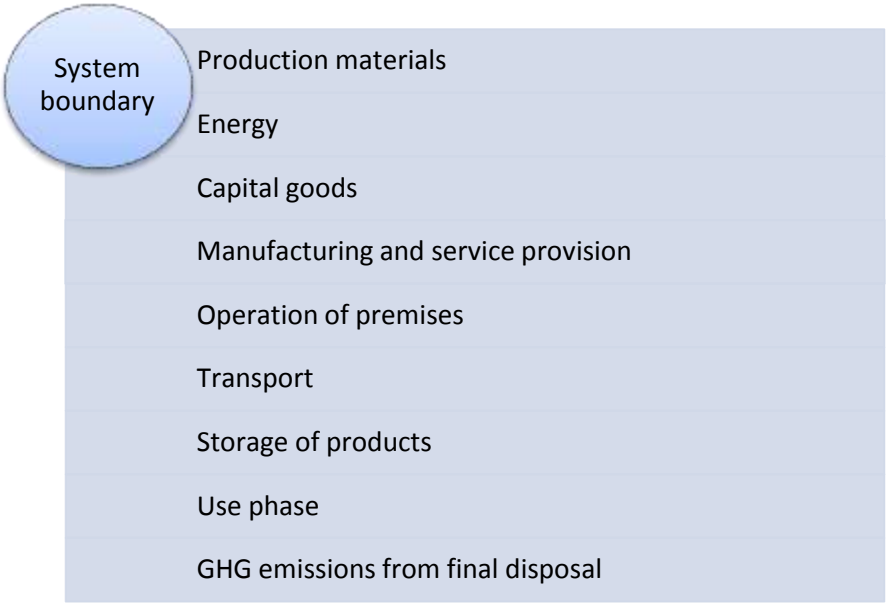


Figure 11 System boundary outlines of GHG emissions and removals[6]

The system boundary is the key issue deciding the meaning of the whole CFP assessment results whether they have comparability with others. This step establishes the foundation and prioritisation of data collecting.

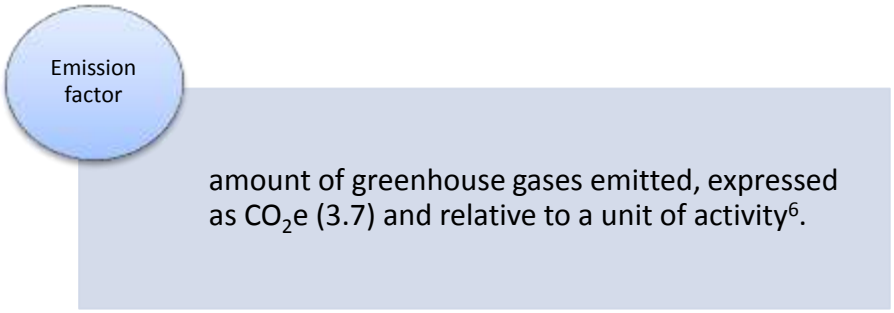
Step 6: Collecting data

Figure 12 Types of data collecting[6]

NOTE Primary activity data: quantitative measurement of activity from a product's life cycle that, when multiplied by the appropriate emission factor, determines the GHG emissions arising from a process[6].

NOTE Secondary data: data obtained from sources other than direct measurement of the emissions from processes included in the life cycle of the product[6].

Two types of data must be collected: primary activity data and secondary data (e.g. emission factors). Activity data refers to all the material and energy amounts involved in the product's life cycle (material inputs and outputs, energy used, transport, etc.)[6]. This kind of data measured from an organization and its suppliers, shows the real input of materials and energy, the output of product/intermediate products and its waste, across the whole supply chain. The potential carbon reduction opportunities are concealed behind the activity data, which fulfill some functions of carbon assessment. Emission factor is an important parameter in CFP calculation. It is a typical secondary data which can only be collected from external resource, such as industry or government database, quantified publications and matured LCA software. Strictly speaking, a complete CFP is full of technicality on data collecting.



NOTE Carbon Dioxide Equivalent (CO_2e): unit for comparing the radiative forcing of a GHG to carbon dioxide[1].

Based on the boundary in *PAS 2050: 2011*, a checklist to gathering data for the assessment of the CFP of major cotton apparel products had been developed and attached to Appendix 1. This checklist can be used as the foundation to derive tailor-made checklists for selected cotton products provided by manufacturing sector in Hong Kong Apparel Supply Chain. Due to the limited popularity of carbon footprint and LCA concept in apparel supply chain, the emission factors database are not entirely developed and need continuous contributions and efforts from related industry and research fields. In this guidebook, some frequently used emission factors and Global Warming Potential (GWP) had been collected for reference. See Appendix 2, 3.

NOTE Cut-off criteria: specification of the amount of material or energy flow or the level of environmental significance associated with unit processes or product system to be excluded from a study[9].

NOTE The checklist in Appendix 1 is developed to collect all the potential input and output data of a product life cycle. The cut-off criteria can be used when the environmental significance of each factor is clear[9].

Step 7: Calculating the footprint

The concept of CFP calculation seems very concise and to the point. A CFP is the sum of all materials, energy and waste across all activities in a product's life cycle multiplied by their emission factors. For each given activity, the calculation of carbon footprint just needs to multiply activity data and its related emission factor. A CFP calculation example of croissant is set up in Guide to *PAS 2050*, which demonstrate how to approach each steps.

Figure 13 Equation of carbon footprint of a given activity[6]

In fact, the calculation theory of CFP is easier to be understood while the most important thing is to clarify the specified boundary according to a product's properties and collect supporting data in the previous steps.

Step 8: Validating results

Figure 14 Levels of validation[6]

Validating results is a useful step to make sure all the data resource and analysis results are on the basis of relevance, completeness, consistency, accuracy and transparency. There are three validation levels. For external communication of the carbon footprint results, inviting independent third party accredited by an internationally recognized accreditation body (e.g. United Kingdom Accreditation Service, UKAS) for certification may be mostly desirable and credible. Non-accredited third parties can provide verification based on recognized standards. For the purpose of internal assessment, the carbon results may be self-verified. The organization can choose to follow some international standards such as BS EN ISO 140216.

Step 9: Reducing emissions

Type	Common emission reduction opportunities
•Energy use	– Change from electricity to gas – Increase proportion of energy from renewables
•Production	– Decrease waste volumes – Increase scale – Decrease amount of processing – Change manufacturing practices and improve efficiency
•Distribution	– Decrease heating/cooling in storage and transport – Decrease distances travelled
•General	– Include energy/carbon criteria in purchasing/supplier choices – Include energy/carbon criteria in design decisions – Change product design/configuration/materials, e.g. 100% recycled bottles – Change technology choice (e.g. upgrading equipment to be more energy efficient) – Improve inventory management

Table 1 Common emission reduction opportunities[6]

For some pragmatic purpose of carbon assessment, to reduce GHG emission is a 'seeing is believing' motivator. In fact, it really works under effective carbon management of many organizations. Some general emission reduction opportunities have been listed in Table 1. In this guidebook, series of

specified carbon reduction opportunities have been identified based on pilot research, see Chapter 4.

Step 10: CFP communication and disclosure

PAS 2050 hasn't formally appointed a general requirement for CFP communication and disclosure. It provides two sources for users' reference. One is named the *Code of Good Practice for product GHG emissions and reduction* claims sponsored by the Carbon Trust and the Energy Saving Trust in conjunction with *PAS 2050*[10]. The other is Defra's *Green Claims Guide*, supported by the Confederation of British Industry, the British Retail Consortium, the Local Authorities Coordinating Body on Food and Trading Standards and the British Standards Institution[11]. These documents provide guidelines for GHG emissions reporting and environmental claims.

Furthermore, *GHG Protocol Corporate Standard*[2] and *GHG Protocol Product Standard*[7] provide guidelines for reporting. ISO 14064[1] presents the specification of reporting framework at the organization and project level. The forthcoming ISO 14067 will present CFP communication principles as well. These kinds of standards can be used to guiding GHG emissions reporting, disclosure and communications if the organization has a qualified and adequate source to handle the whole project.

For the organization without compulsive outer request, CFP assessment can be used as a tool to conduct low carbon management and enhance the competitive advantages in the scope of sustainability. An optional recommendation provided in this guidebook is to integrate the reporting and disclosure work to Environmental Performance of a CSR which is increasingly accepted and fulfilled by plenty of big companies and even SMEs. A checklist had been made up to disclose the CFP based on the GRI guidelines in Appendix 4, which can be used to different products.

NOTE For details of CSR, please refer to guidebook from a SDF project: *Guide to "Better Corporate Social Responsibility" for Apparel Industry – SME version*, compiled by Clothing Industry Training Authority (CITA), which can be freely downloaded from www.cita.org.hk.

Appendix 1: Data collecting checklist of CFP (Application on major cotton apparel products)

Version 1.0

Factory basic information	
Name:	
Address:	
Assessment period (Year):	
Built-up area (M^2):	
Number of employers (Persons):	
Total working days in assessment period (Hours):	
Product category:	

Input: Energy and Raw Materials

Table 1.1 Energy

Name		Unit	Production consumption per year	PAS 2050：2011 boundary	GHG protocol：2011 scope	GRI Index	Remarks
Liquid (crude oil and petroleum products)	Crude oil	Kg		6.4.3	Scope1	EN3, EN4	
	Orimulsion	Kg					
	Natural gas liquids	Kg					
	Motor gasoline	Kg					
	Aviation gasoline	Kg					
	Jet gasoline	Kg					
	Jet kerosene	Kg					
	Other kerosene	Kg					
	Shale oil	Kg					
	Gas oil	Kg					
	Diesel oil	Kg					
	Residual fuel oil	Kg					
	Liquefied petroleum gases	Kg					
	Ethane	Kg					
	Naphtha	Kg					
	Bitumen	Kg					
	Lubricants	Kg					
	Petroleum coke	Kg					
	Refinery feedstock	Kg					
	Refinery gas	Kg					
	Waxes	Kg					
	White spirit & SBP	Kg					
	Other petroleum products	Kg					

Table 1.2	Energy						
Name		Unit	Production consumption per year	PAS 2050：2011 boundary	GHG protocol：2011 scope	GRI Index	Remarks
Solid(coal and coal products)	Anthracite	Kg		6.4.3	Scope1	EN3, EN4	
	Coking coal	Kg					
	Other bituminous coal	Kg					
	Sub-bituminous coal	Kg					
	Lignite	Kg					
	Oil shale and tar sands	Kg					
	Brown coal briquettes	Kg					
	Patent fuel	Kg					
	Coke oven coke and lignite coke	Kg					
	Gas coke	Kg					
	Coal tar	Kg					
	Gas works gas	M^3					
	Coke oven gas	M^3					
	Blast furnace gas	M^3					
	Oxygen steel furnace gas	M^3					
Gas	Natural gas	M^3					
Other fossil fuels	Municipal waste(nonbiomass fraction)	Kg					
	Industrial wastes	Kg					
	Waste oils	Kg					
Peat	Peat	Kg					
Biomass	Wood/wood waste	Kg					
	Sulfite lye (black liquor)	Kg					
	Other primary solid biomass	Kg					
	Charcoal	Kg					
	Biogasoline	Kg					
	Biodiesels	Kg					
	Other liquid biofuels	Kg					
	Landfill gas	Kg					
	Sludge gas	Kg					
	Other biogas	Kg					
	Municipal wastes(biomass fraction)	Kg					
Outsourcing energy	Steam	Kg		6.4.3	Scope2	EN3, EN4	Pressure (KPa)
	Electricity	Kwh					
	Others	Kg					

Table 2	Raw materials: Fiber					
Name	Unit	Production consumption per year	PAS 2050：2011 boundary	GHG protocol：2011 scope	GRI Index	Remarks
Cotton	Kg		6.4.2	Scope3	EN1, EN2	

Table 3.1	Raw materials: Dyes and auxiliaries						
Name		Unit	Production consumption per year	PAS 2050：2011 boundary	GHG protocol：2011 scope	GRI Index	Remarks
Fiber spinning auxiliaries	Spinning bath additive	Kg		6.4.2	Scope3	EN1	
	Spinning solution additive	Kg					
	Finishing oil	Kg					
	Spinning oil	Kg					
	Combing oil	Kg					
	Coning oil(winding oil)	Kg					
	Twisting oil	Kg					
	Sizing agent	Kg					
	Waxing agent	Kg					
	Sizing assistant	Kg					
	Solvent adhesive	Kg					
	Soaking agent	Kg					
	Carbonizing agent	Kg					
	Others	Kg					
Pretreating auxiliaries	Desizing agent	Kg					
	Scouring agent	Kg					
	Degreasing agent	Kg					
	Bleaching assistant	Kg					
	Mercerizing finish	Kg					
	Dechlorinating agent	Kg					
	Hydrogen peroxide remover	Kg					
	Deweighting agent	Kg					
	Splitting agent	Kg					
	Others	Kg					
Dyeing and printing auxiliaries	Leveling agent	Kg					
	Accelerating agent	Kg					
	Retarding agent	Kg					
	Anti-migration agent	Kg					
	Dyeing carrier	Kg					
	Swelling agent	Kg					
	Mordant	Kg					
	Fixing agent	Kg					
	Stripping agent	Kg					
	Binding agent	Kg					
	Printing gum	Kg					
	Thickening agent	Kg					
	Discharging agent	Kg					
	White discharging agent	Kg					
	Resist agent	Kg					

Table 3.2	Raw materials: Dyes and auxiliaries						
Name		Unit	Production consumption per year	PAS 2050：2011 boundary	GHG protocol：2011 scope	GRI Index	Remarks
Dyeing and printing auxiliaries	Soaping agent	Kg		6.4.2	Scope3	EN1	
	Anti-staining agent	Kg					
	Anti-bleeding agent	Kg					
	Others	Kg					
Dyes	Direct dyes	Kg					
	Azoic dyes	Kg					
	Vat dyes	Kg					
	Sulphur dyes	Kg					
	Reactive dyes	Kg					
	Acid dyes	Kg					
	Metal-complex dyes	Kg					
	Chrome Mordant dyes	Kg					
	Disperse dyes	Kg					
	Cationic dyes	Kg					
	Others	Kg					
Pigments	Pigments	Kg					
Finishing auxiliaries	Softening agent	Kg					
	Raising agent	Kg					
	Coating finishing agent	Kg					
	Resin finishing agent	Kg					
	Anti-creasing/shrink-resistant/easy-care finishing/durable press finish agent	Kg					
	Stiffening agent	Kg					
	Fiber strength protective agent	Kg					
	Moisture adsorption and perspiration exhaust finishing agent	Kg					
	Hydrophilic finishing agent	Kg					
	Antistatic agent	Kg					
	Flame-retardant	Kg					
	Water-repellent/oil repellent agent	Kg					
	Soil-resistant finishing agent	Kg					
	Antibacterial and anti-odour finishing agent	Kg					
	Mildew-proofing finishing agent	Kg					
	Anti-mite finishing agent	Kg					
	Moth-proofing agent	Kg					
	Insect-repellent finishing agent	Kg					
	Anti-ultraviolet ray finishing agent	Kg					
	Anti-slip finishing agent	Kg					

Table 3.3	Raw materials: Dyes and auxiliaries						
Name		Unit	Production consumption per year	PAS 2050：2011 boundary	GHG protocol：2011 scope	GRI Index	Remarks
Finishing auxiliaries	Anti-pilling finishing agent	Kg		6.4.2	Scope3	EN1	
	Anti-felting agent	Kg					
	Fulling agent	Kg					
	Scrooping agent	Kg					
	Brightening agent	Kg					
	Delustering agent	Kg					
	Weightening agent	Kg					
	Others	Kg					
General dyeing and finishing auxiliaries	Hygroscopic agent/humectant	Kg					
	Detergent	Kg					
	Wetting agent	Kg					
	Penetrant	Kg					
	Chelating/complexing agent	Kg					
	Emulsifying agent	Kg					
	Enzyme	Kg					
	Anti-foaming agent	Kg					
	Foaming boost	Kg					
	Foaming stabilizer	Kg					
	Foaming booster	Kg					
	Anti-redeposition agent	Kg					
	Alkali-releasing agent	Kg					
	Acid-releasing agent	Kg					
	Oxidizing agent	Kg					
	Anti-oxidizing agent	Kg					
	Reducing agent	Kg					
	Anti-reducing agent	Kg					
	Deep-dyeing agent	Kg					
	Brightening agent	Kg					
	Crosslinking thickener	Kg					
	Catalyst	Kg					
	Solubilizing agent	Kg					
	Smoothing agent	Kg					
	Dispersing agent	Kg					
	Others	Kg					

Table 4	Raw materials: Accessories						
Name		Unit	Production consumption per year	PAS 2050：2011 boundary	GHG protocol：2011 scope	GRI Index	Remarks
Filling piece	Lining	Kg		6.4.2	Scope3	EN1	
	Pad	Kg					
	Floccule	Kg					
	Filling material	Kg					
Connecting piece	Sewing thread	Kg					
	Ornamental thread	Kg					
	Special thread	Kg					
	Waistband	Kg					
	Leather belt	Kg					
	Elastic	Kg					
	Ribbed	Kg					
	Ornamental rope	Kg					
	Button	Kg					
	Zipper	Kg					
Decorating piece	Cording	Kg					
	Bead/Films	Kg					
	Man-made diamond	Kg					
	Fringe	Kg					
	Nailhead/ Rhinestone	Kg					
Marking piece	Tag	Kg					
	Label	Kg					
Hanger	Clothes-hanger	Piece					
	Humanoid model	Piece					
Others		Kg					

Table 5.1	Raw materials: Packaging materials						
Name		Unit	Production consumption per year	PAS 2050：2011 boundary	GHG protocol：2011 scope	GRI Index	Remarks
Intermediate product packaging materials	Paper products	Kg		6.4.2	Scope3	EN1	
	Plastic products	Kg					
	Glass and ceramic products	Kg					
	Metal products	Kg					
	Adhesive	Kg					
	Printing ink	Kg					
	Adhesive tape	Kg					
	Strapping materials	Kg					
	Others	Kg					

Table 5.2	Raw materials: Packaging materials						
Name		**Unit**	**Production consumption per year**	**PAS 2050：2011 boundary**	**GHG protocol：2011 scope**	**GRI Index**	**Remarks**
Product packaging materials	Paper products	Kg		6.4.2	Scope3	EN1	
	Plastic products	Kg					
	Glass and ceramic products	Kg					
	Metal products	Kg					
	Adhesive	Kg					
	Printing ink	Kg					
	Adhesive tape	Kg					
	Strapping materials	Kg					
	Others	Kg					

Table 6	Raw materials: Other consumables						
Name		**Unit**	**Production consumption per year**	**PAS 2050：2011 boundary**	**GHG protocol：2011 scope**	**GRI Index**	**Remarks**
Production	Refrigerants	Kg		6.4.2	Scope1	EN1	
	Water	Ton		6.4.2	Scope3	EN1	
	Others	Kg					
Office	Water	Kg					
	Paper	Kg					
	Pens	Kg					
	Printing ink	Kg					
	Refrigerants	Kg		6.4.2	Scope1	EN1	
	Others	Kg		6.4.2	Scope3	EN1	

Output: Products and Waste

Table 7	Intermediate product-Yarn					
Name	**Unit**	**Production consumption/ output per year**	**PAS 2050：2011 boundary**	**GHG protocol：2011 scope**	**GRI Index**	**Remarks**
Ring spinning	Kg		6.4.2	Scope3	EN1	
Rotor spinning	Kg					
Jet spinning	Kg					
Vortex spinning	Kg					
Friction spinning	Kg					
Open-end spinning	Kg					
Others	Kg					

Table 8	Intermediate product-Fabric						
Name		Unit	Production consumption/ output per year	PAS 2050：2011 boundary	GHG protocol：2011 scope	GRI Index	Remarks
Woven fabrics	Plain and derivation weave	Kg		6.4.2	Scope3	EN1	
	Twill and derivation weave	Kg					
	Sateen and derivation weave	Kg					
Knitted fabrics	Weft-knitted fabrics	Kg					
	Warp-knitted fabrics	Kg					
Nonwoven fabrics		Kg					
Braided fabrics		Kg					
Others		Kg					

Table 9	Products						
Name		Unit	Production consumption/ output per year	PAS 2050：2011 boundary	GHG protocol：2011 scope	GRI Index	Remarks
Woven or Knitted clothing	Overcoat	Piece		/	/	/	Unit weight
	Jacket	Piece					Unit weight
	Cape/ mantle	Piece					Unit weight
	Cold protective clothing	Piece					Unit weight
	Down wear	Piece					Unit weight
	Tailored suit	Piece					Unit weight
	Vest	Piece					Unit weight
	Shirts/ blouses	Piece					Unit weight
	T-shirt	Piece					Unit weight
	Pants	Piece					Unit weight
	Skirt	Piece					Unit weight
	Suits	Set					Unit weight
	Casual wear	Piece					Unit weight
	Dressing gown	Piece					Unit weight
	Sports wear	Piece					Unit weight
	Swimming wear	Piece					Unit weight
	Ethnic costume	Piece					Unit weight
	Infant’s wear	Piece					Unit weight
	Maternity dress	Piece					Unit weight
	Qipao	Piece					Unit weight
	Wedding gown，formal wear	Piece					Unit weight
	Underwear	Piece					Unit weight
	Others	Piece					Unit weight
Special clothing	Army uniform	Piece					Unit weight
	Professional clothing	Piece					Unit weight
	Others	Piece					Unit weight
Personal protective equipment	Head protection equipment	Piece					Unit weight
	Respirator	Piece					Unit weight
	Others	Piece					Unit weight

Table 10	Waste						
Name		Unit	Production consumption/ output per year	PAS 2050：2011 boundary	GHG protocol：2011 scope	GRI Index	Remarks
Manufacturing process	Cotton dust	Kg		6.4.10	Scope 3	EN22	
	Fiber stock	Kg					
	Waste fabric	Kg					
	Defective materials	Kg					
	Waste water	Kg					
	Others	Kg					
Non-manufacturing process	Domestic garbage	Kg					
	Waste wood	Kg					
	Waste plastics	Kg					
	Waste paper	Kg					
	Waste metal products	Kg					
	Others	Kg					
Waste water treatment	Mud	Kg					

Official travel

Table 11	Office travel							
Travel tools	Code	Country/City	Origin	Destination	PAS 2050：2011 boundary	GHG protocol：2011 scope	GRI Index	Remarks
Air					6.4.6	Scope3	EN4	
Train								
Bus								
Mini-bus								
MTR								
Taxi								
Ferry								
Others								

Appendix 2: Frequently used emission factors

Name	Proposed data	Unit	Date source
Crude oil	$7.33*10^4$	Kg/TJ	IPCC 2006
	2.76	$KgCO_2/L$	Taiwan, Energy Statistical Data Book
Natural gas liquids	$6.42*10^4$	Kg/TJ	IPCC 2006
	2.66	$KgCO_2/M^3$	Taiwan, Energy Statistical Data Book
Kerosene	$7.19*10^4$	Kg/TJ	IPCC 2006
	2.56	$KgCO_2/L$	Taiwan, Energy Statistical Data Book
Motor gasoline	$7.41*10^4$	Kg/TJ	IPCC 2006
	2.26	$KgCO_2/L$	Taiwan, Energy Statistical Data Book
Diesel oil	$7.41*10^4$	Kg/TJ	IPCC 2006
	2.73	$KgCO_2/L$	Taiwan, Energy Statistical Data Book
Liquefied petroleum gases	$6.31*10^4$	Kg/TJ	IPCC 2006
	1.75	$KgCO_2/L$	Taiwan, Energy Statistical Data Book
Lubricants	$7.33*10^4$	Kg/TJ	IPCC 2006
	2.95	$KgCO_2/L$	Taiwan, Energy Statistical Data Book
Coking coal	$9.46*10^4$	Kg/TJ	IPCC 2006
	2.69	$KgCO_2/Kg$	Taiwan, Energy Statistical Data Book
Lignite	$1.01*10^5$	Kg/TJ	IPCC 2006
	3.14	$KgCO_2/Kg$	Taiwan, Energy Statistical Data Book
Coke	$1.07*10^5$	Kg/TJ	IPCC 2006
	3.14	$KgCO_2/Kg$	Taiwan, Energy Statistical Data Book
Gases	$4.44*10^4$	Kg/TJ	IPCC 2006
	0.93	$KgCO_2/M^3$	Taiwan, Energy Statistical Data Book
Natural gas	$5.61*10^4$	Kg/TJ	IPCC 2006
	2.33	$KgCO_2/M^3$	Taiwan, Energy Statistical Data Book
Electricity	0.99	$KgCO_2/Kwh$	2009 line Emission Factors for Regional Power Grids in China
	0.98	$KgCO_2/Kwh$	2010 line Emission Factors for Regional Power Grids in China
	0.95	$KgCO_2/Kwh$	2011 line Emission Factors for Regional Power Grids in China
	0.93	$KgCO_2/Kwh$	2012 line Emission Factors for Regional Power Grids in China
	0.56	$KgCO_2/Kwh$	CLP Sustainability Report (2009)
	0.54	$KgCO_2/Kwh$	CLP Sustainability Report (2010)
	0.59	$KgCO_2/Kwh$	CLP Sustainability Report (2011)
	0.84	$KgCO_2/Kwh$	Power Assets Holding Ltd. Sustainability report (2009)
	0.79	$KgCO_2/Kwh$	Power Assets Holding Ltd. Sustainability report (2010)
Town gas	0.58	$KgCO_2/Unit$	The Hong Kong and China Gas Company Ltd. Annual Reports (2009)
	0.57	$KgCO_2/Unit$	The Hong Kong and China Gas Company Ltd. Annual Reports (2010)

Appendix 3: Global Warming Potential (GWP)

Industrial designation or common name	Chemical formula	GWP for 100-year time horizon
Carbon dioxide	CO_2	1
Methane	CH_4	25
Nitrous oxide	N_2O	298
Substances controlled by the Montreal Protocol		
CFC-11	CCl_3F	4,750
CFC-12	CCl_2F_2	10,900
CFC-13	$CClF_3$	14,400
CFC-113	CCl_2FCClF_2	6,130
CFC-114	$CClF_2CClF_2$	10,000
CFC-115	$CClF_2CF_3$	7,370
Halon-1301	$CBrF_3$	7,140
Halon-1211	$CBrClF_2$	1,890
Halon-2402	$CBrF_2CBrF_2$	1,640
Carbon tetrachloride	CCl_4	1,400
Methyl bromide	CH_3Br	5
Methyl chloroform	CH_3CCl_3	146
HCFC-22	$CHClF_2$	1,810
HCFC-123	$CHCl_2CF_3$	77
HCFC-124	$CHClFCF_3$	609
HCFC-141b	CH_3CCl_2F	725
HCFC-142b	CH_3CClF_2	2,310
HCFC-225ca	$CHCl_2CF_2CF_3$	122
HCFC-225cb	$CHClFCF_2CClF_2$	595
Hydrofluorocarbons		
HFC-23	CHF_3	14,800
HFC-32	CH_2F_2	675
HFC-125	CHF_2CF_3	3,500
HFC-134a	CH_2FCF_3	1,430
HFC-143a	CH_3CF_3	4,470
HFC-152a	CH_3CHF_2	124
HFC-227ea	CF_3CHFCF_3	3,220
HFC-236fa	$CF_3CH_2CF_3$	9,810
HFC-245fa	$CHF_2CH_2CF_3$	1030
HFC-365mfc	$CH_3CF_2CH_2CF_3$	794
HFC-43-10mee	$CF_3CHFCHFCF_2CF_3$	1,640

Industrial designation or common name	Chemical formula	GWP for 100-year time horizon
Perfluorinated compounds		
Sulfur hexafluoride	SF_6	22,800
Nitrogen trifluoride	NF_3	17,200
PFC-14	CF_4	7,390
PFC-116	C_2F_6	12,200
PFC-218	C_3F_8	8,830
PFC-318	c-C_4f_8	10,300
PFC-3-1-10	C_4F_{10}	8,860
PFC-4-1-12	C_5F_{12}	9,160
PFC-5-1-14	C_6F_{14}	9,300
PFC-9-1-18	$C_{10}F_{18}$	>7,500
Trifluoromethyl sulfur pentafluoride	SF_5CF_3	17,700
Fluorinated ethers		
HFE-125	CHF_2OCF_3	14,900
HFE-134	CHF_2OCHF_2	6,320
HFE-143a	CH_3OCF_3	756
HCFE-235da2	$CHF_2OCHClCF_3$	350
HFE-245cb2	$CH_3OCF_2CHF_2$	708
HFE-245fa2	$CHF_2OCH_2CF_3$	659
HFE-254cb2	$CH_3OCF_2CHF_2$	359
HFE-347mcc3	$CH_3OCF_2CF_2CF_3$	575
HFE-347pcf2	$CHF_2CF_2OCH_2CF_3$	580
HFE-356pcc3	$CH_3OCF_2CF_2CHF_2$	110
HFE-449sl (HFE-7100)	$C_4F_9OCH_3$	297
HFE-569sf2 (HFE-7200)	$C_4F_9OC_2H_5$	59
HFE-43-10pccc124 (H-Galden 1040x)	$CHF_2OCF_2OC_2F_4OCHF_2$	1,870
HFE-236ca12 (HG-10)	$CH_2OCF_2OCHF_2$	2,800
HFE-338pcc13 (HG-01)	$CHF_2OCF_2CF_2OCHF_2$	1,500
Perfluoropolyethers		
PFPMIE	$CF_3OCF(CF_3)$ $CF_2OCF_2OCF_3$	10,300
Hydrocarbons and other compounds – Direct Effects		
Dimethylether	CH_3OCH_3	1
Methylene chloride	CH_2Cl_2	8.7
Methyl chloride	CH_3Cl	13

NOTE Global Warming Potential (GWP): factor describing the radiative forcing impact of one mass-based unit of a given greenhouse gas relative to an equivalent unit of CO2 over a given period of time[1].

NOTE Source IPCC 2006 Guidelines for National Greenhouse Gas Inventories

Appendix 4: Carbon disclosure checklist

Version 1.0

Company/Organization:				Completed by:		Disclosure period:			To be completed by the Assessor	
GRI Indicator	CSR-GATEs Ref	GRI Level	Section	Requirements	Examples of relevant information	Information can be presented	Supporting evidences available (Reference attachment if appropriate)	Data owner	Assessment*	Remarks
EN	3.2.3, 3.2.4, 4.3.1	B	Management Approach for Environmental Aspects	Goals and performance, policy, organization responsibilities, training and awareness, monitoring and follow up, risks and opportunities, key strategies, major changes, etc. (CSR-GATEs: Mechanism for identifying and evaluating legal compliance)	As left					
EN1	4.3.3	CORE *	Environmental Performance Indicators	Materials used by weight or volume	Purchasing records; Total weight or volume of direct materials and non-renewable materials used					
EN2	4.3.3, 4.3.5	CORE *	Environmental Performance Indicators	Percentage of materials used that are recycled input materials	Purchasing records; Total weight or volume of recycled input materials					
EN3	4.3.5-4.3.7	CORE *	Environmental Performance Indicators	Direct energy consumption by primary energy source (CSR-GATEs: resources utilization rate, energy consumption per unit of production, energy consumption per industry value added)	Energy bills; Data about energy directly used, e.g., electricity, solar energy collected and used, heating by burning gas, diesel, etc.					
EN4	4.3.6	Core	Environmental Performance Indicators	Indirect energy consumption by primary source	Purchasing records; Data about energy used for generating another form of energy, e.g., uses of gasoline to generate electricity on site					
EN5	4.3.8	Add	Environmental Performance Indicators	Energy saved due to conservation and efficiency improvements	Examples such as the uses of LED lamps, process redesign, uses of environment friendly facilities, etc.					

GRI Indicator	CSR-GATEs Ref	GRI Level	Section	Requirements	Examples of relevant information	Information can be presented	Supporting evidences available (Reference attachment if appropriate)	Data owner	Assessment*	Remarks
EN6	4.3.4, 4.3.5, 4.3.9	Add	Environmental Performance Indicators	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives. If use-oriented figures are employed (e.g., energy requirements of a computer), clearly report any assumptions about underlying consumption patterns or normalization factors.	As left					
EN7	4.3.4, 4.3.5	Add	Environmental Performance Indicators	Initiatives to reduce indirect energy consumption and reductions achieved. Indicate underlying assumptions and methodologies used to calculate other indirect energy use and indicate the source of information.	Examples such as the uses of solar energy or main line electricity to replace using diesel to generate electricity on site; improvement in energy efficiency in subcontracted processes; reduction of business-related travel					
EN8	4.3.10	CORE *	Environmental Performance Indicators	Total water withdrawal by source (including surface water from wetlands, rivers, lakes, and oceans; ground water; rainwater collected directly and stored by the reporting organization; waste water from another organization; and municipal water supplies or other water utilities). (CSR-GATEs: unit of water used per unit of production)	Water bills, water meter records in m^3					
EN 10	4.3.11	Add	Environmental Performance Indicators	Percentage and total volume of water recycled and reused (e.g. uses of grey water). (e.g. if the organization has a production cycle that requires 20 m^3 of water per cycle, the organization withdraws 20 m^3 of water for one production process cycle and then reuses it for an additional three cycles. The total volume of water recycled/reused for that process is 60 m^3.)	As left					
EN 16	4.3.16	Core	Environmental Performance Indicators	Total direct and indirect greenhouse gas emissions by weight (including CO2, CH4, N2O, HFCs, PFCs and SF6) (CSR-GATEs: status of discharge licenses applicable; discharge control targets defined; % of items achieved regulatory limit)	Calculated through data of power consumption, fuel consumption, water consumption, material consumption, etc. through using appropriate parameters					

GRI Indicator	CSR-GATEs Ref	GRI Level	Section	Requirements	Examples of relevant information	Information can be presented	Supporting evidences available (Reference attachment if appropriate)	Data owner	Assessment*	Remarks
EN 17		Core	Environmental Performance Indicators	Other relevant indirect greenhouse gas emissions (e.g. business travel, emission by subcontracted processes) by weight	As left					
EN 18	4.3.17	Add	Environmental Performance Indicators	Initiatives to reduce greenhouse gas emissions and reductions achieved	As left					
EN 19		Core	Environmental Performance Indicators	Emissions of ozone-depleting substances by weight (Emissions = Production + Imports - Exports of Substances)	Usage of ozone-depleting substances, such as CFC, R22 etc.					
EN 20	4.3.13 - 4.3.15	Core	Environmental Performance Indicators	NO_x, SO_x, and other significant air emissions by type and weight. (CSR-GATEs: status of discharge licenses applicable; discharge control targets defined; % of items achieved regulatory limit)	As left					
EN 21	4.3.12 - 4.3.15 , 4.3.18	Core	Environmental Performance Indicators	Total water discharge by quality and destination.(CSR-GATEs: status of discharge licenses applicable; discharge control targets defined; % of items achieved regulatory limit; controls at discharge points and their status)	Data including treated discharge and non-treated discharge					
EN 22	4.3.5, 4.3.20 , 4.3.28	Core	Environmental Performance Indicators	Total weight of waste by type and disposal method.(CSR-GATEs: waste reuse / recycle rate; ratio of controlled treatment for domestic wastes)	Tons of wastes disposed by the following methods: reuse, recycle, recovery, incineration, use as fuel, landfill, on site storage, etc.					
EN 26	4.3.19 , 4.3.21 4.3.22	Core	Environmental Performance Indicators	Initiatives to mitigate environmental impacts (excluding reclaiming of products and impacts on biodiversity) of products and services, and extent of impact mitigation. (CSR-GATEs: Times of training and % of coverage; environmental friendly facilities and implementation rate; packing materials reuse rate; environmental impacts assessment / implementation rate)	Description of environmental management program, implementation of ISO 14001, introduction of environment friendly products, etc.					
EN 27	4.3.21	Core	Environmental Performance Indicators	Percentage of products sold and their packaging materials that are reclaimed by category. Rejects and recalls of products should not be counted. Recycling or reuse of packaging should also be reported separately.	As left					

GRI Indicator	CSR-GATEs Ref	GRI Level	Section	Requirements	Examples of relevant information	Information can be presented	Supporting evidences available (Reference attachment if appropriate)	Data owner	Assessment*	Remarks
EN 28	4.3.30, 4.3.32	CORE *	Environmental Performance Indicators	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with environmental laws and regulations. Where reporting organizations have not identified any non-compliance with laws or regulations, a brief statement to this fact is sufficient. (CSR-GATEs: state any impact on financing or fund raising)	As left					
EN 29	4.3.27	Add	Environmental Performance Indicators	Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce. (CSR-GATEs: no. of vehicles under controlled; environmental standards applicable for vehicles; environmental test pass rate for vehicles)	Data such as energy use, emission, effluents, wastes, noise and spills					
	4.3.26		Environmental Performance Indicators	(CSR-GATEs: Green coverage rate; area of public green area per head)	As left					
Date: _____										

* Legend for Assessment: Available and complete (A)
Can be included but need improvement (B)
Information not available and can be excluded (C)
Information not available and need improvement (D)

NOTE Source GRI G3.1 Self-assessment Checklist by CITA, funded by Sustainable Development Fund (SDF) 2011

Appendix 5: Reference

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製 衣 業 訓 練 局
CLOTHING INDUSTRY TRAINING AUTHORITY

Address: 63 Tai Yip Street, Kowloon Bay,

Kowloon, Hong Kong

Tel.: (852) 2263 6392

Fax: (852) 2795 0452

Websites: www.cita.org.hk

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