THE
FASHION
PACT

CLIMATE PILLAR

SUPPLIER SUPPORTING PACKAGE - TIER 2

INTRODUCTION

Climate action is becoming increasingly important for the fashion industry. Whether it is from external pressure by consumers or investors, (inter)national legislation, entrepreneurial spirit or risk management, more companies are taking steps to incorporate climate action, all along their value chain. Fashion suppliers are key to this climate action movement, as they account for some of the most resource-intensive areas of the industry, and solutions can be easily implemented to unlock significant benefits for all stakeholders. This Support Package for suppliers aims to provide guidance to suppliers in the beginning stages of developing and integrating a holistic climate strategy. In particular, this document is prepared for Tier 2 suppliers, although many key messages are applicable to suppliers in all tiers. As referenced throughout this document, Tier 2 suppliers should refer to the other tier documents if they want to learn more specific information for these other suppliers.

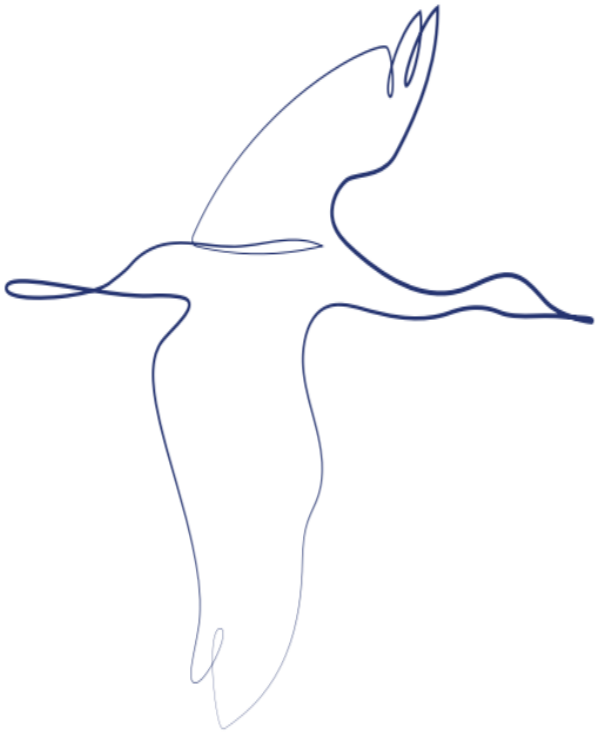
How to use this guidance

The aim of this guidance is to help supplier Fashion Pact signatories and suppliers to Fashion Pact supplier signatories get started and accelerate their progress on climate. Each section aims to help explain key terms and concepts, and then shares references to guidance, publications and organisations that can further support in your company's journey.

Specifically, this guidance sets out to:

- Present cost effective climate strategies that help build the business case for climate action.
- Provide clarity on the basic steps you should consider in developing a climate strategy.
- Provide a useful overview of related terminology and ideals.
- Connect you to the right external guidance documents and organisations - helping you find the right content without duplicating efforts.

IN THIS DOCUMENT



Who should use this guidance?

This guidance is one of three levels of package available for Fashion Pact signatories. This document is one of four within the supplier package, which can be used either by producer signatories to the Pact, suppliers of the Pact producer signatories, or by brands and retailers wanting to work with suppliers or to learn more about supply chain action. The other two packages are the accelerators package (for brand/retail companies who are starting their climate journey) and the leaders package (for brand/retail companies who are advanced in their climate journey).

CLIMATE CHANGE: WHY IT'S TIME TO ACT NOW

The concentration of greenhouse gases (GHGs) in the atmosphere has increased to such an extent that it is changing the climate and increasing global temperatures. The effects of rising average temperatures will be numerous and wide-reaching, including the acidification of oceans, a rise in sea levels from melting glaciers, and an increased frequency of extreme weather events.

As well as impacting millions of people and devastating natural systems across the world, the effects of climate change are expected to significantly impact the fashion value chain. Heat waves, water scarcity, floods, changes in agricultural pests, and extreme weather events like hurricanes will negatively impact the production of raw materials, causing business disruptions and increasing costs.

These disruptions will be particularly felt in many of the geographical regions in which suppliers and producers are located, impacting both livelihoods and biodiversity. Taking action on climate impact reduction and climate adaptation will both be important to ensure that suppliers can keep their operations open in the future.

Fashion companies are facing increased pressure from shareholders, customers, investors, regulators and civil society organisations, to take action on climate. More than 195 countries have signed up to the 2015 Paris Agreement, aiming to limit warming to 1.5°C. This means that every country is likely to have stronger emissions regulations over time, and that preparing for this future can make your business more resilient.

There are also many immediate business benefits from focusing on energy efficiency and GHG emission reduction, ranging from financial savings, improved customer relationships and increased governmental support.

One of the most obvious benefits to suppliers is cost reductions. By making your own operations and supply chain more efficient, costs can be reduced. These reduced costs make a more attractive offer for brands and retailers when choosing their suppliers.

Case study:
Suzhou Nanhua Textile Finishing Technology Co. Ltd. in China created annual savings of $3.8 million with a payback period of 10 months, through participating in the Clean by Design programme for wet processing mills. Through investing resources in water management, chemical reuse, equipment upgrades and process improvements, Nanhua has achieved water savings of 70%, or 1.2 million cubic metres of water, in 2019 alone, as well as saving 2,300 tons of carbon dioxide from its emissions. These measures have significantly reduced the plant's production costs and increased its market competitiveness, while creating both greenhouse gas and energy use savings of around 30%[1].

In addition, sustainability and transparency of production methods is now a priority for brands' sourcing executives, who increasingly look for process improvements when searching for suppliers. Increased transparency strengthens suppliers' integrity and accountability, and thus enhances their customers' trust and loyalty. Particularly in tiers 1 and 2, top performing suppliers are more likely to be rewarded for their sustainability improvements, and could be incentivized to make their processes even more efficient, such as through brands investing in on-site energy efficiency and improvement measures. Mounting consumer demand also increases brands' desire to find suppliers with tangible sustainability improvements and commitments in their operations, with transparent practices that can be easily communicated to consumers.

Entering your data into an online tool such as the Higg Facilities Environmental Module (FEM) could create a more attractive offer for brands, as this will make it easier for them to calculate their total value chain emissions. This will also reduce the number of customer inquiries for such data. Reporting

[1] Apparel Impact Institute, 2020 - https://apparelimpact.org/nanhua-case-study/

your performance through accessible platforms or tools can also reduce audit fatigue in your facility, saving money, time and resources previously spent on environmental impact reporting.

Suppliers who adopt sustainable practices and improve their operations may be more likely to receive government support via higher climate targets and tax benefits. As governments continue to step in on issues like sewage discharge and mandate inspections with strict requirements, suppliers are forced to take accountability for areas such as waste, energy and chemical usage.

Suppliers who adopt sustainability measures such as shifting to renewable energy will be future-proofing their business, reducing their risks of price volatility and regulatory risks. For example, changing regulations on high carbon energy sources and protection of natural systems such as water and biodiversity, could create penalties for suppliers who have not yet phased out their fossil fuel usage or optimised the energy or water use of their operations. Installing on-site renewables will also help to avoid the market fluctuations of fossil fuels, reducing the operational risks of suppliers' facilities. Therefore, making changes to your business today will reduce the severity of changes required in the face of future regulations or market shocks.

Climate change action can spur innovation, for example leading to new production methods that decrease negative impacts. Finally, with increasing internal and external pressure it is quite likely that suppliers not taking timely action will be left behind by both retailers, stakeholders, and investors, and lose their so-called licence to operate. All these actions can increase the competitiveness of a supplier and create new market opportunities. Therefore by adopting more efficient and cleaner production processes, suppliers can create large financial savings, enhancing their competitiveness, as well as benefiting the lives of its workers and local communities.

Acting on climate change mitigation and adaptation will also result in considerable benefits to society, ranging from reduced air pollution, improving human health, fully decarbonized energy systems and production processes, sustainable and fulfilling consumption patterns, sustainable agricultural practices, addressing biodiversity loss, and creating sustainable cities. Increased transparency and sustainability of operations can help in reducing negative environmental impacts, both locally and globally. Companies who reduce their emissions can help their local communities through reduced air pollution and cleaner effluent. Globally, reducing the fashion industry's emissions will help reduce the dangerous impacts of climate change, such as higher global temperatures, sea level rise and extreme weather events.

General Resources To Get Started

Even for supplier companies in tier 2 of the value chain, it may be worthwhile understanding the broader context around climate for the fashion and textiles industry. Key resources to use as a jumping off point for working on climate in fashion include:

Getting started on climate:

- The Fashion Industry Charter for Climate Action Playbook
- The SBTI Apparel and Footwear guidelines

What is the pathway and progress for the industry:

- Fashion on climate, McKinsey and GFA
- Roadmap to Net Zero Delivering Science-Based Targets in the Apparel Sector, WRI, SAC, Aii (draft)
- Environmental Improvement Potential of Textiles (IMPRO Textiles), European Commission (2014)
- Pulse of the Fashion Industry 2019, BCG on behalf of Global Fashion Agenda (2019)
- State of Fashion 2020, McKinsey on behalf of Business of Fashion (2019)

Best practice case studies:

- Sustainable Action and Vision for a Better Environment, Project Final Report, Puma (2016)

SECTION 1: UNDERSTANDING AND MEASURING IMPACT

Why is it useful to understand and measure impact?

In order to take the most strategic action on your energy use and GHG emissions, it is usually beneficial to first measure, or quantify, your impacts. Particularly for energy use, measuring each on-site activity and the amount of energy being used by that process can help identify quick wins in energy efficiency that can immediately reduce spending. Further analysis into process changes, reduced inputs and lower GHG emissions options can help identify medium term priorities that make business sense. An overall understanding of your resource use will help to identify and prioritise opportunities for performance improvements in your operations, as well as observing any areas that may be susceptible to risks in future. Measuring your impact is also vital to evidencing your company's emissions reductions and other improvements in your operations. Put simply, what gets measured gets managed.

How to understand your emissions and costs

Although many suppliers are already measuring their energy use, this section will outline the measurement boundaries to use when calculating your emissions and the tools available to assist with this. For a tier 2 supplier (e.g. a wet processing facility), scope 1 and 2 emissions can be the majority, and therefore these emissions are covered first, with scope 3 emissions discussed at the end of this document.

When a supplier starts the process to measure its greenhouse gas emissions it first needs to determine the boundaries of what will be measured. GHG emissions are grouped in three emission categories - Scope 1, Scope 2, and Scope 3. These three categories together make up a company's total value chain emissions, or GHG footprint, as it includes the "own operations" – scope 1 and 2 – and the upstream and downstream activities – scope 3. See figure 3 for an overview of scope and categories of emissions (note that this is from a retailer's perspective).

- Scope 1 are emissions for direct energy use by a company or organisation (e.g. direct onsite fuel consumption).
- Scope 2 are emissions from indirect energy use by that organisation (e.g. emissions for grid electricity).
- Scope 3 covers 'indirect' emissions (for tier 2 suppliers this is likely to be significant), further explained at the end of this document.

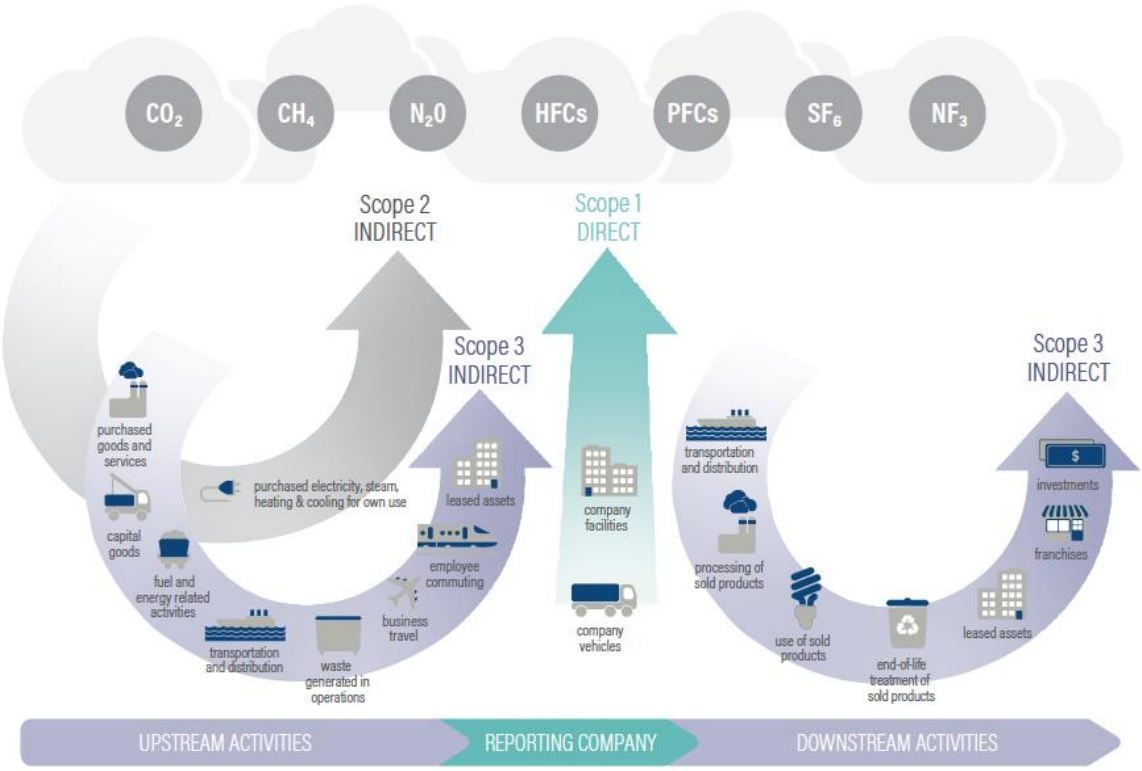


Figure 1: Greenhouse gas scopes and emissions across the value chain. Source: Greenhouse Gas Protocol

In general, suppliers can draw their scope 1 and 2 boundaries around the emissions over which they have control, or energy use for sites they control. For example, scope 1 emissions might be from diesel used for on-site energy generation in their owned and operations, and scope 2 emissions will be from purchased electricity from the grid.

There are several types of greenhouse gas emissions to understand. All greenhouse gases have a different warming potential for the world's atmosphere and are therefore converted into carbon dioxide equivalents (CO2e) when companies calculate their emissions. You should focus to start with measuring the major sources of GHG emissions - and many sites start with CO2 emissions. However if you have the ability to include others and are likely to have sources of other GHG emissions (e.g. refrigerant gases) it may be worth including these from the start.

How to start

There are a variety of approaches used by suppliers to measure (or model) their GHG emissions across all 3 scopes. The most widely-recognised and credible standard for GHG accounting is the Greenhouse Gas Protocol (GHG Protocol).

The GHG Protocol has a number of guidelines and standards for companies to use for measuring and reporting GHG emissions. The basic guide on GHG accounting is the Guide to Corporate GHG Accounting, which provides guidance to companies on how to gather data and measure GHG emissions. There are also additional guidelines specifically on scope 2 and scope 3 emissions, which

we will explore further in the relevant sections below. Even if companies use different standards or guidelines, the recommendation would still be to also align with the GHG protocol guidance.

Other tools that tier 2 suppliers can use for measuring and calculating GHG emissions or structuring their processes include:

ISO14001 management framework
The Higg FEM
CTIC's carbon reporting tool for China
WWF HK LCMP tool
The IFC Edge tool (building only)

More detailed GHG emissions software available includes:
Metrio
EcoDesk
Enablon GHG Emissions Management Software

Measuring scope 1 and 2 emissions

Scope 1 and 2 emissions are relatively straightforward to measure, in that they refer to the direct and indirect energy use of a supplier's own operations. The company itself will therefore have direct access to the energy and fuel data that should be converted into GHG emissions.

For measuring scope 2 emissions, two different approaches exist to calculating emissions, the 'location' and the 'market-based' approach. This is described in the detail in the GHG Protocol Scope 2 Guidance.

To understand how to calculate your scope 1 and 2 GHG emissions, you can ask the following questions:

1) Are you using energy from the grid?

If not, just calculate your on-site energy use (this is scope 1)

2) If yes, are you using any 'improved' energy supply such as a more sustainable energy provider?

If not, use a 'location-based' approach as below

If yes, use the 'market-based' approach as below

Location-based: You use standard grid emission numbers for the country or state where you are consuming energy.

Market-based: You have a specific emissions profile provided by your energy supplier, demonstrating how their impacts are better than the standard grid emissions.

How to calculate your GHG emissions

To convert energy data into GHG emissions, a conversion analysis needs to be carried out based on a number of different factors. In particular, the types and sources of energy used and key conversion factors will help you convert energy use data (e.g. activity data) into GHG emissions.

Conversion factors recommended by the UNFCCC and created by IPCC can be found here, and some industry tools like the SAC MSI and the SAC FEM also embed these emission factors.

Ideally, suppliers should use actual energy use data wherever possible to calculate Scope 1 and 2 emissions. While estimating energy use can help to provide a high-level understanding of emissions and impact, it can become difficult to demonstrate and substantiate impact reductions if estimates are not backed with actual improvements.

Data sources

Data sources for Scope 1 data may include:

- Info on the size of the factory space (in square metres or square feet).
- Actual fuel use data or purchase records (invoices)/use estimates
- Actual refrigerant losses data or modelled estimates.
- Emissions factors.

Data sources for Scope 2 data may include:

- Actual or estimated metre readings or costs from electricity providers.
- Actual or estimated usage or costs from steam providers.
- Renewable energy contractual agreements, energy attribute certificates, etc.
- Emissions factors.

Data sources for Scope 3 data may include:

- Actual emissions data from direct or indirect suppliers or modelled impacts based on typical industry data
- LCA data for raw material inputs (accounting for waste)
- Chemical use data
- Emissions factors

SECTION 2: TARGET SETTING AND REPORTING

This section will describe the basics towards developing GHG emission reduction targets and reporting on your progress. Fashion Pact members are committed to the implementation of science-based targets to achieve net-zero by 2050, and so reporting on your progress is also key to achieving this goal, whether you are a supplier signatory of the Pact or a supplier to a signatory.

Customer requirements

For tier 2 suppliers, your brand customer(s) or immediate supplier customers might want you to set targets for your operations, possibly in line with their own. For these companies, supplier engagement targets can make a bold statement and set the direction for its business units to act. For example, Fashion Pact companies might require their suppliers to set science-based targets, as part of their own commitment to net-zero as mentioned above.

Your brand customer(s) might request that you set targets and report on your progress through an environmental assessment tool, such as the Higg FEM. This tool is a suite of self-assessment tools, with practical, qualitative questions to assess the environmental performance of suppliers. Reporting on your performance through the Higg FEM or equivalent environmental assessment tools, can improve a brand's trust in your operations and provide a standardised set of data to compare your performance against other suppliers. Your independently verified score can also be presented to multiple brand customers with confidence, streamlining the process of finding new business.

Case study:

100% of H&M's tier 1 and strategic tier 2 suppliers are reporting their performance in the Higg FEM tool, as well as over 400 processing factories and fabric mills in their value chain[2].

Environmental management systems

Environmental management systems (EMS) are a common requirement of verifying the environmental performance of your facilities. As well as being tools for guiding your emissions reductions, environmental management systems such as the ISO14001 management framework are also useful mechanisms for reporting on your environmental performance. Verifying your facilities through an environmental management system can demonstrate your compliance with emission reductions practices and strategically communicate this to stakeholders.

Textile mills can obtain and maintain the following certifications:

- ISO 14001 certification for their environmental management system
- ZDHC Chemical Management System
- ISO 50001 Energy Management System

Other tools for validating your facility's environmental performance is through building certifications such as LEED (Leadership in Energy and Environmental Design). This widely recognised certification provides a benchmark through which building owners and operators can verify and communicate their facility's environmental performance. As well as recognising energy efficiency, the LEED certification also covers water savings, materials and resources selection, site development and indoor environmental quality.

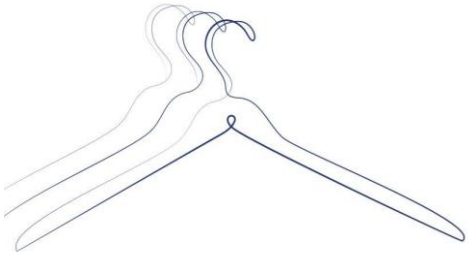
[2] H&M Group, 2018 - https://apparelcoalition.org/2018-higg-facility-modules/

Certifications

As well as providing measurable steps and criteria to improve the efficiency of your facility, certifications can be a well-recognised benchmark to use as a reporting tool. Tier 2 suppliers can utilise certain textile standards that include requirements relevant to a responsible use of water and chemicals, which will also help to lower your energy use.

The following certifications are examples of well-recognised benchmarks that manufacturers along the value chain can work towards:

- Oeko-Tex Standards
- Global Organic Textile Standard (GOTS)
- Bluesign



Targets & Reporting - Resources to use:

- SAC Facility Tools guidelines
- The Fashion Pact - first annual report
- ISO 14001 Environmental Management System
- Oeko-Tex benefits for manufacturers
- Textile Exchange Suppliers Certification Toolkit

SECTION 3: TAKING ACTION - ON-SITE EMISSIONS

While target setting is of vital importance for reasons explained earlier in this document it should not stop suppliers from taking appropriate action in the meantime. **There are significant financial and reputational advantages for suppliers to take immediate action**, as well as numerous environmental benefits. This section will provide examples of what suppliers can and should be doing to address their GHG footprint, using case studies from existing initiatives in the fashion industry.

The easiest way to classify certain activities and measures are via the emission scopes of your company – scope 1, 2 and 3. However, **we would also recommend actions that go beyond emissions**, such as strategy development and collaborations with your brand customers and non-governmental organisations.

Addressing scope 1 and 2 emissions

Scope 1 emissions are direct GHG emissions that occur from sources that are owned or controlled by the supplier company, such as from on-site energy consumption. These exist as scope 3 emissions for fashion brands and retailers. For suppliers, scope 1 emissions are normally the easiest

to address as the facilities are owned directly, and account for a large proportion of a supplier's total emissions.

However, different types of suppliers may require different solutions depending on their processes and/or facilities. The energy requirements and GHG emissions will be different per factory type and even variable between sites, as specific machine selection and setup can affect energy needs and outcomes. The availability of opportunities may also be influenced by a supplier's region or country in which they are located.

Scope 2 accounts for GHG emissions from the generation of purchased electricity consumed by the facility (GHG protocol), for example from the electricity used in a factory or processing facility. The same counts for scope 2 emissions as for scope 1 emissions, in that they are normally easier to address as a supplier has, to some extent, direct control on where they are sourcing electricity from and therefore have a high degree of influence. Similar to scope 1 emissions, scope 2 emissions can account for a significant proportion of a tier 2 supplier's emissions, due to the energy-intensive nature of most production processes. In addition, taking actions to reduce your scope 1 emissions (such as through energy efficiency and energy-saving activities) will reduce the need for electricity, and therefore immediately reduce your scope 2 emissions.

The following are some activities that can and/or should be considered in order to address scope 1 and 2 emissions within tier 2 supplier facilities. These actions will reduce the scope 1 and 2 emissions of that particular facility or installation and will reduce the scope 3 emissions of the fashion brand or retailer. The main solutions for reducing emissions (and costs) consist of energy savings, efficiency increases and renewable energy installations.

As a first step, an energy and GHG emissions assessment should be performed (if not done already) to assess the main energy needs and reduction opportunities in a factory. Installing metering systems to monitor consumption will also help with regular assessments. Benefits of metering include: cost reductions through identification of excess energy and water usage; creating measurement and verification abilities by letting internal teams verify the energy and water savings of an implemented project, and to provide justification for projects; assisting top company management in identifying further investment to continuously reduce cost.

Opportunities for tier 2 facilities to reduce energy consumption and GHG emissions:

General operations	• Turning off machines at the end of the day and when not in use • Setting up automatic turn-off systems for optimising HVAC systems • Investing in environmental management systems and staff training to support impact reduction • Adjusting shifts to maximise utilisation of the production line • Measuring consumption with metres that track water, steam, and electricity consumption in total and at the processes and equipment levels

Lighting efficiency	• Replacing compact fluorescent lamps with LED lamps • Optimising on / off time for lights (including turning off when not in use) • Installing additional light switches for better zonal control • Eliminating double layer lights • Lower the lighting fixture height level • Use of daylight (installation of skylights)
Water efficiency	• Installing condensate recovery systems • Purifying wastewater effluent, e.g. through a membrane separation process, decolorizing process • Specific low- or zero-water technology such as plasma treatment or CO_2 • Use of on-site water recycling systems, such as for cooling water, condensate and process water
Maintenance	• Introduce regular steam trap and leakage check and repair program • Introduce total productive maintenance program • Introduce regular Thermal Imaging Checks Program
Air compressor	• Lower inlet air temperature into air compressors by diverting hot exhaust air outside • Optimise the compressed air distribution piping system • Introduce regular compressed air leakage check program
Boiler / thermal	• Install steam trap on condensate pipe to limit flow of steam for ironing process • Proper insulation for thermal systems (piping, valves and flanges) • Install economizer for heat recovery of exhaust air • Optimization of air-fuel ratio for boiler or oil heater • Heat recovery from hot wastewater • Using alternative high heat source solutions in existing boilers, such as sustainable second generation biofuels • Alternative technologies for heat production such as solar collectors and heat pumps
HVAC	• Install temperature/humidity control for optimising HVAC system

Motors and drives	• Install Variable Speed Drive (VSD) for cooling tower fan to lower fan speed • Install VSD and modulating valve for air handling unit (AHU) • Install VSD for chiller water pumps • Install VSD for condenser water pumps • Install VSD for air compressors • Replace induction motor with servo motor for sewing machines • Replace hydraulic motor with servo motor for cutting machines
Power quality	• Install capacitor bank for power factor correction
Process equipment	• Stenter exhaust heat recovery for air preheating • Dryer control enhancement
Additional opportunities	• Replace manual cutting machines with automatic cutting machines • Low liquor ratio dyeing machines • Replace manual compression moulding machines with by automatic injection moulding for single colour soles • Replace manual buffing machines with automatic machines for flat soles • Reduction, capture and re-use of GHG intensive inputs such as chemicals

Source: UNFCCC Climate Action Playbook and Adidas Environmental Good Practice Guide & Toolkit

Behavioural changes within a factory can also result in energy savings, for example in the way boilers are operated and other machines are optimised, like the simple act of turning off machines and lighting. In some cases, the overall production of a factory can also be optimised to increase production and reduce impacts.

Case study:

Zaber and Zubair (Z&Z) Fabrics Limited of Noman Group, is a continuous/cold pad batch dye house located in Bangladesh. Previously, the facility spent large amounts of money and energy on treating their effluent water, created by its six mercerizing units used to treat fabrics. High quantities of sulfuric acid were required to neutralise the excess caustic acid released in the effluent, creating huge costs for the company and a devastating environmental impact without sufficient wastewater treatment.

With support from PaCT, the company has saved 6.5 million litres of caustic soda annually through recovery and generated around 28 million litres of hot water per year as a by-product, which can

be used in other units. The facility's sulphuric acid consumption has reduced by 57%, all resulting from their installation of two Caustic Recovery Plants. Following a payback period of less than a year, the company is saving US $3.8 million annually through their efficiency improvements[3].

Scope 1 and 2 emissions - Resources to use:

- PaCT programme
- Fashion Industry Charter Playbook - Manufacturing section and table A1, A2 and A3
- Textile Sustainability Hub publications for textile manufacturing
- Apparel Impact Institute
- Clean by design programme for mills
- Environmental Good Practice Guide and Toolkit, adidas (2019)
- WWF Pakistan - Best Management Practices in the Textile Sector of Pakistan (with ROI data)
- Alternative and Emerging Technologies for an Energy-Efficient, Water-Efficient, and Low-Pollution Textile Industry, Ali Hasanbeigi, China Energy Group, Lawrence Berkeley National Laboratory (2015) Clean by Design, Aii / Clean by Design
- Energy-Efficiency Improvement Opportunities for the Textile Industry, Ali Hasanbeigi, China Energy Group, Lawrence Berkeley National Laboratory (2010)
- Supply Chain Guidelines: Vision and Ecodesign Action List, Mistra Future Fashion (2019)
- Environmental Compliance Opportunities in the Bangladeshi Ready-Made Garments Industry: Lessons from the Green High Achievers (Economic Dialogue on Green Growth paper)
- UNIDO Leather Panel - Energy savings in tanneries through solar energy use (solar water heating) and electrical performance improvement
- Environmental Compliance Opportunities in the Bangladeshi Ready-Made Garments Industry: Lessons from the Green High Achievers (Economic Dialogue on Green Growth paper)
- Carbon Trust - HVAC impact reduction
- Carbon Trust - Digital technologies for energy management
- IEA - The Future of Cooling
- IFC edge tool
- World Green Building Council
- Breeam standard
- Leed standard

[3] Partnership for Cleaner Textile - https://www.textilepact.net/wp-content/uploads/2019/11/case-study-on-caustic-recovery-plant.pdf

Renewable energy

Renewable energy can also support the reduction of emissions and costs. In several countries where clothing is produced, renewable energy – mainly rooftop solar PV – is already a cost-effective alternative to other energy sources. If a rooftop is suitable, a solar PV installation can provide a significant part of the electricity use of a factory - reducing its scope 2 emissions and reducing the scope 3 emissions of the fashion brands and retailers that source from this factory. As a first step, it is recommended that suppliers switch to renewable electricity tariffs if these are available in your country. If not, purchasing renewables certificates (see below) should be the second option.

Depending on the context, suppliers may also have access to renewable power purchase agreements (PPAs) in their marketplace, and can use these to source renewable electricity. PPAs are legal contracts (often) with fixed energy prices over a longer period between the factory's company and a seller of renewable energy. The factory's energy can be purchased directly from such a supplier to power their activities and claim the renewable energy to reduce their scope 2 emissions. It is worth noting that power purchase agreements are currently not available in Bangladesh and Turkey, but they are seeing rising use in other major supplier countries, including China, India and Vietnam.

Another option is buying Energy Attribute Certificates (EACs), which allow you claim the emission reductions that are associated with generating renewable energy. In this case a facility or company is not necessarily sourcing any renewable electricity, but it just buys the claim to renewable electricity that is for example generated somewhere in the region - as the credits need to come from the same grid as where the consumption of electricity takes place. Brand companies could also support the purchase of EACs, through incentivising or rewarding purchases. EACs could provide a straightforward and cost-effective way of addressing scope 2 emissions but in certain cases is not the most effective solution as it does not create 'additionality' in bringing more renewable energy into the grid.

Your brand customers may be able to support your use of renewable energy, such as through financial aid or providing technical support. For example, for suppliers wanting to access PPAs, brands could offer their probable higher credit rating to secure more favourable terms for these long-term contracts. Communicating with your customers about possible support opportunities could be a good first step in identifying the options that are available to you.

Case study:

Wuxi Shilead Dyeing Co. Limited in China has installed a 1,98MWp rooftop solar project, reducing an annual 1,755 tonnes of greenhouse gas emissions, along with the reduction of other air pollutants. The 22,000m^2 rooftop solar system can generate 2,133,200kWh electricity each year, with more than 90% of this being used on-site. The project should make a return on investment in less than six years. As a H&M supplier, they were supported by H&M through feasibility studies, project design and implementation[4].

[4] H&M Group, 2018 - https://hmgroup.com/sustainability/leading-the-change/supplier-list.html

Renewable energy - Resources to use:

- RE100
- REBA
- RE-Source Renewable Energy Buyers Kit
- WBCSD guidelines to corporate PPAs
- PPAs vs VPPAS - Schneider Electric

SECTION 4: ENGAGING WITH YOUR SUPPLIERS (SCOPE 3 EMISSIONS)

Measuring scope 3 emissions

Measuring scope 3 emissions is generally more complex and you have less direct access to data on energy used and associated emissions, as you do not own these parts of the value chain. The larger the value chain and the more players active in it, generally increases the complexity, especially to obtain primary data. Scope 3 emissions are important for tier 2 suppliers, as you will likely have many upstream activities in the value chain before materials reach your facilities, increasing the complexity and amount of emissions that can be attributed to your operations. Figure 2 shows the GHG Protocol's description and boundaries of upstream scope 3 categories for retailers, most of which are applicable to tier 2 suppliers. See our other suppliers documents for tier-specific actions to increase efficiency.

Upstream or downstream	*Scope 3 category*
Upstream scope 3 emissions	1. Purchased goods and services 2. Capital goods 3. Fuel- and energy-related activities (not included in scope 1 or scope 2) 4. Upstream transportation and distribution 5. Waste generated in operations 6. Business travel 7. Employee commuting 8. Upstream leased assets

Figure 2: Greenhouse gas scopes and emissions across the value chain. Source: Greenhouse Gas Protocol

Although technically, all downstream impacts for a supplier are in scope for their measurement and reporting of Scope 3 emissions, in reality there are some considerations to bear in mind when drawing the boundaries of what is in scope for your own company.

These considerations include:

- Whether suitable data or calculation methods are available to the company to actually capture those impacts.
- How much reasonable responsibility a supplier can have over certain kinds of downstream impact, in particular in the case where the relative size, resources or positioning of the company makes it inappropriate to consider them responsible for the impacts of another organisation.

For example, tier 2 suppliers might not be able to retrieve data on raw materials due to being so far up the value chain compared to tier 4 material producers. In this case, online tools such as the Higg MSI could be used to model the impacts of raw materials and their manufacturing processes, to help tier 2 suppliers in estimating their scope 3 upstream emissions.

Emissions scope

Similar to calculating your scope 1 and 2 emissions, the energy use in the broader value chain needs to be converted into GHG emissions. Ideally, direct energy usage data can be collected from at least immediate sub-suppliers. You will also need to identify the type of source of energy used, and the energy mix of the relevant national/sub-national grid, to help you convert energy use data into GHG emissions accurately. Another challenge is knowing how much of your suppliers' GHG impact should be attributed to your company. The most accurate option would be to distinguish between energy use for your products versus the products of another customer, however, the reality is that sites are often not equipped to make the distinction in such a granular way.

Emission factor sources

- Raw materials: Higg Materials Sustainability Index (MSI)
- Fuels, vehicles: US EPA Emission Factors
- Electricity: eGRID location-based emission factors for North America
- Electricity: Green-e residual mix emission factors for North America
- Electricity: AIB residual mix emission factors for Europe
- Electricity: IPCC emission factor database
- Wide variety of emission sources: DEFRA

Taking action on scope 3 emissions

Scope 3 emissions are all other indirect emissions related to the activities of a supplier but occur from sources not owned or controlled by the supplier itself. For example, upstream activities such as raw material production and extraction, transportation and fabric processing can make up a tier 2 supplier's scope 3 emissions.

To begin measuring their scope 3 emissions, tier 2 suppliers should start with a high-level screening of purchased goods and services, recognising that there will be double counting with brands (which is an inherent factor in scope 3 accounting). This should help to identify the areas of the value chain where you can influence GHG reductions, and start implementing actions within these areas.

Engaging with sub-suppliers will be key to implementing change within your upstream activities. The two main areas for emissions reductions will likely be your suppliers' energy use and raw materials used. The solutions and case studies mentioned in the scope 1 and 2 sections above could also be replicated for your sub-suppliers' energy use, and options for raw materials are displayed in our tier 4 suppliers package. However, the solutions mentioned here are not exhaustive and their applicability will vary depending on supplier type, geographical location and control over these activities. As a minimum, contacting your suppliers will help to determine which options are a best fit for them.

Changing your raw materials used and production techniques will likely be a significant way to reduce your scope 3 emissions. In some cases, it is worth considering alternative materials including recycled options, and ensuring that these have lower impacts. Scaling up the recycling of (semi-) finished products can also provide a new resource (e.g. recycled fibres) into your suppliers' production system, reducing the need for virgin materials.

In addition, it is recommended that you engage with your brand customer(s) to find out how much control they have over the value chain and reducing its emissions. As all Fashion Pact members have pledged to ensure that 25% of their key raw materials are lower climate impact by 2025, your brand customer(s) will likely be open to discussing their raw materials and the changes that could be implemented. You could also make suggestions to the brand about what steps they can take to help reduce emissions in their (and your) supply chain, such as through implementing water- and energy-saving actions in earlier manufacturing processes like wet processing, and using renewable energy to power these processes.

APPENDIX: KEY TERMS AND CONCEPTS

- Adaptation: Refers to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts.
- Absolute emission reduction target: A target defined by reduction in absolute emissions over time e.g., reduces CO2 emissions by X% below 2018 levels by 2030.
- Avoided emissions: Emission reductions that occur outside of a product's life cycle or value chain, but as a result of the use of that product often in comparison to another product.
- Base year: A historic datum (a specific year or an average over multiple years) against which a company's emissions are tracked over time.
- Bioenergy: Energy derived from any form of biomass such as recently living organisms or their metabolic by-products
- Boundaries: GHG accounting and reporting boundaries can have several dimensions, i.e. organisational, operational, geographic, business unit, and target boundaries. The inventory boundary determines which emissions are accounted for and reported by the company.
- Carbon budget: For a given temperature rise limit, for example a 1.5°C or 2°C long-term limit, the corresponding carbon budget reflects the total amount of carbon emissions that can be emitted for temperatures to stay below that limit. Stated differently, a carbon budget is the area under a carbon dioxide (CO2) emission trajectory that satisfies assumptions about limits on cumulative emissions estimated to avoid a certain level of global mean surface temperature rise.

- Carbon intensity: The amount of emissions of CO2 released per unit of another variable such as gross domestic product, output energy use, transport, or agricultural/forestry products.
- Carbon pricing: The price for avoided or released CO2 or CO2e emissions. This may refer to the rate of a carbon tax or the price of emission permits. In many models used to assess the economic costs of mitigation, carbon prices are used as a proxy to represent the level of effort in mitigation policies.
- Carbon tax: A levy on the carbon content of fossil fuels. Because virtually all of the carbon in fossil fuels is ultimately emitted as CO2, a carbon tax is equivalent to an emission tax on CO2 emissions.
- Circular economy: A circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources and designing waste out of the system. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital.
- Climate finance: Refers to local, national or transnational financing—drawn from public, private and alternative sources of financing—that seeks to support mitigation and adaptation actions that will address climate change.
- Climate resilience: Climate resilience is the ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate. Improving climate resilience involves assessing how climate change will create new, or alter current, climate-related risks, and taking steps to better cope with these risks.
- CO2 equivalent (CO2e): The universal unit of measurement to indicate the global warming potential (GWP) of each of the six greenhouse gases, expressed in terms of the GWP of one unit of carbon dioxide. It is used to evaluate releasing (or avoiding releasing) different greenhouse gases against a common basis.
- Deforestation: Conversion of forest to non-forest.
- Emission factor: A factor allowing GHG emissions to be estimated from a unit of available activity data (e.g. tonnes of fuel consumed, tonnes of product produced) and absolute GHG emissions.
- Emission hotspots: Areas along the value chain where emissions are particularly high or important.
- Emission pathway: The trajectory of annual greenhouse gas emissions over time.
- Energy efficiency: Using less energy to perform the same tasks.
- Global warming potential (GWP): An index representing the combined effect of the differing times greenhouse gases remain in the atmosphere and their relative effectiveness in absorbing outgoing infrared radiation.
- Greenhouse gas: The atmospheric gases responsible for causing global warming and climatic change. The major greenhouse gases are carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O). Less prevalent, but very powerful, GHGs are hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF6).
- Greenhouse gas inventory: A quantified list of an organization's GHG emissions and sources.
- Land use, land-use Change and forestry (LULUCF): A greenhouse gas inventory sector that covers emissions and removals of greenhouse gases resulting from direct human induced land use, land use change and forestry activities.

- Mitigation: In the context of climate change, a human intervention to reduce the sources, or enhance the sinks of greenhouse gases. Examples include using fossil fuels more efficiently for industrial processes or electricity generation, switching to solar energy or wind power, improving the insulation of buildings and expanding forests and other 'sinks' to remove greater amounts of CO2 from the atmosphere.
- Monitoring, reporting and verification: A process/concept that potentially supports greater transparency in the climate change regime.
- Nationally Determined Contribution (NDC): Submissions by countries that have ratified the Paris Agreement which presents their national efforts to reach the Paris Agreement's long-term temperature goal of limiting warming to well below 2°C. New or updated NDCs are to be submitted in 2020 and every five years thereafter. NDCs thus represent a country's current ambition/target for reducing emissions nationally.
- Nature based solutions: Actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.
- Offsetting: the action or process of compensating for carbon dioxide emissions arising from industrial or other human activity, by participating in schemes designed to make equivalent reductions of carbon dioxide in the atmosphere.
- Renewable energy: Energy taken from sources that are inexhaustible, e.g. wind, water, solar, geothermal energy, and biofuels.
- Science-based target: GHG emissions reduction targets are considered "science-based" if they are in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement—to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C.
- Supply chain: The sequence of processes involved in the production and distribution of a commodity.
- Tipping-point: Tipping points are thresholds where a tiny change could push a system into a completely new state and are based on positive feedback loops, whereby an effect of something reinforces the cause.
- Value chain emissions: Emissions from the upstream and downstream activities associated with the operations of the reporting company.

(Sources: GHG Protocol Corporate Standard, IPCC AR5 Report, SBTi Manual, 2050 own definitions)