UK PACT

State Securities Commission of Vietnam

ESG DISCLOSURE GUIDANCE

MANUFACTURING SECTOR

Unlocking Green Finance through Disclosure of Climate-Related Financial Risks

31/07/2025

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The ESG Disclosure Guidance for Manufacturing Sector (hereinafter referred to as the 'Sectoral Guidance') was developed under the Activity 'Unlocking Green Finance through Disclosure of Climate-Related Financial Risks' (the 'Activity'), as part of the UK Partnering for Accelerated Climate Transitions (UK PACT) Program. It was issued by the State Securities Commission of Vietnam to encourage the adoption of sustainable practices and the disclosure of sustainability-related information by manufacturing companies in Vietnam. The guidance also aims to strengthen the capacity of local enterprises to improve access to sustainable finance.

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ACRONYMS AND ABBREVIATIONS

	Abbreviate	English Explaination
	2DS	2 Degree Scenario
A	**WHO**	Artificial Intelligence
	Aii	Apparel Impact Institute
	ASEAN	Association of Southeast Asian Nations
B	**BCP**	Business Continuity Planning
	BOF	Basic Oxygen Furnace
	BSCI	Business Social Compliance Initiative
C	**CBAM**	Carbon Border Adjustment Mechanism
	CCS	Carbon Capture and Storage
	CCUS	Carbon Capture, Utilization, and Storage
	CDP	Carbon Disclosure Project
	CDSB	Climate Disclosure Standards Board
	CEAP	Circular Economy Action Plan
	CFP	Carbon Footprint of Products
	CORE	Committee of Sponsoring Organizations of the Treadway Commission
E	**EAF**	Electric Arc Furnace
	EGD	European Green Deal
	EnMS	Energy Management System
	EPA	Environmental Protection Agency
	EPR	Extended Producer Responsibility
	EPR	Extended Producer Responsibility
	ERM	Enterprise Risk Management
	ESG	Environmental, Social and Governance
	ESPR	Ecodesign for Sustainable Products Regulation
	ESRS	European Sustainability Reporting Standards
	EU	European Union
	EUDR	EU Deforestation Regulation
	EVFTA	EU-Vietnam Free Trade Agreement
F	**FSB**	Financial Stability Board
	FTA	Free Trade Agreement
G	**GDP**	Gross Domestic Product
	GHG	Green House Gas
	GRCF	Green Recovery Challenge Fund
	GRI	Global Reporting Initiative
	GSO	General Statistics Office
	GX	Green Transformation
I	**IEA**	International Energy Agency
	IFC	International Finance Corporation
	IFRS	International Financial Reporting Standards
	ILO	International Labour Organization
	Iodine	Internet of Things

	Abbreviate	English Explaination
	IPCC	Intergovernmental Panel on Climate Change
	IPPU	Industrial Processes and Product Use
	ISPRONRE	Institute of Strategy and Policy on Natural Resources and Environment
	ISSB	International Sustainability Standards Board
	IUCN	International Union for Conservation of Nature'
J	**JRC**	Joint Research Centre
L	**LCA**	Life Cycle Assessment
	LMIC	Lower- and Middle-income Countries
O	**MRSL**	Manufacturing Restricted Substances List
	MSCI	Morgan Stanley Capital International
	NGFS	The Network of Central Banks and Supervisors for Greening the Financial System
	NMFR	Near Miss Frequency Rate
O	**ODS**	Ozone Depleting Substances
	OECD	Organisation for Economic Co-operation and Development
P	**PCF**	Product Carbon Footprint
	PCI	Powdered/Pulverized Coal Injection
	PM	Particulate Matter
R	**R&D**	Research & Development
	REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
	RMSC	Risk Management and Sustainability Committee
	RSL	Restricted Substances List
	RTO	Regenerative thermal oxidizer
S	**SASB**	Sustainability Accounting Standards Board
	SBTi	Science Based Targets initiative
	SBTN	Science Based Targets Network
	SBTs	Science Based Targets
	SCP	Sustainable Consumption Programme
	SDGs	Sustainable Development Goal
	SDS	Sustainable Development Scenario
	SOE	State-owned Enterprise
	SPOC	Single Point Of Contact
	SPP	Solar Power Plant
T	**TCFD**	Task Force on Climate-related Financial Disclosures
	TCFD	Taskforce on Nature-related Financial Disclosures
	TPT	Transition Plan Taskforce
	TRIR	Total Recordable Incident Rate
U	**UAE**	United Arab Emirates
	UK	United Kingdom
	UK FCDO	UK Foreign, Commonwealth and Development Office
	UK PACT	UK Partnering for Accelerated Climate Transitions
	UNEP	United Nations Environment Programme
	UNEP-WCMC	UN Environment Programme World Conservation Monitoring Centre

	Abbreviate	English Explaination
	UNFCCC	United Nations Framework Convention on Climate Change
	UNGP	United Nations Guiding Principles on Business and Human Rights
	UNIDO	United Nations Industrial Development Organization
	USAID	United States Agency for International Development
	USD	United States Dollar
V	**VCCI**	Vietnam Chamber of Commerce and Industry
	VITAS	Vietnam Textile & Apparel Association
	VND	Vietnam East
	VOC	Volatile Organic Compound
W	**WBCSD**	World Business Council for Sustainable Development
	Who	World Health Organization
	WHR	Waste Heat Recovery
	WPP	Wind Power Plant
	WRI	World Resources Institute
	WWF	World Wildlife Fund
Z	**ZDHC**	Zero Discharge of Hazardous Chemicals

INTRODUCTION OF ESG DISCLOSURE GUIDANCE FOR THE MANUFACTURING SECTOR

The guidance on ESG disclosure for the manufacturing sector is implemented within the scope of the "Unlocking Green Finance through Disclosure of Climate-Related Financial Risks" (GRCF) Activity, which is part of the UK Partnership for Climate Transition (UK PACT) Programme by the UK Office for Development and Commonwealth's (UK FCDO), with the aim of providing technical support to the State Securities Commission of Vietnam (SSC) in improving the capacity of domestic listed enterprises to increase access to sustainable financial capital. The Asia Foundation, in collaboration with EY – as the technical support provider, has been selected as the implementation partner.

The ESG Disclosure Guidance for the Manufacturing sector ("Sectorial Guidance") provide guidance and reference materials to encourage and support enterprises in the manufacturing industry in Vietnam in disclosing ESG information. It ensures alignment with both domestic and international regulations, as well as with leading industry practices. The primary users of this Sectoral Guidance are public companies operating in fields classified under Section C – Manufacturing Sector according to Decision No. 27/2018/QD-TTg on promulgating Vietnam standard industrial classification. Other companies within the sector are also encouraged to refer to this Guidance when developing their sustainability disclosures.

The guide consists of 3 main parts:

- Part 1: Context of ESG disclosure for enterprises in Manufacturing sector
- Part 2: Guidelines for ESG disclosure in the Manufacturing Sector
- Part 3: Additional guidance on climate-related disclosure

In each Part, in addition to the content for enterprises in the manufacturing industry in general, to clarify and concretize the guidance, this sector guide will perform an in-depth analysis for two sub-sectors in the manufacturing sector, including:

1. **Textiles, clothing, leather and footwear,** including divisions: (i) 13 – Manufacture of textiles, (ii) 14 – Manufacture of wearing apparel; (iii) 15 – Manufacture of leather and related products.

2. **Iron, steel and their products,** including:

- Division 24 – Manufacture of metals, Group 241 - 2410 - 24100: Manufacture of iron, steel and cast iron and Group 243 – 2431 - 24310: Casting of iron and steel;
- Division 25 – Manufacture of fabricated metal products, except machinery and equipment: includes only the production of products from iron and steel.

according to Decision No. 27/2018/QD-TTg on promulgating Vietnam standard industrial classification

While using the guidance, enterprises may refer to the Handbook on ESG implementation and disclosure ('General Handbook'), which was published under the same GRCF activity. Throughout this document, symbols are used to indicate content related to: (1) specific guidance or additional information, (2) case studies or examples, and (3) topics focused on Diversity and Inclusion, as outlined below.

Symbols used in the document:		
Specific guidance or Additional information 	**Diversity and Inclusion Focus** 	**Case study or Example** 
Information for Iron, steel and their products Sub-sector 	**Information for Textiles, clothing, leather and footwear** 	

Note:

For multi-sector enterprises, depending on stakeholder requirements and the enterprise's reporting objectives and needs, ESG disclosures may need to cover some or all of the company's primary business sectors as stated in its Business Registration Certificate. For disclosures related to activities in the manufacturing sector, enterprises are encouraged to refer to the contents of this Guidance. For disclosures related to other business sectors, enterprises are advised to refer to the General Handbook and relevant sectoral guidance (if available).

PART A: ESG DISCLOSURE CONTEXT FOR MANUFACTURING FIRMS

1. The urgency of enhancing ESG disclosure practices among Manufacturing firms

1.1. Environment and social impact of the manufacturing sector

Manufacturing is one of the main contributors to global GHG emissions[1] – which is generated throughout its supply chain from the material acquisition to the end-of-life stage. According to IRC 2024 report,[2] the industrial manufacturing sector is the second-largest global emitter of CO_2, reaching 23,433 Mt CO_2e in 2023 — a 2% increase compared to 2022 and a 41% increase compared to 2005, second only to the total emissions from the energy industry.

Polluting industries, including those from the manufacturing sector, are becoming increasingly prevalent in lower- and middle-income countries (LMICs) due in part to the globalization of trade, low labour costs and the spread of Western lifestyles. Industrial pollution is also responsible for impacting the health of the general population due to contamination of air, drinking water, soil, crops, livestock, fish and other resources.[3] Along with this, climate change has been found to exacerbate the effects of pollutant exposure in developing countries by increasing concentrations of many chemicals in water, air, and sediment thereby the increasing sensitivity of crops and vegetation as well humans to the adverse effects of industrial pollution.[4] The use of the planet's resources, i.e., land, water and raw materials, and energy – could pose future sustainability problems, owing to increasing competition for these resources between heavy industry, agriculture and energy.[5]

With global value chains and high levels of resource-intensity, manufacturing has a major responsibility for the sustainable development – and is also an important lever in efforts to achieve a more sustainable and environmentally compatible production in the future.[6]

In addition, the manufacturing sector also has a significant social impact. As of 2025, the manufacturing sector is recruiting and providing jobs to 450 million workers globally, playing a key role in both industrialized and developing economies.[7] However, the sector also poses several serious challenges affecting workers and communities, including a high risk of occupational accidents, significant consumption of energy and water, emissions of gases and waste, concerns related to health, livelihoods, and food security, as well as supply chains that release toxic substances and produce substandard products.

Impact of the manufacturing sector on the economy, environment and social in Vietnam

In Vietnam, the manufacturing sector is one of the largest total GHG emissions contributors and has gradually increased in recent years.[8] According to the Ministry of Natural Resources and Environment (now Ministry of Agriculture and Environment), it is predicted that by 2025 and 2030, industrial processes will contribute 116.1 million tons of CO_2e and 140.3 million tons of CO_2e, respectively. In addition, in 2023, the proportion of industrial parks (IPs) and processing zones (PZs) that have been put into operation with wastewater treatment plants which meet environmental standards will reach 92%,[9] and 15% of wastewater discharge cases in excess of the national technical regulations on wastewater coming from industries, etc equivalent to about 0.8 million m3 of wastewater per day from industrial parks.[10] Environmental pollution, including air pollution, is mainly concentrated in old industrial parks that use outdated technology or lack air pollution control systems. On the other hand, newer industrial parks, which benefit from modern technology investment, have better wastewater treatment systems.

The manufacturing sector also has significant impacts on social. According to the 2023 report from the General Statistics Office (GSO), the industrial and construction sectors are attracting up to 17.2 million workers, an increase of 248.2 thousand people, corresponding to a 1.5% increase compared to the previous year.[11] With a large number of workers, the sector has several potential risks of occupational accidents, especially the high risks come from a number of main manufacturing industries including the production of construction materials, metals, textiles, leather and footwear. According to statistics from the Ministry of Labor, Invalids and Social Affairs in 2024, the total number of fatal occupational accidents occurring in the above industries accounts for more than 19% of the total number of cases nationwide.[12]

Impact of the Iron and Steel sub-sector on the Environment and Social

Production of steel is the most energy-consuming and CO2 emitting industrial activity in the world.[13] The steel industry accounts for around 2.8 gigatonnes of CO2 emissions per year, or 8% (10% if indirect emissions from electricity generation are included) of total energy system emissions.[14]

The metallurgical sector, particularly iron and steel production, is a significant source of environmental pollution, impacting air, water, and soil quality. During steel production, both in blast furnaces and electric arc furnaces, large quantities of metallurgical waste are generated. These wastes are often stored in slag dumps near metallurgical plants, causing environmental pollution in all its components: soil, water, and air.[15] Moreover, the steel industry also consumes significant amounts of water and creates substantial volume of wastewater. Most conventional wastewater treatment methods are not sufficient for complete reclamation and remediation of effluents. Air quality is affected by emissions from the handling, heating, and transformation of raw materials. The primary pollutants include dust/particulate matter (PM), sulfur dioxide (SO2), and nitrogen oxides (NOx), along with smaller quantities of dioxins and heavy metals. These emissions have been linked to negative respiratory health effects and environmental damage.[16]

In addition, the production of steel is resource intensive. According to a recent factsheet published by the World Steel Association, the integrated steelmaking route, based on blast furnace (BF) and basic oxygen furnace (BOF), requires, on average, 1,370 kg of iron ore, 780 kg of metallurgical coal, 270 kg of limestone, and 125 kg of recycled steel to produce 1,000 kg of crude steel. On the other hand, on average, the recycled steel-EAF route uses 710 kg of recycled steel, 586 kg of iron ore, 150 kg of coal, 88 kg of limestone, and 2.3 GJ of electricity to produce the equivalent of 1,000 kg of crude steel.[17]

In terms of social impact, ensuring occupational safety in the industry is of utmost importance due to the enormous workforce and unique risks associated with the sector. Unique risks associated with the steel industry might include (non-exhaustive): High risk of accidents from the operation of heavy machinery, working with molten metals and high temperature processes increases the risk of burns and fire hazards for workers, the use of various chemicals in the manufacturing process can lead to health risks.

Impact in Vietnam

According to worldsteel, Vietnam ranked 12th in the top 50 largest crude steel-manufacturing countries globally and 1st among ASEAN countries in 2023, up 13 levels in 7 years from 26th place in 2014[18]. Besides, Vietnam was the 7th steel importer with an output of 17.2 million tons and the 9th biggest exporters of steel with an amount of 13.4 million tons by 2024[19]. The overall scale of the Vietnamese steel industry accounted for approximately 5% of Vietnam's GDP during the period 2016-2020[20]. In Vietnam, the steel industry has an impact on several of the environment and social aspects:

- GHG emissions projected that emissions would increase by an average of 9% from 2016 to 2030, rising from 178 million tons of CO2 in 2015 to 646 million tons in 2030, and further to an estimated 1,388 million tons by 2050[21]. The steel industry is responsible for 17% of the national emissions [22] and 45% of industrial processes (as identified in the national climate change strategy)[23].
- According to the announcement by the Ministry of Labor, Invalids and Social Affairs on April 6, 2022, the Mechanical Engineering and Metallurgy industry accounted for 6.19% of the total number of occupational accidents and 5.98% of the total number of fatalities.[24]

Impact of the Textiles, clothing, leather and footwear sub-sector (TCLF) on the Environment and Social

Fashion is the second most polluting industry in the world, coming just after oil and gas industry.[25] The TCLF industries contribute 6-8% of global carbon emissions,[26] which could rise to 26% by 2050,[27] with the industry's CO_2 emissions expected to rise to nearly 2.7 billion tonnes per year by 2030.[28] Scope 3 emissions account for a significant portion of the DMDG industry's emissions. The World Research Institute (WRI) and Apparel Impact Initiative (Aii) estimate that 96% of emissions across 30 brands with approved Science-Based Targets (SBTs) fall under Scope 3.[29] At global level, the textile, garment and footwear is facing difficulty to cope with its impacts, including significant natural resource use and pollution, with 215 trillion litres of water consumed per year[30], and 8% of annual microplastic tosses to oceans.[31] Many materials used in the process of creating textile products such as heavy metals, flame retardants, ammonia, etc. are toxic chemicals to environment and human health. Chemicals used in textile dyeing enterprises are estimated at 500-2,000kg/ton of products. The fashion industry also is a major player in deforestation and soil degradation[32] – Approximate 300 million trees are cut down annually for production for the textile industry.[33]

Socially, the textiles sector is the third largest employer worldwide, after food and housing. Most production takes place in Asia, where low production costs come at the expense of workers' health and safety. Women are particularly vulnerable as they represent an average of 68% of the garment workforce, and 45% of the overall textile sector workforce.[34]

The textile industry supply chain is characterised by low wages and poor working conditions, which have the injury rate of 5.6 injuries per 1000 workers each year.

Impacts in Vietnam

According to the World Economic Forum, the annual carbon emissions in the textile, garment and footwear industry alone in Vietnam account for about 5% of the total global carbon emissions.[35] According to the Vietnam Textile and Apparel Association (VITAS), Vietnam's textile and garment industry is spending about 3 billion USD per year on energy consumption and accounts for about 8% of the energy demand of the entire Vietnam's industry, emitting about 5 million tons of CO2 per year.[36]

In addition, in Vietnam, the rapid development of industrial parks without effective management plans can increase the level of impact on the environment, especially water pollution, emissions, waste and greenhouse gas emissions, affecting the sustainable development of industrial parks in Vietnam.[37]

Socially, TCLF industries' common characteristic is labor-intensive. In Vietnam, the TCLF industries create jobs for 4.3 million workers, accounting for 30% of industrial and construction workers and 10% of the country's total working-age workers.[38] The leather and footwear industry needs more than 1.4 million workers, accounting for over 18% of the TCLF industries.[39]

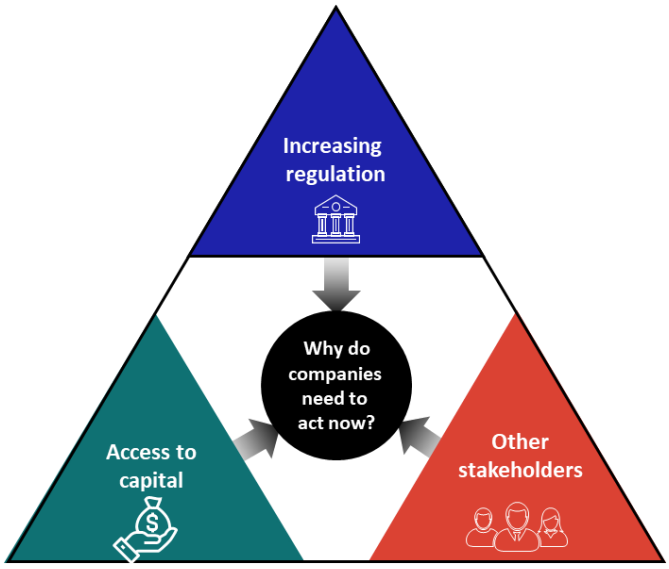
Due to the specific nature of work in the textile industry requiring meticulousness and ingenuity, the proportion of female workers is higher than male workers (female workers account for 73.80%). According to a study by the Ministry of Labor, War Invalids and Social Affairs (MOLISA), for every 1 billion USD value of Vietnamese textiles and garments exported, about 100,000 additional direct and indirect jobs will be created, of which about 50,000 people directly work in textiles.[40]

The TCLF sector is considered one of the industries with the highest risk of labour accidents and serious incidents in Vietnam. In 2024, the TCLF sector accounted for nearly 3.5% of the total number of accidents and 2.62% of the total number of deaths due to occupational accidents. In Vietnam, the industry also faces the risk of labour rights violations, including forced labour, child labour and child slavery.[41]

1.2. Stakeholder requirements for sustainability disclosures in the Manufacturing sector

The significant environmental and social impacts of the manufacturing sector, along with the escalating severity of climate change, have led to increasing pressure from stakeholders—including customers, investors, lenders, and regulatory bodies—urging manufacturing enterprises to assess and disclose their performance in implementing sustainable development. Disclosure of sustainability-related information is also a prerequisite for companies to be included in global rankings and credibility assessments, participate in global supply chains, and meet criteria for sustainable financial incentives.

Figure 1: Drivers for the manufacturing industry to practice and disclose information on sustainable development



Currently, national and regional regulations and voluntary standards from global organizations are becoming increasingly numerous and demanding—particularly in key markets for Vietnam such as the EU, the United States, and South Korea. These regulations are placing pressure on manufacturing enterprises to transform their operations toward sustainability and to disclose their environmental and social performance. Failure to perform will incur high costs - fines, penalties, local unrest and customers leaving. For example, an increasing number of major corporate purchasers require their downstream suppliers to meet certain sustainability thresholds. 330+ CDP Supply Chain members – purchasing organizations – are engaging over 47,000+ suppliers on environmental issues, requesting their key suppliers to report environmental data through CDP's questionnaires.[42] Manufacturing companies that are not compliant with these requirements may risk losing their preferred supplier status. Pressures from regulatory bodies are also increasing and their mandates are becoming more complex. National, regional, and global regulations and voluntary standards are pressing manufacturers to rethink and transform their sustainability operation and disclose their environmental performance. In addition, social pressures to show good stewardship are mounting in the form of customer demand and investor interest - financial institutions are increasingly factoring ESG metrics into their decision-making.[43]

EU's sustainability-related regulations

The European Green Deal (EGD), approved on January 15, 2020, is a comprehensive and long-term program of the European Union (EU) aimed at tackling climate and environmental-related challenges through to 2050.

To implement the EGD, the EU has been developing various specific strategies, programs, action plans, policies, and legislation across nearly all economic sectors.

With the green policies in the European Green Deal identified so far, the following Vietnam's exporting sectors are expected to be severely affected by the green transition in the EU market in the coming time: (i) Electrical, electronics, information technology products, machinery, equipment, and related components; (ii) Agricultural products (especially coffee, cashews, pepper, cocoa, meat, etc.), seafood, wood and wood products; (iii) Foods of all kinds (especially organic foods); (iv) Textiles and footwear; (v) Chemicals, fertilizers, batteries; (vi) Iron and steel, aluminium, cement; and (vii) Product packaging (especially packaging of food and chemicals, etc.).

Key policies and strategies in the EGD that directly impact Vietnam's exported goods are listed in table below. A detailed description of each policy/strategy is also included.

Table 1: Key policies and strategies directly impacting Vietnam's exports

No.	Policy/Strategy	Industries impacted	Key impacts
1	"Farm to Fork" Strategy	Agricultural and food manufacturing industry	Impose stricter standards, requiring significant investment in sustainable practices, technology, and compliance with new health, safety, and labeling requirements.
2	Circular Economy Action Plan (CEAP)	Textiles and apparel, footwear, food products, electronics, cosmetics, toys, detergents, baby/childcare products, furniture, and other such items.	Necessitating sustainable production changes and compliance with new regulations, potentially increasing costs but also opening market opportunities and enhancing competitiveness.
3	Carbon Border Adjustment Mechanism (CBAM)	Iron & steel, cement, fertilizer, and aluminum manufacturing industries	Impose additional reporting and potential tax burdens on Vietnamese manufacturing, increasing production costs and potentially affecting competitiveness to comply with emissions regulations.
4	Biodiversity strategy	Livestock, cocoa, coffee, rubber, palm oil, soybeans, wood and products made from these items (leather, chocolate, furniture, etc.).	Increased procedures, the need for a "due diligence" statement to help confirm that exported products are not associated with deforestation or forest degradation.

EU's Carbon Border Adjustment Mechanism

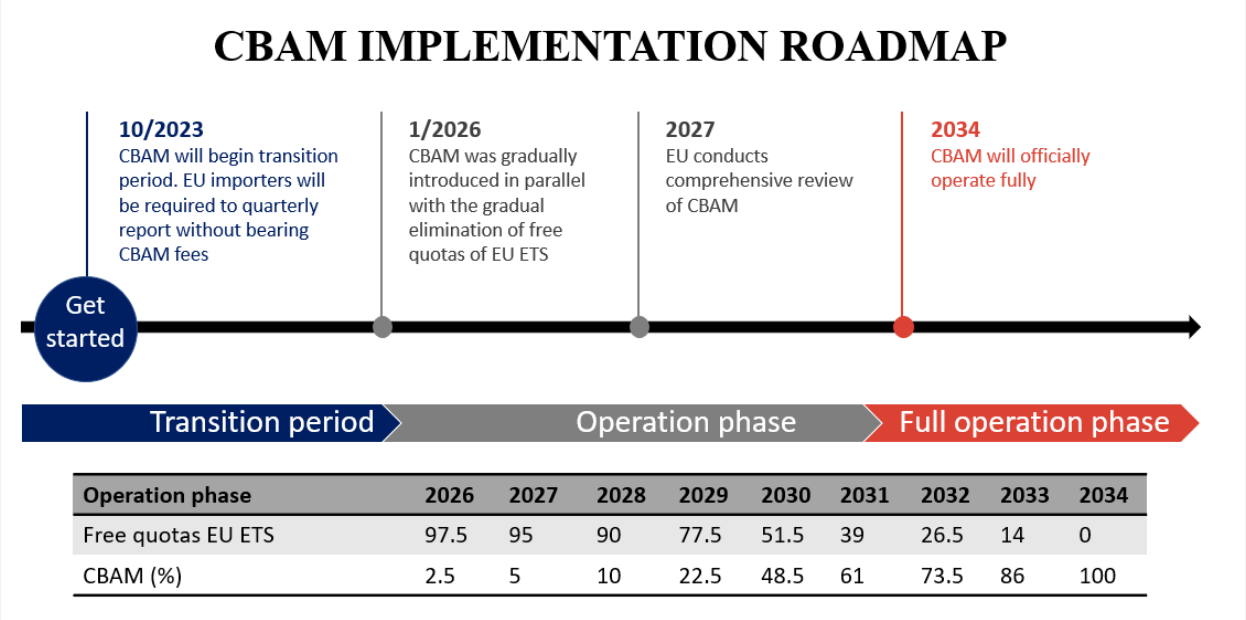
The EU's Carbon Border Adjustment Mechanism (CBAM) is the EU's tool to put a fair price on the carbon emitted during the production of carbon intensive goods that are entering the EU, and to encourage cleaner industrial production in non-EU countries.

The CBAM underscores the urgency for exporting nations to EU to comply with emissions standards and align their production processes with stringent environmental standards to maintain access to the European market. Approximately 13.8 per cent of Vietnam's export turnover being in carbon-intensive goods directed to the European market, the application of the CBAM will substantially affect Vietnam's exports.[44]

CBAM has a direct impact on the four main industries of Vietnam, namely iron and steel, cement, fertiliser, and aluminium with the export value to EU as below (numbers are 2017-2021 average):[45]

- Iron & steel: ~1.1 billion USD (12% of total Vietnam steel export value)
- Aluminium: ~ 48 million USD (7% of total Vietnam aluminium export value)
- Fertiliser: small export quantity (~0.2 $ mil/year)
- Cement: ~ 12 million USD (1% of total Vietnam cement export value)

Figure 2: CBAM implementation roadmap[46]



Operation phase	2026	2027	2028	2029	2030	2031	2032	2033	2034
Free quotas EU ETS	97.5	95	90	77.5	51.5	39	26.5	14	0
CBAM (%)	2.5	5	10	22.5	48.5	61	73.5	86	100

CLIMATE-RELATED DISCLOSURES

As the global economy moves toward carbon reduction and transitions to a low-carbon model, manufacturing businesses will face transition risks, especially in industries such as steel, cement, plastics, and ammonia, due to their significant reliance on carbon intensive activities that are difficult to decarbonize. Besides, the manufacturing sector also faces increasing policy pressure as governments around the world are adopting carbon pricing mechanisms to limit industrial emissions. Operational improvements and technological innovations will also reduce the market share of traditional manufacturing enterprises if alternative low-carbon solutions are not implemented. At the same time, as awareness of climate change grows, manufacturing businesses are also at risk of legal and reputational damage.

Physical risks are also a major concern for the industry, as efficient operations within complex supply chains depend heavily on the stability of climate conditions. As extreme weather events increase in both frequency and severity, the physical impacts of climate change will make current manufacturing activities more challenging and risk-prone.

Therefore, manufacturing enterprises need to prioritize climate response actions, in which the implementation of climate-related disclosure is the main factor driving their actions. Businesses cannot reduce greenhouse gas emissions or build resilience to the impacts of climate change without accurate information about the sources of emissions and the climate risks that occur in their businesses. Information transparency is also an important tool to ensure businesses are accountable for the climate goals they have set and committed. In addition to ensuring compliance with legal regulations, the disclosure of climate information also helps identify potential risks for the Board of Directors to proactively respond to. The availability of climate-related information also meets the needs of investors, helping them make capital allocation decisions that align with climate risks and protect the value and returns of both investors and their entrusted stakeholders.

The Financial Stability Board's (FSB) Task Force on Climate-related Financial Disclosures (TCFD) report [47] on the progress of climate-related reporting based on its 11 recommended disclosures highlights several manufacturing sectors considered to be at high risk from climate-related impacts, including Materials & Construction, Agricultural, Food and Forest Products, Technology & Media, and Consumer Goods. The report shows that in 2022 and 2023, climate-related disclosures across all sectors have improved, but further enhancement is needed. The most significant increase in TCFD-aligned reporting was observed in the Technology & Media sector, which previously had a relatively low reporting rate.

Table 2: Progress of reporting practice according to the recommendations of the TCFD of the surveyed enterprises

Out of a total of 11 information disclosure recommendations of the TCFD, enterprises in the Materials and Construction industry have made an average of 4.3 disclosures (second only to the Insurance and Energy industries in 2023); technology and communication enterprises, consumer goods, on average, the least announced in the sectors.

Table 3: Average number of recommended disclosures per company for fiscal year 2023, by industry

Industry	Number of disclosures
Materials and buildings	4.3
Agriculture, food and forest products	4.1
Technology and media	3.7
Consumer goods	3.6

At the same time, manufacturing companies in various sectors are reporting more on climate-related metrics and targets, including greenhouse gas (GHG) emissions disclosures and Board and Executive oversight, compared to other recommended disclosures under the TCFD framework.

Table 4: Disclosure by industry for fiscal year 2023

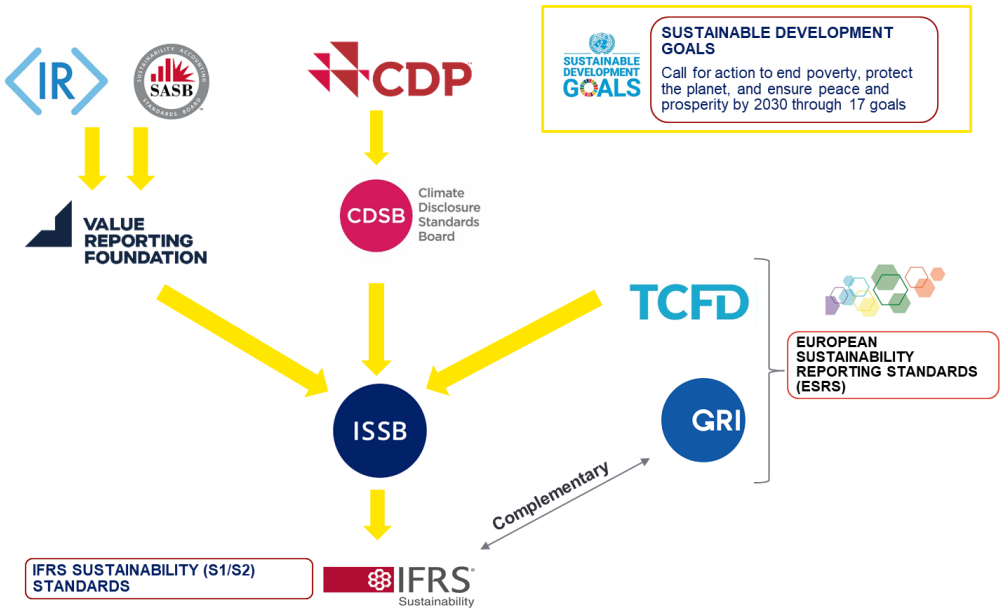
Percentage of companies					
Recommendation	**Recommended disclosure**	Materials and buildings (1,398)	Agriculture, food and forest products (288)	Technology and media (364)	Consumer goods (394)
Governance	a) Board oversight	54%	51%	55%	48%
	b) Management's role	33%	33%	25%	27%
Strategy	a) Risks and opportunities	37%	33%	25%	35%
	b) Impact of risks and opportunities on company	40%	39%	34%	31%
	c) Resilience of strategy	11%	13%	7%	8%
Risk management	a) Risk identification and assessment processes	27%	26%	23%	22%
	b) Risk management processes	33%	31%	33%	24%
	c) Integration into overall risk management	15%	14%	13%	14%
Metrics and targets	a) Climate-related metrics	57%	51%	48%	49%
	b) GHG emissions	66%	62%	60%	58%
	c) Climate-related targets	54%	59%	49%	48%

2. Global sustainability disclosure context

ESG disclosure frameworks and standards

IFRS has affirmed the urgency of establishing a global sustainability reporting framework to form a comparable, consistent and reliable reporting system.[48] Accordingly, the International Sustainability Standards Board (ISSB) - IFRS is currently working to provide a common global basis for the disclosure of sustainable development information. Since 2024, IFRS has taken over the responsibilities of the TCFD in overseeing climate-related reporting. When selecting ESG frameworks and standards for developing and disclosing ESG reports, enterprises need to consider the purpose of the report, its intended users, and the regulations in the countries where they operate, in order to choose one or more appropriate standards.

Figure 3: Sustainability Reporting Standards



At the same time, efforts are being made globally to develop specific guidelines for the manufacturing sector and its sub-sectors, with several adjustments and changes as outlined below.

Table 5: The development of specific guidelines for the manufacturing sector and sub-sectors

Sustainability reporting Framework and Standards	Recent adjustments and changes
GRI	• GRI is prioritizing the development of specific Standards for the Industrial and Metal Processing industries – including iron and steel production.[49] • The TCLF sub-sector standard will be developed and issued by GRI in the next industry standard, in the period from 2024 to 2026.
IFRS Sustainability	• The International Sustainability Standards Board (ISSB) has released Industry-Based Guidance on the Implementation of Climate-Related Disclosures, along with IFRS S2 standards, to propose indicators that businesses can use to identify, measure, and disclose information about climate-related risks and opportunities. [50] In addition, more and more economies and financial systems recognize biodiversity as a systemic risk. In April 2023, the International Standards for Sustainable Development (ISSB) announced a plan to consult additional standards related to biodiversity, ecosystems, and ecosystem services in accordance with the recommendations of the Task Force on Nature-Related Financial Disclosures (TNFD)[51] published in September 2023. The Natural Risks and Biodiversity Dataset, developed by S&P Global Sustainable in partnership with UNEP-WCMC, has been introduced to support reporting in line with TNFD's recommendations. If the new TNFD recommendations are also applied as the TCFD, TNFD may become a mandatory element of reporting and disclosure. • In April 2024, in its 2024-2026 plan, ISSB announced that it will start implementing research projects on risks and opportunities related to biodiversity, ecosystems and ecosystem services to assess investors' information needs for these risks and opportunities to assess the development potential of businesses. This could be a sign for the ISSB to

Sustainability reporting Framework and Standards	Recent adjustments and changes
	develop the next IFRS S3 guidance standard on Biodiversity, Ecosystems and Ecosystem Services. • The recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) have been integrated into the ISSB's IFRS standards, in response to the growing demand from investors and financial markets for useful, comparable, and reliable sustainability information.[52,53]

TPT Transition Plan Taskforce	• The TPT's Disclosure Framework provides recommendations for enterprises by sector, including the manufacturing sector, to come up with credible and comprehensive transition plans by focusing on five key elements: foundation, implementation strategy, engagement strategy, metrics & targets, and governance.
	  ◦ In 2024, to supplement its Disclosure Framework, TPT has also issued industry-specific guidance, which includes Industrials, Apparel, Accessories & Footwear and Iron & Steel Producers.[54]
	  ◦ Since June 2024, IFRS has been responsible for managing the specific disclosure documents developed by the TPT, ensuring these standards are integrated into global financial reporting activities.

ESRS	• ESRS E1-1 (Climate Change Mitigation Transition Plan) of ESRS E1 (on climate change)[55] requires enterprises, including manufacturing enterprises, to disclose their transition plans to mitigate climate change and the purposes of the disclosure.
SCIENCE BASED TARGETS DRIVING AMBITIOUS CORPORATE CLIMATE ACTION	• SBTi has been developing its own guidelines for each manufacturing industry. • In September 2023, the SBTi issued its own guidance for the Steel industry and related documents.[56] • In June 2025, WRI and Apparel Impact Institute issued official guidelines for the TCLF industry during a workshop in Barcelona.[57]

3. Sustainability disclosure context in Vietnam

For the manufacturing sector, the Vietnamese government's strategic viewpoints include:

- To develop industry based on green growth, sustainable development and environmental protection, with the direction that Vietnam's industrial sector will develop to be environment-friendly and green, focusing on industrial production fields with advanced technologies, industrial products with prestigious trademarks and high quality.
- Synchronize industrial, energy, and trade policies with other policies to establish necessary and sufficient conditions for implementing sectoral restructuring, including finance, currency, investment, science and technology, education and training, transportation, construction, integration, social welfare, environmental protection, and enforcement of commitments at COP26 on climate change and other policies.

In 2023, Vietnam gradually implemented the strategic goals of Vietnamese Government in establishing the foundation for continued substantial and robust development of the industrial sector. Notable achievements include the National Power Development Plan, the Infrastructure Plan for petroleum supply and reserves, the Comprehensive National Energy Plan, and the Exploration, Exploitation, and Processing Plan for mineral resources, all of which were approved by the Prime Minister.[58] The Ministry of Industry and Trade (MOIT) will focus on completing the implementation plans for the four national sectoral plans on energy and mineral resources, and other regulations that will significantly impact business production and operation, such as the Law on Development of Key Industries, the Chemical Law (amendment), the Electricity Law (amendment), and

policies regarding rooftop solar power, direct power purchase, and pricing frameworks for various types of energy.

The Sustainable Consumption and Production (SCP) National Program is considered one of the crucial pillars being implemented by the Ministry of Industry and Trade to achieve the target of zero emissions by 2050, as committed by the Vietnamese Government at COP26. Circular economy plays a vital role in successfully implementing the National Action Program on Sustainable Consumption and Production. It is also one of the development orientations for the country during the period 2021-2030, as recognized in the documents of the 13th National Party Congress: "Building a green, circular, and environmentally friendly economy".[59]

Consistent with the national direction on sustainable development, in order to improve the responsibility and transparency in the implementation and sustainable practices of enterprises, Circular No. 96/2020/TT-BTC providing guidelines on disclosure of information on securities market has set out a number of requirements for sustainability disclosure in the Annual Report for public companies, including:

STT	Topic	Disclosure Requirements
	General Information	
	Development direction	• Sustainability goals (environmental, social and community) and key programs related to the Company's short- and medium-term
	Corporate Environmental and Social Impact Report	
1.	Impact on the environment	• Total direct and indirect GHG emission • Measures and initiatives to reduce GHG emission
2.	Management of raw materials	• The total amount of raw materials used for the manufacture and packaging of the products as well as services of the organization during the year • The percentage of materials recycled to produce products and services of the organization
3.	Energy Consumption	• Direct and indirect energy consumption • Energy savings through energy efficiency initiatives • Energy efficiency initiative reports (providing energy-efficient or renewable energy products and services); Report on the results of these initiatives
4.	Water consumption	• Water sources and water usage • Percentage and total amount of recycled and reused water
5.	Compliance with the law on environmental protection	• Number of times the company is fined for failing to comply with laws and regulations on environment • The total amount to be fined for failing to comply with laws and regulations on the environment

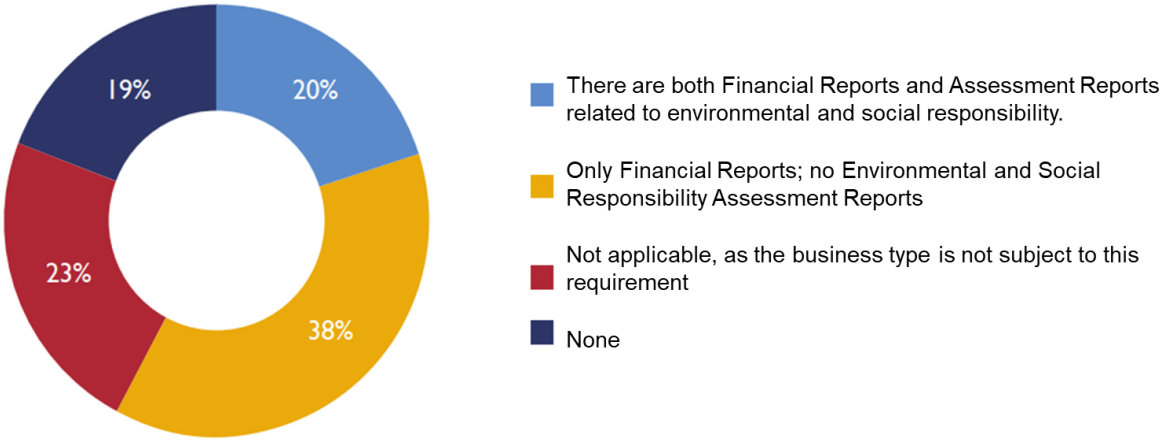
6.	Policies related to employees	• Number of employees, average salary for employees
		• Labor policy to ensure the health, safety and welfare of employees
		• Employee training activities:
		  ◦ Average number of training hours per year, by employee and by employee classification
		  ◦ Continuing learning and skills development programs to support workers in securing employment and career development

7.	Reporting related to responsibility to local communities	• Community investment and other community development activities, including financial support to serve the community
8.	Report on green capital market activities under the guidance of the SSC	

Regarding the environmental and social impact report, public company can choose to include it in the annual report or develop a separate sustainability report. At the same time, the Circular also encourages businesses to apply international reporting standards in developing sustainability reports.

Current state of sustainability disclosure of manufacturing enterprises in Vietnam

This challenge stems from the fact that awareness and practice of ESG reporting among businesses in Vietnam are still in the early stages of development and require support and encouragement for improvement. According to a survey conducted by the Agency for Private Enterprise Development and Collective Economy (APED), under the Ministry of Planning and Investment (now the Ministry of Finance), between May and July 2024, as part of a report on sustainable business practices,[60] ESG remains a relatively new concept—especially for small, medium, and micro-sized enterprises. Of the 1,019 enterprises participating in the survey, 55% of enterprises have never heard of the concept of "ESG" (although they may have practiced on environmental, social, and governance topics), at the same time, only 5% of enterprises have a plan and are actively implementing ESG in a structured approach. In terms of reporting practices, across the country, up to 42% of businesses do not have financial reports or assessments related to environmental and social responsibility. Among them, 19% of businesses fail to produce such reports despite being part of the group required to do so.



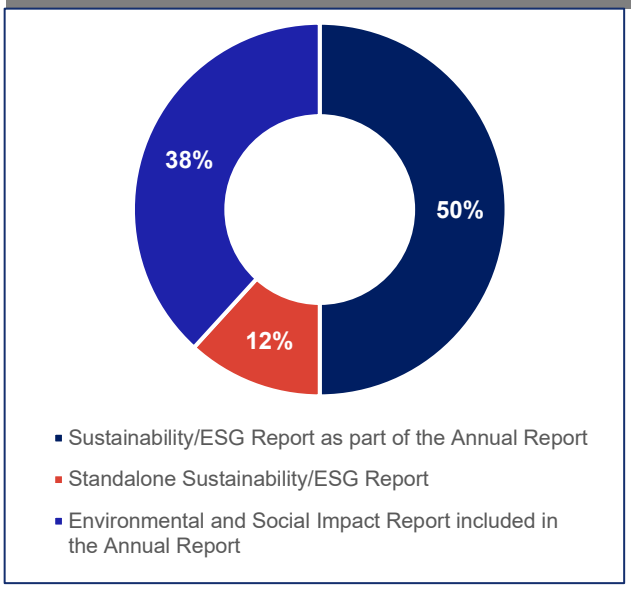
APED's survey report also provides an overview of the classification of ESG practices of enterprises in the manufacturing industry as follows:

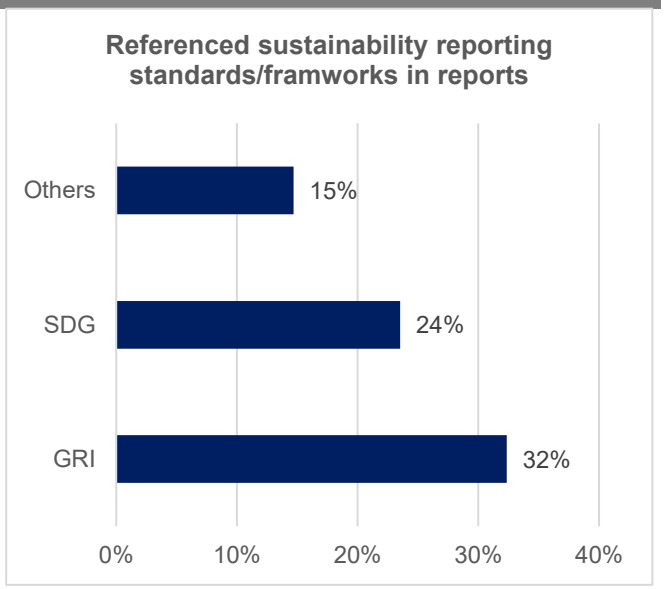
- The percentage of enterprises rated A (evaluation score of over 80%) - are pioneers in ESG practices reaching 15%.
- 67% of enterprises in this sector achieve rated B (assessment score from 50-80%) - showing strong potential for ESG practices if sector-specific challenges are addressed.
- The remaining 18% of enterprises rated C (assessment score of <50%) when as most had not implemented or had very few ESG-related activities or solutions.

Among enterprises in the Manufacturing Industry, about 57% of enterprises do not have or lack ESG information, and about 49% lack ESG introduction and training programs, leading to difficulties in publishing and reporting ESG practices.

In addition, according to 2025 statistics from the UK PACT project team's research covering 120 enterprises in the top listed enterprises with the largest volume of stock listing/registration on HOSE and HNX, out of 34 manufacturing enterprises, 62% of enterprises have developed a sustainability/ESG reports and 12% of enterprises have published standalone sustainability/ESG reports. GRI is the most commonly referenced ESG reporting standard among manufacturing enterprises, with a rate of 32%. In addition, some manufacturers also refer to other standards/reporting frameworks such as SASB's sectoral reporting framework, IFC's reporting framework or the Dairy Sustainability Framework. Among these enterprises, none of them have implemented a report under the TCFD on disclosure of climate-related information.

Statistical results of sustainability/ESG reporting practices of 34 manufacturing enterprises in 2025

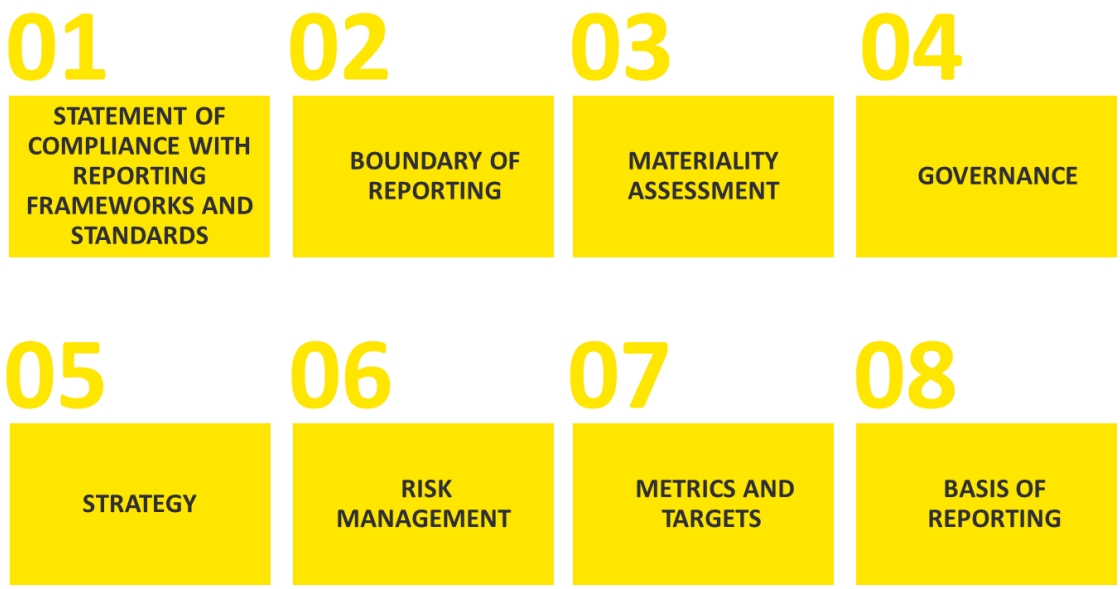




PART B: GUIDELINES FOR ESG DISCLOSURE IN THE MANUFACTURING SECTOR

The Handbook on ESG Implementation and Disclosure ('General Handbook') has provided guidelines for developing sustainability-related disclosure according to 8 elements as follows.

Figure 4: Sustainability Report Structure



Enterprises should refer to the guidance provided for each disclosure element in the General Handbook, and combine it with the additional instructions outlined in this sector-specific guide for elements that are unique to the manufacturing sector, including:

- Materiality assessment
- Governance
- Strategy
- Risk Management
- Metrics and targets

The instruction in each element will include:

- Element disclosure requirements – as outlined in the General Handbook
- Additional specific guidelines for manufacturing firms on disclosure requirements
- An illustrative example of disclosure

Note:

- Sustainability-related disclosure in accordance with the contents of the General Handbook and sectoral guidance ensures compliance with legal requirements on sustainability reporting. Enterprises may refer to the comparison of disclosure requirements between regulations and the recommendations provided in the General Handbook/sectoral guidance - outlined in Part 3, Section 3 of the General Handbook, for each disclosure element.
- Depending on disclosure approach, enterprises may choose between developing a standalone sustainability report or integrating it into the annual report/governance report, aligning with the specific requirements of the enterprises and its stakeholders and ensuring the completeness and linkage of the published contents. Accordingly, enterprises should pay attention to ensuring the following principles – which have been explained in detail in the General Handbook – Part 3, Section 2.

Guiding Principles for sustainability reporting

Principles for defining report content	Principles for defining report quality
• Strategic and long-term focus • Connectivity of information • Stakeholder inclusiveness • Materiality and relevance • Completeness	• Accuracy and precision • Balance • Clarity • Comparability • Reliability • Timeliness

1. Materiality assessment

GENERAL REQUIREMENTS FOR ESG DISCLOSURE

Elements	Content

Materiality assessment	• A list of material sustainability-related matters.
	• A descriptive process of coming up with this list (identifying, prioritising and shortlisting matters), including stakeholders' engagement i.e., who is held responsible, accountable, consulted, or informed on the process.
	• A description of processes in place to manage these matters, including:
	  • describe the actual and potential, negative and positive impacts on the economy, environment, and people, including impacts on their human rights through its activities or as a result of its business relationship. Report whether the organization is involved with the negative impacts
	  • describe its policies or commitments regarding the material topic;
	  • describe actions taken to manage the topic and related impacts and track the effectiveness of the actions taken, goals, targets, and indicators used to evaluate progress, lessons learned, including:
	  i. actions to prevent or mitigate potential negative impacts;
	  ii. actions to address actual negative impacts;
	  iii. actions to manage actual and potential positive impacts;
	• describe whether and how affected stakeholders have been involved in determining an appropriate remedy for a negative impact or how stakeholder feedback is used to assess the effectiveness of the actions taken.

GUIDANCE ON DEVELOPING DISCLOSURE CONTENT ON MATERIALITY ASSESSMENT MANUFACTURING SECTOR

The methodology for developing a list of material sustainability-related topics has been described in detail in the General Handbook, section 2 – section 2.1.2 ESG Materiality Assessment. For manufacturing enterprises, some additional considerations in the steps for material topic list development include:

Step 1: Establish purpose and scope of materiality determination process:

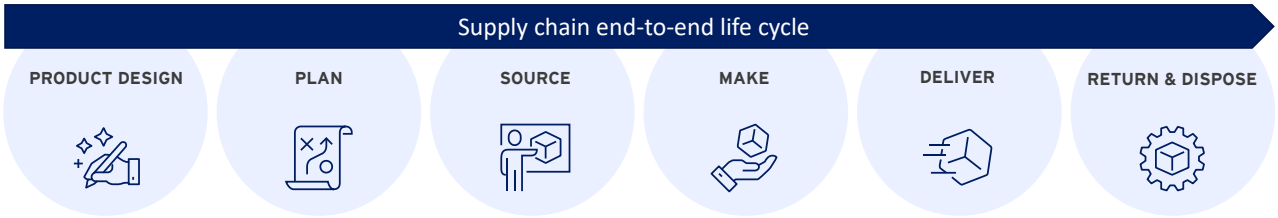
- **Value chain and Business activities**

To pinpoint material sustainability issues, the organisation firstly should establish an initial scope overview of its business operations. This includes:

- entities, business activities, business relationship and sustainability context;

- the full spectrum of activities across the supply chain to identify material sustainability issues at each phase of a product's life cycle. This includes assessing inputs, outputs, main activities, and the environmental and social impacts at each stage.

Figure 5: Supply chain end-to-end life cycle



- **Stakeholder engagement**

It is essential for the organization to actively engage with its major stakeholder groups to understand their key concerns, which is essential for material matter identification. The range of stakeholders will vary based on the company's specific business model and unique characteristics. For manufacturing sector, these groups might include:

- entities along the value chain (e.g., investors, suppliers, customers, etc.);
- industry peers (e.g., membership bodies, industry associations);
- governments, public sector organizations (e.g., regulators), local communities, and civil society; and
- internal stakeholders (e.g., workers, contractors, etc.).

Step 2: Identify potential topics

To identify potential topics, manufacturers need to consider the context of regulations and key trends in sustainability in the industry, assess environmental, social and governance impacts, along with reference to international standard frameworks for sustainable development and standard frameworks on key industry topics including (non-exhaustive):

- GRI Standards
- SASB Standards
- ESG Ratings and Indices

Figure 6: Some ESG rating agencies in the market

MSCI SUSTAINALYTICS MOODY'S REFINITIV S&P Global Bloomberg ISS ESG

- UN Sustainable Development Goals (SDGs): as of 2022, adopted rate in Vietnam at 42%. Since the SDGs and targets associated with them are integrated and indivisible, manufacturing organizations have the potential to contribute to all SDGs by enhancing their positive impacts, or by preventing and mitigating their negative impacts, on the economy, environment, and people. The manufacturing sector is particularly relevant to achieving the following SDGs:

Figure 7: United Nations Sustainable Development Goals related to Manufacturing

- Guidance on key topics for the sectors of the IFRS SASB standard in https://sasb.ifrs.org/standards/materiality-finder/find/

The table below discusses the suggested material issues for manufacturing companies in Vietnam with reference to above mentioned standards and frameworks. It is important to note that companies should review whether the topics proposed in this guidance are applicable and material to their business context. Additionally, they should analyse other ESG topics that are not included in the list below for materiality inclusion.

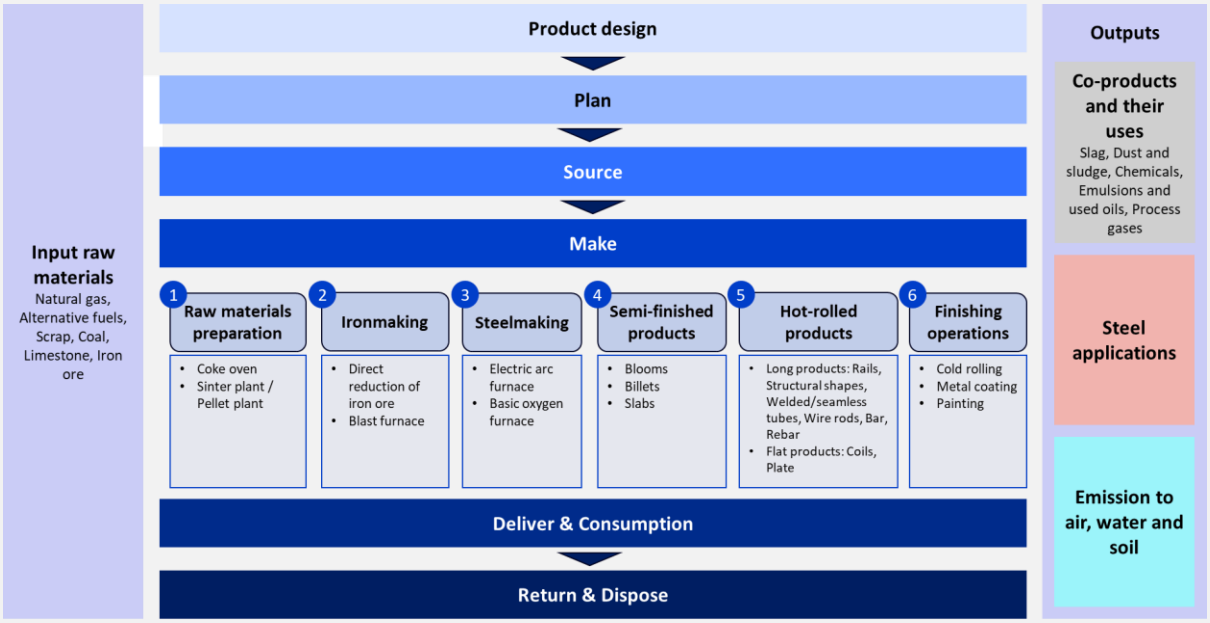
Table 6: List of key topics for the manufacturing industry

Proposed material topics for manufacturing companies in Vietnam			
	Topic Groups		**Topic**
1	**Environmental factors**		Air quality
2			Water and wastewater management
3			Biodiversity and ecological impacts
4			Waste and hazardous materials management
5			GHG Emissions
6			Energy management
7			Climate adaptation, resilience, and transition
8			Materials Sourcing & Efficiency
1	**Social factors**	**Affected communities**	Human rights and community relations
2		**Consumers and end-users**	Product quality and safety
3			Customer welfare
4			Selling practices and product labelling
5		**Human Capital/ Workforce**	Labor practices
6			Employee health and safety
7			Employee engagement, diversity and inclusion

Material topics recommended for the iron and steel sector

For guidance purpose, scope for the materiality determination process will cover the full value chain of the iron and steel manufacturing sector, as illustrated in Figure below.

Figure 8: Iron and steel value chain - EY consolidation



Stakeholder engagement

Key stakeholders of the industry can be identified as below – non-exhaustive.

Figure 9: Steelmaker's key stakeholder - Source: EY analysis

To identify potential topics, all of these are considered together with UN Sustainable Development Goals (SDGs), in which, considering the material topics include:

Figure 10: UN SDGs relevant to Iron and steel sector

- Entities in the Iron and steel sector that are interested in accessing international financing sources may be driven to align with other international practices:
  - In addition to the IFRS Sustainability Disclosure Standards, IFRS S1 requires entities to refer to guidance on disclosure topics from the SASB Standards. For more information on the SASB Standards, refer to the General Handbook – Appendix.
  - In addition to SASB, which also covers entities that work in the design, wholesaling, marketing, supply chain management and retail activities, Vietnamese companies that mainly involve in the production of Iron and steel products may also refer to other industry references, such as MSCI's ESG Industry Materiality Map.
  - Furthermore, the entity may refer to sources such as the CDSB Framework Application Guidance for Water-related Disclosures and the CDSB Framework Application Guidance for Biodiversity-related Disclosures, and peers' selection of sustainability-related risks and opportunities.

Typical material topics of the Iron and Steel sector

The table below discusses the suggested material issues for Iron and steel companies in Vietnam in reference to above mentioned standards and frameworks. It is important to note that companies should review whether the topics proposed in this guidance are applicable and material to their business context, as well as analyse other ESG topics that are not included in the list below for materiality inclusion.

Table 7: List of Material topics for Iron and steel sector

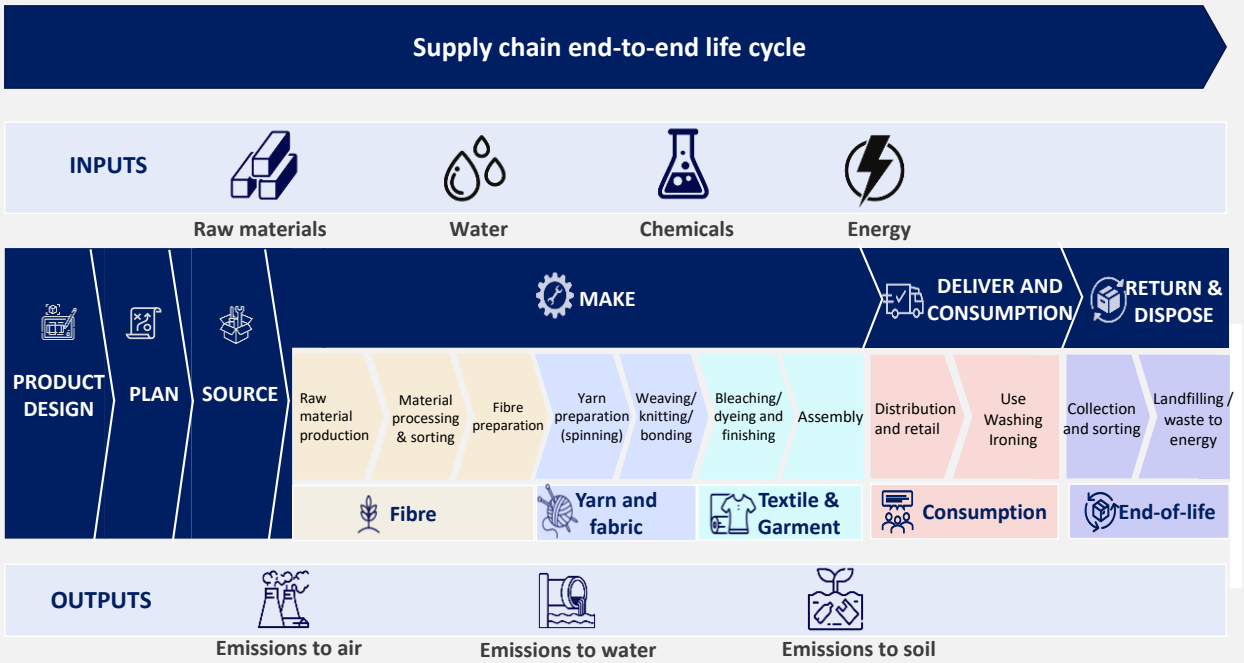
Proposed material topics for Iron and steel companies in Vietnam			
	Topic Groups		**Topic**
1	**Environmental factors**		Air quality
2			Water and wastewater management
3			Waste and hazardous materials management
4			GHG Emissions
5			Energy management
6			Materials Sourcing & Efficiency
1	**Social factors**	**Affected communities**	Human rights and community relations
2		**Human Capital/ Workforce**	Labor practices
3			Employee health and safety

4			Employee engagement, diversity and inclusion
1	**Governance factors**	**Business Model and Innovation**	Product Design & Lifecycle Management

Material topics recommended for the Textiles, clothing, leather and footwear (TCLF) sector

Material topic identified along TCLF sector value chain are illustrated in the Figure below.

Figure 11: The TCLF value chain



Stakeholders in TCLF

TCLF organisations should identify key stakeholders including both internal and external stakeholders with whom interactions and relationships are important to the organization to identify material topics and conduct comprehensive impact analysis.

Stakeholders along the value chain of the TCLF sector can be identified as below – non-exhaustive:

Figure 12: TCLF sector – Stakeholders along the value chain

CSOs and Donors	Government agencies	Academia and Associations	Other
• Donors such as World Bank, UNEP, UNIDO, IFC, USAID, WWF, etc. • CSOs such as Better Work, VICOSA, etc.	• MONRE, MOIT • DONRE, DOIT • Provincial People's Committees • Province's Industrial Zone Authority • Environment policies Dept. • Vietnam Environment Administration • National legislature • Other	• VITAS, Industry platform • Regional industries associations • Research institutes • Educational & training institutions • Universities • Consultancies	• Financial institutions and investors • Innovators • Local community

At the same time, enterprises shall consider the alignment of material topics of Textiles, clothing, leather and footwear sector with the UN Sustainable Development Goals (SDGs), in which, considering the material topics include:

Figure 13: UN SDGs relevant to TCLF sector

- Entities in the TCLF sector that are interested in accessing international financing sources may be driven to align with other international practices:
  - In addition to the IFRS Sustainability Disclosure Standards, IFRS S1 requires entities to refer to guidance on disclosure topics from the SASB Standards. For more information on the SASB Standards, refer to the General Handbook – Appendix.
  - Furthermore, the entity may refer to sources such as the CDSB Framework Application Guidance for Water-related Disclosures and the CDSB Framework Application Guidance for Biodiversity-related Disclosures, and peers' selection of sustainability-related risks and opportunities.[61]
  - MSCI's ESG Industry Materiality Map.

Suggested material issues for TCLF companies

- The table below discusses the suggested material issues for TCLF companies in Vietnam in reference to above mentioned standards and frameworks. It is important to note that companies should review whether the topics proposed in this guidance are applicable and material to their business context, as well as analyse other ESG topics that are not included in the list below for materiality inclusion.

Table 8: List of Material topics for TCLF Sector

Proposed material topics for TCLF companies in Vietnam		
	Topic	**Focused sub-topic (if any)**
Environmental factors	GHG Emissions	
	Water and wastewater management	
	Biodiversity and ecological impacts	
	Materials Sourcing & Efficiency	Raw materials sourcing
Social factors	Product Quality & Safety	Management of Chemicals in Products
	Labour Conditions in the Supply Chain	Employee health and safety
		Labor practices

Example 1: ESG Disclosure - Materiality Assessment – Iron & Steel Sub-sector

The process of identifying material topic of multinational steel manufacturing enterprises in Korea[62]

The Group's materiality assessment process consists of 4 steps:

1. **Understand and select:** Identify potential significant impact on the sustainability of Group's business model and value chain
2. **Identify issues:** Assess identified ESG issues for their social/environmental Impact Materiality and Financial Materiality (risk & opportunity).
3. **Conduct double materiality assessment:** Consider both impact materiality and financial materiality and gather input from experts and stakeholders to ensure the accuracy of the results.
4. **Finalize material issues:** Prioritize key ESG issues based on quantitative analysis results, report them to the Board of Directors, and finalize material issues.

Process	Purpose	Key Considerations
❶ Understand and select	Identify potential significant impact on the sustainability of POSCO Holdings' business model and value chain	• SASB's industry-specific metrics for each operating company/value chain • ESG assessment metrics of 4 major global rating agencies (MSCI, Sustainalytics, ISS ESG, and KCGS) • Inquiries raised by investors and other key stakeholders • Materiality assessment results of respective operating companies and major ESG issue reports from industry peers
❷ Identify issues	Assess identified ESG issues for their social/ environmental Impact Materiality and Financial Materiality (risk & opportunity)	• [Impact Materiality] Social/environmental impact of ESG issues identified across five business models and their value chain - Positive/negative, actual/potential, inside-out impact brought by POSCO Holdings' business operations • [Financial Materiality] Financial impact in the areas of ESG regulations/laws/policies associated with identified issues - Risks and opportunities viewed from the outside-in impact perspective concerning POSCO Holdings' financial value
❸ Conduct double materiality assessment	Group ESG Council	• Analysis of the agendas discussed at the CEO-led Group ESG Council (29 agendas in 2023)
	Direct communication with stakeholders (ESG NDR, conference calls, etc.)	• Analysis of on/offline requests and responses from key stakeholders, including investors (156 cases in 2023)
	Surveys on internal/external stakeholders	• Survey on internal/external experts with a deeper understanding on POSCO Holdings' business and ESG (36 persons in 2023)
	Stakeholder Round Table with major stakeholders	• 3rd Stakeholder Round Table to heed feedback from investors, government agencies, and customers/suppliers
❹ Finalize material issues	Prioritize key ESG issues	• Prioritize key ESG issues based on quantitative analysis results, report them to the Board of Directors, and finalize material issues

The Group publishes a materiality thematic matrix based on 2 factors: (1) impact materiality and (2) financial materiality. The matrix consists of 10 main themes and specifies the key scores.

Top ESG Issue	Impact Materiality		Financial Materiality	
❶ Climate change		94		87
❷ Independent and transparent Board of Directors		91		76
❸ Health and safety		91		73
❹ Energy		84		70
❺ Green technology and products		59		63
❻ Working environment		62		54
❼ Environmental management		48		55
❽ Biodiversity		50		47
❾ Compliance		45		52
❿ Diversity and inclusion		48		41

further upgraded our double materiality assessment process to accurately identify the needs and expectations of wide-ranging stakeholders. This allowed Group to identify key ESG issues in each of the five business areas of steel, rechargeable battery materials, infrastructure, energy, and trading.

Steel		Rechargeable Battery Materials		Infrastructure (Construction, IT & Engineering)		Energy		Trading	
Top 5 Issues		Top 5 Issues		Top 5 Issues		Top 5 Issues		Top 5 Issues	
1	Climate change	1	Climate change	1	Compliance	1	Compliance	1	Compliance
2	Energy	2	Energy	2	Diversity & inclusion	2	Climate change	2	Climate change
3	Compliance	3	Compliance	3	Health & safety	3	Health & safety	3	Green technology and products
4	Green technology and products	4	Health & safety	4	Green technology and products	4	Energy	4	Energy
5	Working environment	5	Supply chain management	5	Climate change	5	Green technology and products	5	Working environment

● Environmental ● Social ● Governance

Material topic Management

As a holding company, Group operates a Group-level ESG risk response system developed to ensure effective response to internal/external ESG risks. Group-wide ESG issues raised through wide-ranging channels are compiled by the Corporate Compliance and Ethics Team of Holdings (ESG), and key issues are reported to the Board of Directors with C-level management meetings including the Group ESG Council playing a pivotal role in developing responses.

In 2023, Group received and addressed a total of 156 ESG issues at the Group-wide level by leveraging our ESG risk response mechanism encompassing ESG NDRs, investor conference calls, and e-mails. By area, these issues were categorized into 69 environmental issues, 59 social issues, 20 governance issues, and eight cross-cutting issues.

Example 2: ESG Disclosure - Materiality Assessment - TCLF Sub-sector

The process of identifying material topic of a large garment manufacturing group in China[63]

Group have conducted the first Group-wide materiality assessment in 2023, engaging employees, customers, suppliers, NGOs, industrial partners, and international initiatives through a survey to help Group identify the sustainability issues that are most relevant to Group and stakeholders.

Materiality Assessment Process of the Group consists of 3 steps:

1. **Identification:** a list of potential material topics based on international frameworks, global and industry trends, as well as peer practices.
2. **Prioritization:** The list of relevant material topics was then prioritized through questionnaires with internal and external stakeholder groups. Group regularly communicate with internal and external stakeholders through diverse communication channels to understand their expectations and needs, allowing enterprise to identify issues that are material to our business and stakeholders .

Employees

- Regular meetings
- Internal publications
- Intranet
- Performance review
- Employee engagement activities
- Dialogues with the management
- Workshops
- Social media

Customers

- Publications
- Surveys and feedback channels
- Social media

Suppliers

- Procurement process
- Supplier assessments
- Regular meetings

Industry Associations

- Conferences, exhibitions and seminars
- Research collaborations

NGO Partners

- Community engagement projects

3. **Validation:** The prioritized material topics were reviewed and validated by the management.

Materiality Matrix:

Sustainability Issues

Environmental	1	Biodiversity	2	Effluents Management
	3	Emissions Management	4	Energy Management
	5	Hazardous Substances	6	Opportunities in Clean Technology
	7	Solid Wastes Management	8	Supplier Environmental Assessment
	9	Sustainable Materials	10	Water Consumption Management
Social	11	Accurate Marketing and Labelling	12	Customer Privacy Protection
	13	Diversity, Equality and Non-Discrimination	14	Employment Approach
	15	Engaging Local Communities	16	Forced and Compulsory Labor Prevention
	17	Labor/Management Relations	18	Market Presence
	19	Occupational Health and Safety	20	Product Safety and Quality Assurance
	21	Responsible Procurement Practices	22	Supplier Social Assessment
	23	Training and Education		
Governance	24	Anti-Corruption	25	Privacy and Data Security

2. Governance

GENERAL REQUIREMENTS FOR ESG DISCLOSURE

Elements	Content
Board Oversight	• Governance roles and responsibilities, structure, and composition for sustainability-related matters, including: composition and diversity, roles and responsibilities, quality and expertise of governance body or access to experts or training; sustainability-specific structures/committees in place (if any) • Board or Board committees' oversight of sustainability-related matters, including process, frequency, and oversight mechanism of target setting and progress monitoring related to sustainability-related matter • Other (if not mentioned above): Business ethics, conflict of interest, competitive behavior
Management's role in the governance processes, controls and procedures used to monitor, manage and oversee sustainability-related matters	• Delegation of roles and authorities to a specific management-level position or management-level committee • How oversight is exercised over that position or committee including reporting lines and any control and procedures applied for oversight of sustainability-related matters, and how these engage with other internal functions
Integration of sustainability-related performance in incentive schemes	• Description of sustainability-related remuneration policies and incentive schemes, and proportion of remuneration linked to sustainability targets.

GUIDANCE ON DEVELOPING DISCLOSURE CONTENT ON GOVERNANCE FOR THE MANUFACTURING SECTOR

Governance disclosure aims to provide an understanding of the governance processes, controls and procedures the organisation uses to monitor, manage and oversee sustainability matters in the form of a board-approved charter and governing policies, the roles, responsibilities, decision-making mechanisms and Integration of sustainability-related performance in incentive schemes.

Corporate Leadership is responsible for taking the lead in establishing ESG values and relevance to the business, and accordingly, incorporating them into the vision, mission and goals of the business. This serves as an important foundation for organisations to establish and ensure the fulfilment of their sustainability commitments to key stakeholders and the communities in which they operate.

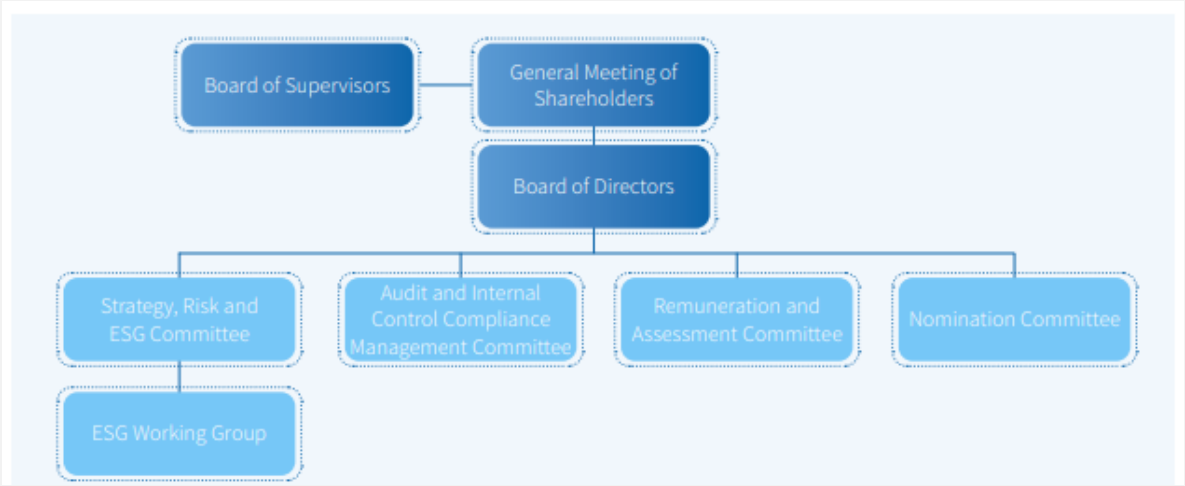
Manufacturing enterprises can refer to the General Handbook – Part 2, section 2.1.1 and Part 3, section 3.4.

Example 3: ESG Disclosure – Oversights and Roles of the Board - Iron and Steel Sub-sector

The world's leading steel manufacturer based in China[64]

Corporate governance structure:

The Company has established a corporate governance structure under the leadership of the Board of Directors. The Board of Directors consists of the Strategy, Risk and ESG Committee, the Audit and Internal Control Compliance Management Committee, the Nomination Committee, and the Remuneration and Assessment Committee. The corporate governance principles are implemented from top to bottom to ensure compliant operations and efficient business activities.



To formulate and implement the Company's long-term sustainable development strategies, Baosteel has drafted up management systems such as the ESG Management Policy and established a multi-tier top-down management structure consisting of the Board of Directors as leadership, the Strategy, Risk and ESG Committee as the core, and the ESG Working Group as executive level.

- **Board of Directors:** plays the highest leadership role, responsible for deliberating on the risks and importance related to the Company's ESG matters. They supervise and review the Company's ESG-related policies, management, performance, and target progress.
- **Strategy, Risk and ESG Committee:** is the central position, tasked with conduct research, analysis, and risk evaluation on the Company's ESG and other matters, and put forward ESG policies, strategies, and goals. This Committee organize and coordinate the supervision and inspection of ESG-related policies, management, performance, and target progress of the Company, and put forward corresponding suggestions.
- **ESG Working Group:** plays a role in developing ESG-related policies and action plans that are in line with the Company's strategies and ESG plans. They manage ESG-related risks and matters in the daily operation of the Company. The Group also communicate with relevant departments and subsidiaries of the Company to jointly implement ESG-related matters.

Board Oversight

In addition to the Strategy, Risk and ESG Committees, all committees of the Board have a majority of members who are independent directors, who play a key role. These directors assume responsibility in a professional manner, thereby ensuring independence and fairness in auditing, internal controls, evaluations, as well as the appointment of directors and senior leadership.

Management's role in the governance processes, controls and procedures used to monitor, manage and oversee sustainability-related matters

The Group has continuously improved its governance structure related to climate change, established the Strategy, Risk and ESG Committee led by the Chairman of the Board of Directors; strengthen management in the implementation of enterprises, establish a Carbon Neutrality Committee and a Carbon Neutrality Office to jointly form a system to promote carbon neutrality work, implement climate change-related strategies and targets set forth by the Board of Directors and the Strategy Committee, Risk and ESG build, and ensure the implementation of climate change risk management measures. In which, the Director of the Carbon Neutrality Committee is the Chairman of the Board of Directors, the Director of the Carbon Neutrality Office is the Head of the Strategy and Science and Technology Department.

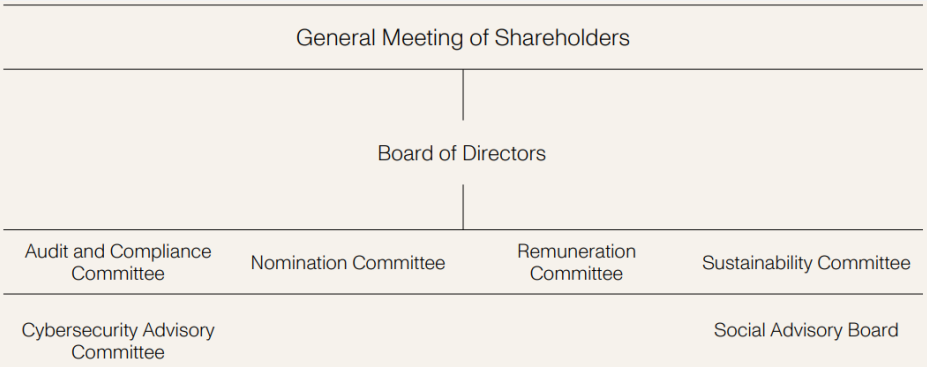
Integration of sustainability-related performance in incentive schemes

The Group links the compensation of directors and senior management to sustainability performance indicators, incorporate indicators to ensure the effective implementation of key ESG goals and initiatives and deepen the governance capacity of sustainable development. In 2023, in addition to such indicators as promoting green development, emission reduction, internal waste treatment, and research on low-carbon metallurgy technology, and include ESG system improvement in management's performance goals as a special indicator.

Example 4: ESG Disclosure – Oversights and Roles of the Board - TCLF Sub-sector

A multinational fashion group based in Spain[65]

Organisation of our Governing Bodies

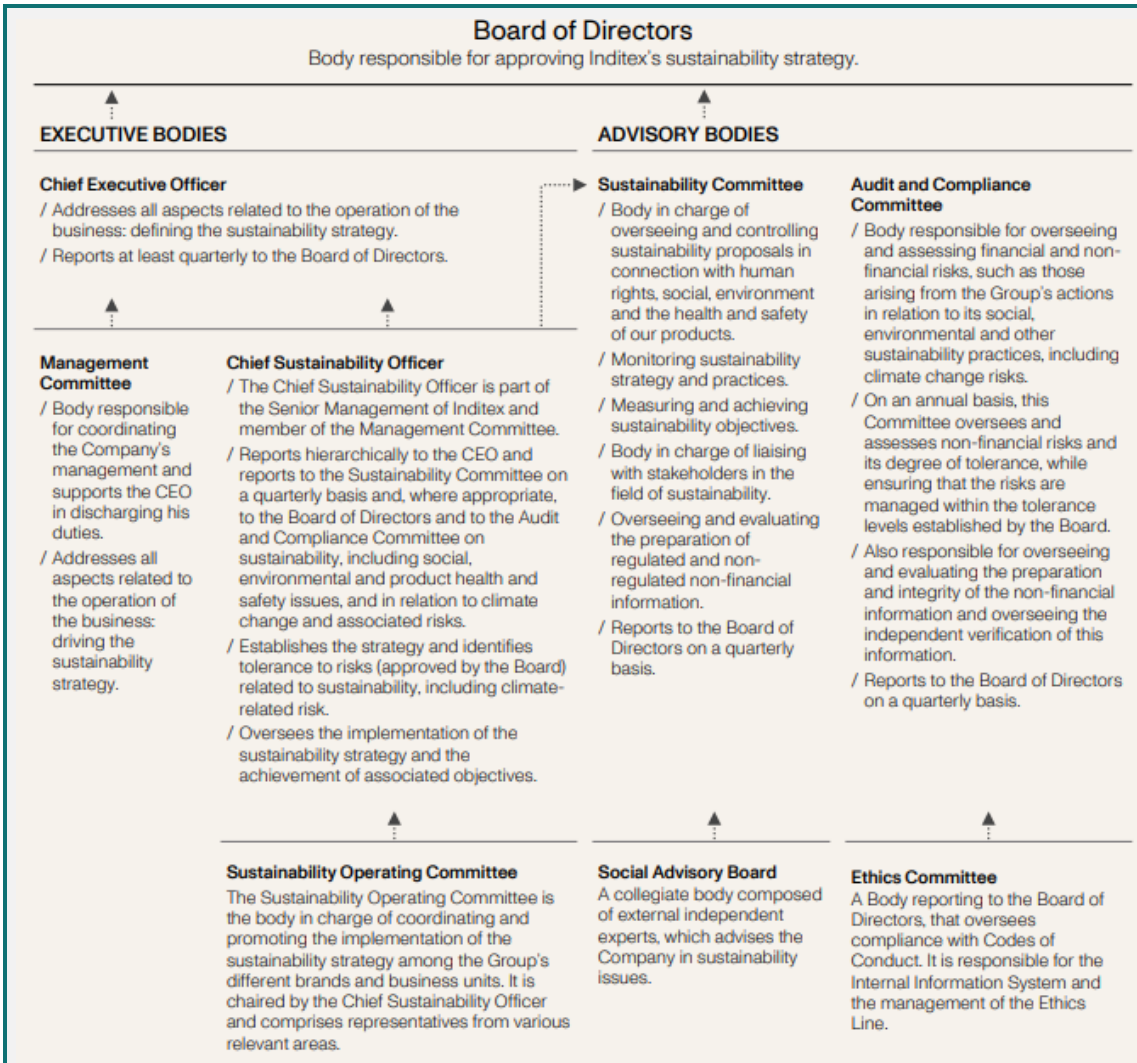


Some members of the Group's Board of Directors are members of the Sustainability Committee, which was established in 2019 to help promote the Group's Sustainable Development strategy.

Member	Position	Directorship type	Position in BOD
Bns. Denise Patricia Kingsmill	Chair	Independent	Independent Director
Mr José Arnau Sierra	Ordinary Member	Proprietary	Deputy Chair
Ms Pilar López Alvarez	Ordinary Member	Independent	Independent Director
Ms Belén Romana García	Ordinary Member	Independent	Independent Director

The main mission of the Sustainability Committee is to support the Board of Directors in aspects relating to the Group's sustainability practices, by supervising its strategy and overseeing proposals in this area, in the social, environmental areas and the area of health and safety of the products marketed by the Company, or by any Group company, as well as to foster the commitment to the Sustainable Development Goals. It is also the body responsible for overseeing effective liaisons with stakeholders in the field of sustainability.

The Group's commitment to sustainability is reflected at the highest level of the Company, starting with the most senior governing bodies, with sustainability as a factor integrated in the decision-making process. In this regard, the Board is supported by a number of consultative and executive bodies, represented in the Group's management team, with the involvement.



The Sustainability Committee is further tasked with the supervision of the process of preparing regulated and non-regulated sustainability information. With regard to the sustainability information included in the Directors' Report, this oversight is carried out in coordination with the Audit and Compliance Committee, which is responsible for the ultimate oversight and evaluation of the preparation process and the integrity of the sustainability information included in the Directors' Report, ensuring compliance with all legal requirements, and also dealing with the process of independent verification of this information.

Management's role in the governance processes, controls and procedures used to monitor, manage and oversee sustainability-related matters

The CSO is also a member of the Inditex Management Committee —which reviews the strategy and business and investment plans in this area too— and chairs the Sustainability Operating Committee —the body in charge of coordinating and always promoting the implementation of the sustainability strategy among the various brands and business units— liaising directly with the different corporate and business areas responsible for its execution.

Integration of sustainability-related performance in incentive schemes

The Remuneration Policy establishes the possibility of linking both variable components to financial, operational and value creation metrics, and non-financial metrics, such as sustainability indicators. The CEO's variable remuneration, both annual and multi-year, is linked to the fulfilment of certain sustainability targets (environmental, social and corporate governance), consistent with the Group's sustainability strategy, which is a further incentive for the development of that strategy.

In terms of short-term remuneration, the CEO´s annual variable remuneration for 2024 would be determined on the basis of certain criteria in relation to progress made in the implementation of Inditex's global sustainability strategy in corporate governance and in the implementation of the diversity and compliance programmes, with a total weight of 15%.

In terms of long-term remuneration, in line with the Remuneration Policy, the weight of sustainability metrics to which multi-year remuneration is linked in the long-term incentive plans currently in force is 25%, which is above the 20% market median.

3. Strategy

GENERAL REQUIREMENTS FOR ESG DISCLOSURE

Elements	Content
Market position, strategy, business model(s) and value chain	• Market position • Sustainable Development Goals • sIntended direction of the elements of the organisation's strategy that relate to or impact sustainability matters • Description of the business model and value chain.
Interests and views of stakeholders	• Key features and findings of stakeholder engagement • The state of key stakeholder relationships and how the organisation has responded to key stakeholders' legitimate needs and interests.
Material impacts, risks and opportunities and their interaction with strategy and business model(s)	• Description of material sustainability-related risks and opportunities over short-, medium- and long-term horizon, and their link to planning horizon in strategy development • Effects on business models and value chains • Effects on strategy and decision-making • Effects on financial position, financial performance and cash flow • Resilience of the strategy to sustainability-related risks.

GUIDANCE ON DEVELOPING STRATEY DISCLOSURE CONTENT FOR THE MANUFACTURING SECTOR

a. Developing sustainable development strategies and goals

To develop sustainability strategies and goals, manufacturing companies should consider national or international commitments, such as Vietnam's nationally determined contributions to achieve net-zero by 2050; national decarbonisation and adaptation strategies or policies; global sustainable development goals and strategies of peers. Organisation may refer to some sustainable strategies and goals below for the manufacturing sector in Vietnam.

No.	Document
National Objectives	
1	• Decision 2756/2022/QD-BCT: Promulgating the action plan to climate change adaptation and green growth of the industry and trade sector in the period up to 2030, with a vision to 2050
2	• Decision 1973/2021/QD-TTg: approving the National Plan on air quality management for the period 2021 - 2025
3	• Resolution of the 13th National Congress
4	• Decision 149/2022/QD-TTg: Approval of the National Strategy on Biodiversity to 2030, vision to 2050

No.	Document
5	• Decision 1375/2020/QD-TTg: Approving the Environmental Protection Plan of the Industry and Trade Sector for the period of 2020-2025
6	• Decree 82/2018/ND-CP: Regulations on management of industrial parks and economic zones
7	• Decision 896/2022/QD-TTg: Approving the National Strategy on Climate Change to 2050
8	• Decision 687/2022/QD-TTg: Project on circular economy development in Vietnam
9	• Decision 889/2020/QD-TTg: Approving the National Action Program on Production for the 2021-2030 period
10	• Decision 645/2020/QD-TTg: Approving the national e-commerce development master plan for the 2021-2025 period

b. Developing ESG Action Plan for Strategy implementation and achieving the Sustainable Development Goals

Manufacturing enterprises can refer to the proposed ESG transformation actions below to plan, implement and report on progress and implementation results in ESG information disclosures.

Governance and Strategy: For manufacturing organisations, establishing a robust governance and strategy is essential to their ESG Capability Framework. This foundational step allows them to define a clear sustainability strategy, assign specific ESG roles and responsibilities, and demonstrate leadership's dedication to sustainability. This initial capability is crucial as it forms the basis for developing further essential capabilities in the company's ongoing ESG efforts. Small and medium-sized enterprises (SMEs) can begin by raising awareness and building the ESG capacity of their leadership team. They can also assign oversight and governance responsibilities for ESG matters to a member of the leadership team in a concurrent role

Operations: Manufacturing enterprises experience economic, environmental, and social impacts from consuming energy, materials, water, and other resources during production, leading to solid, liquid, and gaseous waste emissions. It is therefore essential to develop capacities and initiatives aimed at reducing and controlling these impacts.

- **Value chain management:** Enterprises should focus on the following areas: ((1) Sustainable sourcing, (2) Carbon neutral footprint, (3) Circularity and (4) Other: Transparency & Traceability and Digitalisation.
  - ***i. Sustainable sourcing***
    - Select materials responsibly;
    - Prioritize green and low-carbon materials;
    - Manage and engage suppliers collaboratively towards sustainable development goals;
  - ***ii. Carbon neutral footprint***
    - Reduce greenhouse gas emissions during production and operations;
  - ***iii. Circularity***
    - Focus on “reduce-by-design” concept;
    - Use resources effectively, particularly water and energy;
    - Reduce and limit waste, including solid, liquid, and gaseous forms;
    - Extend the life and value of materials, close resource loop.
  - ***iv. Other Sustainable operations***
    - Increase transparency regarding sustainability across the supply chain;
    - Adopt digitized, electrified, and automated operations, such as smart factories.

  Details of these transformation initiatives are given in Appendix A.
- ***Stakeholder Management:*** Businesses should strengthen their ability to manage stakeholder relationships throughout the supply chain. Since manufacturing enterprises are not isolated, effective stakeholder management and engagement are crucial for achieving sustainability objectives, making them more attainable and manageable.

- ***Risk management:*** Companies should bolster their risk management capabilities to identify ESG risks to the business and the risks that the business poses to ESG issues. This heightened awareness will enable businesses to devise more suitable strategies and plans, respond proactively and flexibly to emerging risks, and ensure that sustainability goals are within reach.

Data and Reporting: The manufacturing sector is facing intense pressure to prioritize ESG data governance due to a significant increase in manufacturing breaches and the vast amount of data collected in the industry. As companies increasingly recognize the importance of sustainability, establishing and prioritizing strong ESG data governance frameworks is crucial for achieving long-term environmental and socio-cultural objectives. Effective ESG data management capability is essential for sustainable manufacturing, as it helps in tracking, assessing, and enhancing ESG initiatives. At the same time, to meet the requirement for transparent and complete ESG information from stakeholders such as investors, enterprises need to identify and report on several key environmental, social and governance metrics – refer to the General Handbook and Part B – section 5 of this Sectorial Guidance.

Monitoring: A standardized system for continuously monitoring sustainability metrics is crucial for organisations to remain competitive. For manufacturing companies, regular oversight and tracking is necessary to confirm that sustainability strategies are practical, and goals are met. The complexity of the manufacturing supply chain makes it harder to enforce sustainability goals across all levels, particularly in managing suppliers to adhere to sustainable practices. Thus, improving the ability to monitor sustainability is vital for manufacturers to turn their strategies, plans, and goals into tangible outcomes. For SMEs, this aspect may be of lower priority compared to the three areas mentioned above and should only be considered in the long term. In the short and medium term, SMEs should prioritize allocating resources to implement ESG in Operations, Reporting, and Strategy and Governance first.

Additional guidance on disclosures related to the strategy for the iron and steel sector

When establishing ESG ambition in its vision and mission, Iron and steel companies should consider its contribution potential to international and national sustainability commitments.

1. Sustainability Strategy and Goals

Businesses can refer to a number of sustainable strategies and goals for the iron and steel industry put forward by international organizations in the industry to ensure that they are in line with international orientations and commitments.

Organization	Strategy
worldsteel[66]	• This is achieved through a financially sound industry that takes leadership in environmental, social, and economic sustainability. • The steel industry is committed to continuing to reduce the environmental footprint of its operations and the use of its products. • The industry fully supports the aims of the Paris Agreement. • World Steel Association's goal is to use all raw materials to their full capacity, ensuring zero waste from steelmaking. • The steel industry is committed to achieving the goal of zero harm – an injury-free and healthy workplace for employees and contractors.
IEA[67]	• The industry targets a 45% reduction in intensity for primary steel and a 65% reduction for secondary steel by 2030, and net-zero emissions by 2050.

Enterprises can also refer to the environmental protection targets in Vietnam for the iron and steel industry according to some of the following documents:

No.	Document
National Objectives	
1	• Decision 896/2022/QD-TTg: Approving the National Strategy on Climate Change to 2050
2	• Draft Strategy for the development of the steel industry in the period to 2030, with a vision to 2050
3	• Circular No. 20/2016/TT-BCT regulating energy consumption in the steel industry
4	• Resolution 19/NQ-CP: Promulgating the National Program on Occupational Safety and Health for the period of 2021 - 2025

2. Action Plan for Strategy implementation and achieving the Sustainable Development Goals

- For businesses in the Iron and steel industry, sustainable transformation could be happened in three key pillars— namely: **(1) Circularity, (2) Decarbonisation, (3) Social matters improvement in iron & steel sector**— could contribute to delivering on the strategic ambition for sustainability.
  - ***Circularity:*** focuses on designing products for reuse and recycling, enhancing sustainability and resource efficiency**.**
    - Reduce
    - Reuse
    - Remanufacture
    - Recycle
  - ***Decarbonization:*** permanent removal of carbon emissions from an organisation's value chain by implementing transitioning towards greener production methods.
    - Fuel shift
    - Electrification of process heat
    - Waste heat recovery
    - Carbon capture, utilisation and storage (CCUS)
  - ***Social matters improvement in iron & steel sector:*** establish a safety and health program at the workplace to protect workers.

Please refer to the details of the initiatives in the action plan for iron and steel enterprises in Appendix B.

Additional guidance on disclosures related to the strategy for the TCLF sector

1. Sustainability Strategy and Goals

Vietnam is a key player in the global TCLF supply chain. Therefore, when establishing ESG ambition in its vision and mission, TCLF companies should consider its contribution potential to international and national sustainability commitments. Enterprises can refer to the sustainability goals set by a number of widely recognized international organizations as below:

Table 9: Existing industry global goals are widely recognized and trusted[68]

Organization	Goal
IPCC, UNFCCC/Fashion Charter, Textile Exchange, Sustainable Apparel Coalition[69]	The textile value chain reaches net zero emissions by 2050, in line with 1.5C of global warming, an a 45-50% reduction in supply chain emissions by 2030 Source 100% of priority materials that are both preferred and low climate impact by 2030, ensuring that these do not negatively affect other SDGs
Global Fashion Agenda	The industry adopts 100% renewable energy by 2050, and 50% by 2030
Interpreting WWF, SBTN	Companies implement water stewardship, set contextual and science-based target for water
ZDHC	ZDHC Milestone: Chemicals of Concern according to ZDHC MRSL to be eliminated by implementing the ZDHC Roadmap to Zero Programme
SBTN	Companies implement science-based targets for nature
The Fashion Pact[70]	Companies implement science-based targets for nature 25% sustainably sourced by 2025
ILO	Ensure a just transition to environmental sustainability, that decent work principles are applied across the textile value chain, and companies support the delivery of SDG 8
Transparency Pledge	Publicly disclose Tier 1 facilities
CFA and McKinsey	Circular consumer offers make up 60% of textile market revenue by 2050, and 30% by 2030.
Ellen McArthur Foundation, a New Textiles Economy	Textile utility is doubled by 2050
Textile Exchange	45% of polyester recycled by 2025, with a goal of 90% recycled volume share by 2030

	Source 100% sustainable cotton by 2025
Fashion for Good report recommendation	$30 billion is invested in the transition to circular and sustainable textile each year

- The strategic ambitions, goals and ESG commitments of leading DMDG businesses and industry peers – globally and domestically.
- Enterprises can consider their vision and strategy according to the national development orientation of the industry. For example, according to WWF's 2020 'Guidelines for Greening the Textile Sector in Viet Nam', to achieve the national expectation for TCLF sector's sustainability contribution, a green vision for the sector can be stated as: "By 2030, the textile and apparel sector in Viet Nam will become the number one destination for buyers searching for sustainable supplies of textiles and apparel products that do not harm the environment or people. The sub-sector is more circular, efficient and sustainable in terms of use of water and energy and adopts responsible wastewater discharge and solid waste management practices". Therefore, enterprises can also refer to the Sustainable Development Goals for the TCLF industry in Vietnam according to Decision 1643/2022/QD-TTg: Approving the development strategy of Vietnam's Textile, Garment and Footwear industry to 2030, with a vision to 2035

2. Action Plan for Strategy implementation and achieving the Sustainable Development Goals

Enterprises shall disclose transformational initiatives and action plans to achieve the committed sustainability strategies and goals, to demonstrate the actual efforts of the enterprise and the feasibility of the set strategies and goals, demonstrating the ability to respond to the identified material issues.

Achieving sustainability in the TCLF sector requires comprehensive transition throughout the product life cycle. This includes design, sourcing, production, consumption, and processing. Sustainable TCLF production is based on the application of initiatives focused on environmental protection, green production, resource conservation, recycling, proper chemical management, and improvement of working conditions. The table below summarizes top practices in addressing key topics of the TCLF sector for enterprises to refer to when developing ESG action plans.

Table 10. Leading practices for sustainable TCLF supply chain

	Environmental				**Social**	
	GHG emissions	**Water & wastewater management**	**Biodiversity and ecological impacts**	**Materials sourcing & efficiency**	**Products quality & Safety**	**Labour conditions in the supply chain**
Circularity	**X**	**X**	**X**	**X**	**X**	
Traceability and Transparency	**X**	**X**	**X**	**X**	**X**	**X**
Carbon neutral footprint	**X**					
Sustainable sourcing				**X**		
Labour Conditions Improvement Solutions						**X**
Other leading practices	**X**	**X**	**X**	**X**	**X**	

Details of these practices are given in Appendix C

Sustainable Manufacturing Certifications

To develop a green/sustainable transformation plan, businesses can aim to achieve green and sustainability certifications that are widely recognized in Vietnam and globally, thereby building action plan and initiatives to achieve them.

Each group of manufacturing industries will need to review and select compliance and achieve sustainable manufacturing certifications according to industry specificity and the requirements of stakeholders including local regulators and business markets, customers and investors. Below is a list of typical sustainability certifications for businesses to refer to.

Figure 14: Some global sustainability certifications – non-exhaustive. Source: akepa[71]

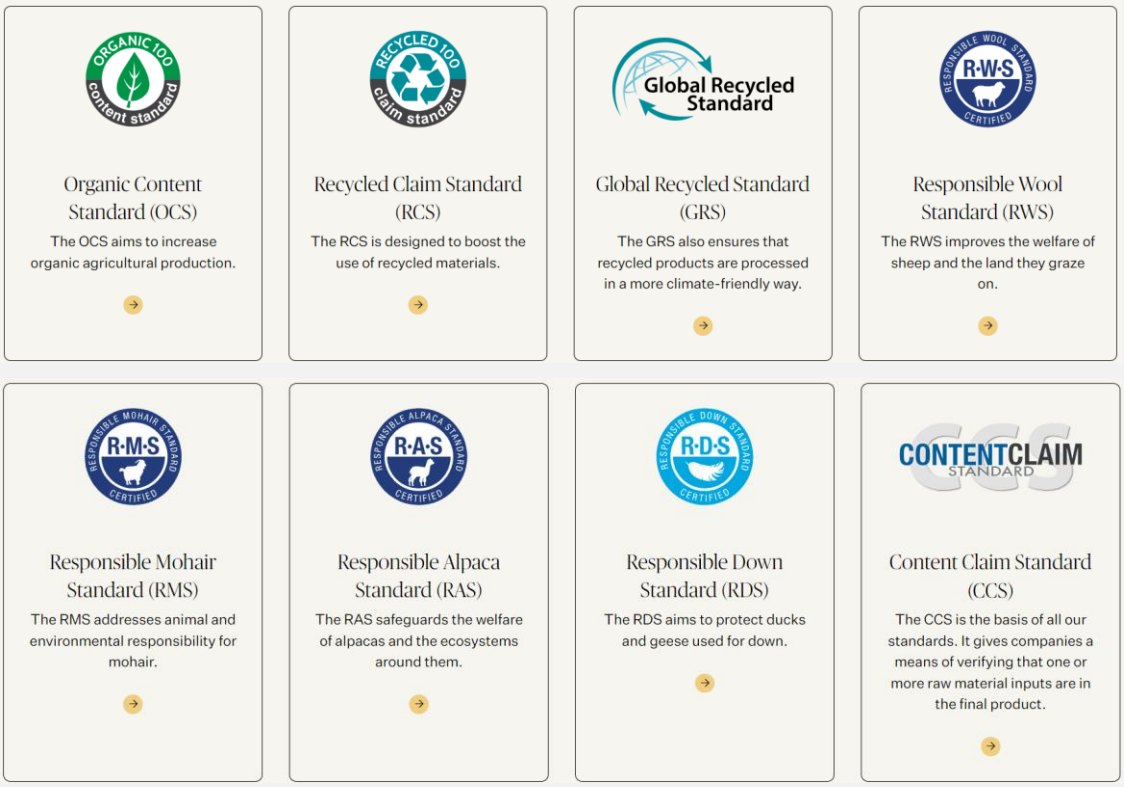
ESG standards, frameworks and ratings promote sustainable iron and steel production

No.		Description
		Standards/Protocols
1	**ResponsibleSteel Standards & Certification**	ResponsibleSteel certification combines all the complexities of good social and environmental performance in one indicator across the value chain. Certification gives buyers, investors, and other stakeholders the confidence that a steel site is working to implement some of the most rigorous social and environmental standards in the industry. Together with members from all stages of the steel supply chain, civil society, and downstream users, Responsible Steel developed an independent certification standard and program via a process that aims to align with the ISEAL Codes of Good Practices.
2	**WRI's GHG Protocol for Steel**	The GHG Protocol established comprehensive global standardized frameworks to measure and manage GHG emissions for private and public sector operations, value chain and mitigation actions. The WRI GHG Protocol for Steel is not a governing body and solely sets a framework for GHG intensity calculation methods.
3	**Climate Bonds Initiative's Criteria for Climate Bonds for the Steel Industry**	• The Climate Bonds Initiative is an international organisation working to mobilize global capital for climate action by developing the Climate Bonds Standard and Certification Scheme and its associated Steel, Policy Engagement, and Market Intelligence work. This work equips organisations with the tools and knowledge needed to navigate, influence, and drive change. • Within the Climate Bonds Initiatives is the Climate Bonds Standards and Certification Scheme and The Steel Eligibility Criteria which are designed to be an easy-to-use screening tool that provides a clear signal to investors and intermediaries on the climate integrity of Certified Climate Bonds. The criteria specified in the Standard and Certification Scheme establish climate change benchmarks for the sector, which are used to evaluate assets and capital projects. Only those that demonstrate climate integrity, either by contributing to climate mitigation or by enhancing adaptation and resilience to climate change, will be certified.
4	**World Steel Association's Protocols**	The World Steel Association is one of the largest industry associations in the world and has expressed goals to provide global leadership to the steel industry focusing on economic, environmental, and social sustainability. The World Steel Association fully supports the aims of the Paris Agreement and has developed several initiatives for its members in support of the Paris Agreement and the United Nations Developments goals. Key programs pertaining to low carbon steel production include their Sustainability Charter, 9 principles and 20 criteria covering the areas of environmental, social and economic criteria.
5	**ISO 14067:2018 - Carbon Footprint of Products**	ISO 14067:2018 specifies principles, requirements, and guidelines for the quantification and reporting of the carbon footprint of a product (CFP), in a manner consistent with International Standards on life cycle assessment (LCA) (ISO 14040 and ISO 14044). The standard itself is not sector-specific, but it is developed for every sector. ISO 14067 is housed in a family of similar standards providing clarity and consistency for quantifying, tracking, reporting, and validating or verifying GHG emissions and removals to support sustainable development through a low-carbon economy.
6	**ISO 14404 Series - Plant Level CO2 Emissions Intensity from Iron and Steel Production**	ISO 14404 series provide guidance for calculating the CO2 intensity at iron and steel plants with all types of process routes, by defining the boundary, CO2 emission factors, and the intermediate products for which upstream emissions are considered for all types of process routes. ISO 14404 is broken down into 4 parts where the scopes apply plants. In addition, ISO 14404:2020 also includes the Universal Calculation Sheet, which covers all relevant emission sources from ISO 14404-1, ISO 14404-2, and ISO 14404-3 to assist in the calculation of CO2 emissions.

ESG standards, frameworks and ratings promote sustainable TCLF production

The TCLF sector has several categories of standards – and accreditation / certification for these standards – to measure performance in each step of the value chain. Standards may be holistic or targeted at select environmental or social criteria. A standard-setting body in the sector is the Textile Exchange, a non-profit established in 2002 focused on setting standards for a range of fibres and materials used in the fashion and textile supply chain.[72] The organisation currently has 8 sector standards available and plans to adopt a unified standard in 2025[73,74].

Figure 15: Textile Exchange's list of standards for fibres and materials (non-exhaustive)



In addition to the Textile Exchange, other certifications exist to verify the sustainability of materials and textile products, some of which are known in Vietnam,[75] such as:

Table 11: List of sustainability of materials and textile products certifications for TCLF sector (non-exhaustive)

No	Certification	Description
		Social responsibility
1	**BSCI**	Amfori BSCI provides a Code of Conduct with a set of values and principles that help amfori members improve their own policies and practices. These principles apply to all sectors worldwide and comply with international regulations (e.g., ILO, OECD, UNGP on Business and Human Rights)
2	**WRAP**	WRAP is the world's largest independent certification program focused on the apparel, footwear, and sewn products sectors, dedicated to ensuring workers have safe, humane, lawful, and ethical working conditions. They promote transparent, sustainable and responsible manufacturing and sourcing practices through education and collaboration.
3	**SEDEX-SMECTA**	SMETA is the world's most widely used audit, which helps organisations to understand standards of labour, health and safety, environmental performance, and ethics within their own operations or at a supplier site, in order to understand and make improvements to working conditions and environmental performance in their business and supply chain.

4	**WCA**	WCA program provides a powerful, cost-effective solution for companies and facilities seeking to improve workplace conditions efficiently and in accordance with widely accepted industry standards and best practices through managing Supply Chain Due Diligence specific to social and labor conditions, health & safety, environment, and business practices.
5	**BETTER WORK**	Better Work – a collaboration between the United Nations' ILO and the IFC – is a comprehensive programme bringing together all levels of the garment industry to improve working conditions, respect of workers' labour rights and boost the competitiveness of apparel and footwear businesses.
6	**B Corp**	B Corp is a third-party certification that assesses, and ensures, a high standard of a company's environmental and social performance, accountability, and transparency.
	Environmental management	
7	**HIGG INDEX**	The HIGG index serves as a comprehensive set of tools and resources designed to assist businesses in assessing and enhancing their environmental and social performance.
8	**ISO 14001**	ISO 14001 is the internationally recognized standard for environmental management systems (EMS). It provides a framework for organizations to design and implement an EMS, and continually improve their environmental performance.
9	**BCI**	The Better Cotton Initiative is the world's largest cotton sustainability program and aims to promote sustainable practices in cotton farming. It provides licensing and training to cotton farmers. 22% of global cotton production in 2022 came from farmers who have received a BCI license.
	Recycled materials	
10	**GOTS**	The Global Organic Textile Standard (GOTS) is a global standard for organic fibres. The standard covers the entire supply chain from the first processing stages of the raw materials through to trading, and covers ecological and social criteria.
	Chemicals	
11	**BLUESIGN**	Bluesign is a third-party certification label that provides independent verification throughout the textile value chain (including chemical suppliers, manufacturers, and brands and retailers), focusing on sustainable chemistry.
12	**OEKO TEX**	OEKO-TEX's STANDARD 100 is a third-party certification for textiles, providing assurance that all product components have been tested for harmful substances and is safe for human health.

In addition to the leading practices outlined above, numerous initiatives have been introduced to enhance sustainability in the TCLF industry. These initiatives aim to help the industry produce more sustainably by using fewer raw materials and reducing emissions into the environment.

Table 12: Other leading practices for sustainable TCLF production

Documents	Description
WWF - Guidelines for Greening the Textile Sector in Viet Nam[76]	These guidelines are designed to be a basis for discussion among stakeholders on actions that can be implemented in short to medium term for the sector green transformation. In the Annex 3. Best Available Technologies and Best Environmental Practices in the global textile and garment sector, it is included recommended best practices and techniques to improve production with win-win benefits that organisations could refer to apply for green transformation in the TCLF sector.
UNEP - Sustainability and Circularity in the Textile Value Chain[77]	This report provides an analysis of the environmental and socio-economic hotspots along the entire textile value chain, as well as an overview of a number of initiatives that have also made headway. In the Annex section, the report lists a number of initiatives designed to support TCLF businesses, including (not exhausted): • Initiatives to promote sustainable cotton cultivation and transparency in cotton value chains • Technological innovations in the textile sector • Initiatives with a focus on social sustainability in textiles • Platforms and networks addressing sustainability in textile production

Circular Economy in the Textile Sector[78]	This report addresses the concept of a circular economy in the textile industry. It assesses innovative recycling technologies, discusses challenges, and proposes potential solutions for the transformation to a circular textile sector.

Example 5: ESG Disclosure - Strategy - Iron & Steel Sub-sector

Leading global steel manufacturing enterprises based in China[79]

Market positioning:

Company is the most modernized super-large steel conglomerate in China and a world-class steel joint venture. Facing the long-term structural adjustment of the steel industry, Company persists in high-end, intelligence, green, and efficiency, and adheres to the development path of technological innovation, green and low-carbon, intelligent manufacturing, and efficient and intensive development, making positive contributions to technological progress, environmental protection, and sustainable development in the steel industry.

The Company focuses on building core competencies to cope with future challenges, upgrading and implementing a new "1+5" development strategy with "scale + capability", aiming to become a world-class steel enterprise.

In 2024, we will follow the general operation policy of "innovation leading, digital intelligence empowerment, green and low-carbon, collaborative value creation", focus on promoting high-quality development, adhere to "high-end, intelligence, green, and efficiency" development direction and the "make to order, marginal product, profitable revenue, and cash profit" business principles, continuously enhance core functions and core competitiveness, unswervingly strive to be a stronger and better player, stabilize the industry-first business performance in China, and open up a new dimension of innovation-driven high-quality development.

Interests and views of stakeholders

Company has identified the key stakeholders having decision-making power and influence on the Group based on its business nature and operational characteristics taking into account global industry experiences and practices, and established a regular communication mechanism with stakeholders. Company ensures that our environmental and social impacts are in line with the stakeholders' expectations while taking full account of the impact of ESG risks and opportunities on the Company. The Company's key stakeholders are divided into the following eight categories:

Material impacts, risks and opportunities and their interaction with strategy and business model(s)

Company develops the Company's carbon neutral technology roadmap, prepares the Company's medium and long-term green and low-carbon plan, implements the ultimate energy efficiency project, develops and expands green energy, researches and innovates the application of low-carbon metallurgy, and promotes a resource-recycling economy subject to low-carbon mining, high utilization, and low emissions.

Company identifies and assesses climate change risks and opportunities based on various scenarios such as the International Energy Agency's (IEA) Net Zero Emission (NZE) by 2050 as well as the transformation and development of China's steel industry (China Iron and Steel Association), taking into account national regulatory policies and changes in downstream customer markets.

Stakeholder	Communication Channels/Response
Staff	Employee activities Internal publications (newspaper, magazines) Employee performance appraisal Multimedia (public and other social platforms)
Government departments, regulatory agencies and auditors	Site investigation Meeting
Shareholders, investors and rating agencies	General meeting of shareholders Investors meeting Performance conference Press release/announcement Site investigation
Customers	Customer satisfaction survey Customer line Official media platform Customer conference
Community members, organizations and non-governmental organizations	Press release/announcement Public welfare undertakings
Suppliers, service providers and contractors	Supplier qualification review Supplier exchange conference
Industry partners, industry associations, and scientific research institutions	Industry association Exhibition
Media	Media press conference Press release/announcement Official media platform

Example 6: ESG Disclosure - Strategy – TCLF Sub-sector

Multinational fashion group based in Spain[80]

Positioning in the market

The group is considered a global fast fashion pioneer, with well-known major brands such as Zara, Pull& Bear, Massimo Dutti, Bershka, etc. offering our customers an inspiring, quality and responsibly produced range of products. Group has a presence in 214 markets, with a relatively low market share in most of them and in a highly fragmented sector, meaning that it has strong growth opportunities.

Regarding sustainable development goals, the Group has developed a sustainability roadmap 2040, with specific target figures:

Roadmap 2040

2025	2030	2040
/ Obtain 100% of our linen and polyester from preferred or lower-impact sources. ⓘ E5 / Reduce water consumption throughout the supply chain by 25%. ⓘ E3 / Help 10 million people through our corporate community investment programme. ⓘ S3 / Reach 3 million people in the supply chain through the Workers at the Centre strategy (fostering progress in the areas of social dialogue, living wages, health, respect and resilience). ⓘ S2 / Provide circularity services such as Zara Pre-Owned in key markets. ⓘ E5	/ Reduce our emissions a 53%, including our own operations and value chain. ⓘ E1 / Use only textile fibres that have a lower impact. ⓘ E5 / 5 million hectares protected, restores or regenerated, or under other forms of management for biodiversity improvement. ⓘ E4	/ Achieve net-zero emissions, reducing at least 90% of our carbon footprint with respect to 2018. ⓘ E1

In terms of directions in its corporate strategy, the Group integrates sustainability into all processes and decisions throughout the entire value chain. To this end, the Group takes actions to promote a culture of sustainability for all its employees, and implements sustainability plans with insights, including: (1) Climate Transition Plan; (2) Supply chain transformation plan; (3) Fibres plan.

Business model

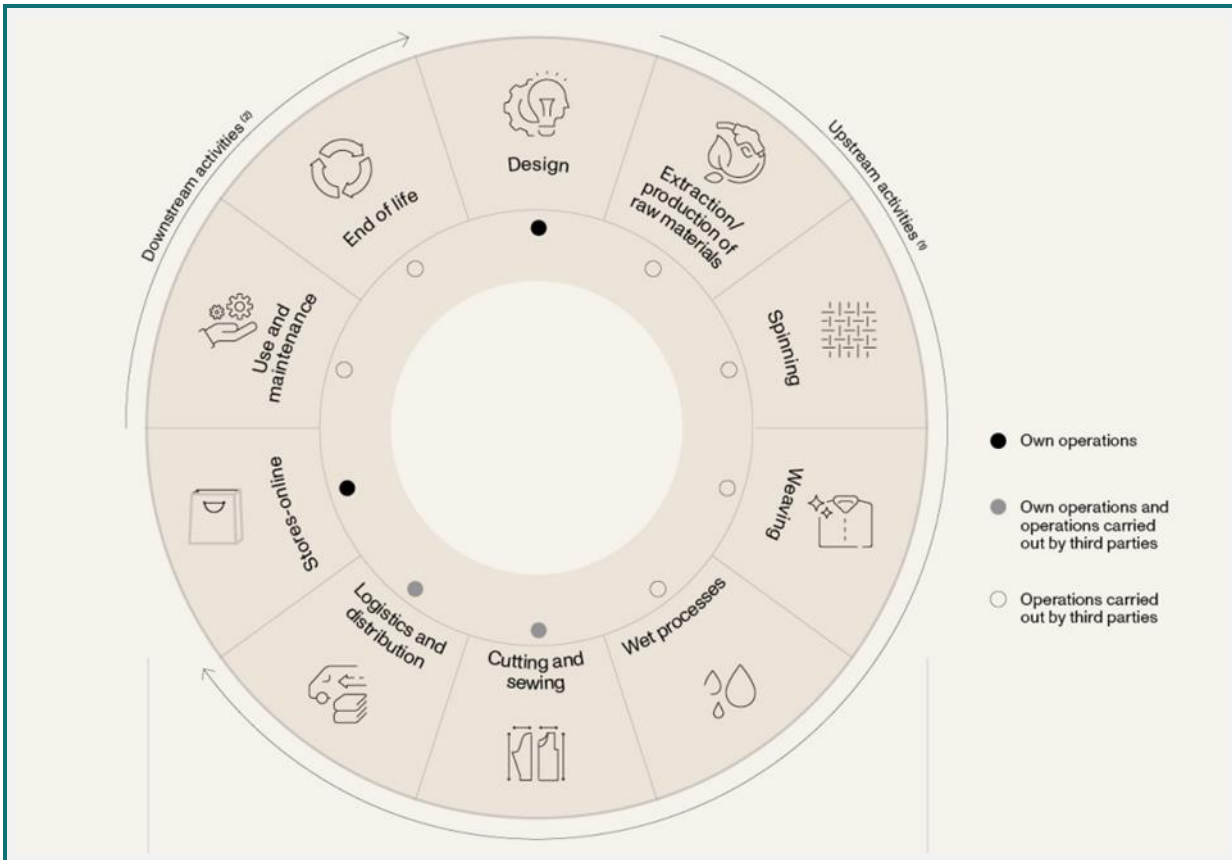
Group's business model covers all the stages, including the design of products and their sale in our stores and online platforms. This business model is based on four drivers, with the aim of generating maximum value for our customers, investors and other stakeholders:

(i) A fashion proposal built on creativity, innovation, quality and, above all, on permanently listening to the needs and wishes of our customers.
(ii) An increasingly engaging shopping experience.
(iii) Group's commitment to sustainability and responsibility.
(iv) Group's people's talent.

Retail concepts excel in their capacity to adapt and respond to any change in the market or the irruption of a new trend, thanks to fine-tuned production processes, with short runs that are fully adapted to demand. So as to guarantee an agile and effective response to this demand, a significant portion of our garments are manufactured in proximity markets near our headquarters, such as Spain, Portugal, Morocco and Türkiye.

The Group transparently discloses the value chain according to 2 main activities, Upstream and Downstream, with the classification of operation levels: (i) Own operations, (ii) Own operations and operations carried by third parties, (iii) Operations carried by third parties.

Group's Value Chain



Interests and views of stakeholders

Group relationship with them is based on transparency, which helps Group to establish a bond of trust with them, and permanent dialogue, which allows us to respond to their demands and needs. To make these principles a reality, Group use strategies, goals and channels of communication and dialogue that are constantly being updated. Moreover, Group have policies that define the principles of the relationship with each stakeholder group, such as our Code of Conduct, our Code of Conduct for Manufacturers and Suppliers or Group's Human Rights Policy, adjunct to Sustainability Stakeholder Relations Policy.

Every year Group conduct a materiality assessment with stakeholders to gain what they need and expect from Company and the potential impacts, risks and opportunities (IROs) of our business model and value chain.

To foster dialogue with our stakeholders on sustainability, the Group established the Social Advisory Council (2002) to connect with civil society and the Sustainability Committee (2019) to oversee communication strategies, stakeholder relations, and ensure effective communication.

Material impacts, risks and opportunities and their interaction with strategy and business model(s)

Through materiality assessment, Group identify our material impacts, risks and opportunities (IROs), especially human rights, financial risks and opportunities, and implementation efficiency in the short, medium and long term. In 2024, in accordance with the ESRS framework methodology, the Group identifies the following 37 Impacts, Risks and Opportunities:

	Type (I/R/O)	Affectation on Human Rights
E1 - CLIMATE CHANGE		
Greenhouse gas emissions (GHG)	I	✓
Energy consumption	I	–
Physical and transition risks related to climate change	R	–
E2 - POLLUTION		
Impact from the use of chemical substances	I	✓
Possible emissions of other pollutants and microfibres	I	✓
Transition risks due to pollution	R	–
E3 - WATER RESOURCES		
Water withdrawal	I	✓
Water discharge	I	✓
Physical and transition risks due to water resources	R	–
E4 - BIODIVERSITY AND ECOSYSTEMS		
Impacts relating to the exploitation, degradation and disruption of ecosystems and natural resources	I	✓
Physical and transition risks due to biodiversity and ecosystems	R	–
E5 - RESOURCE USE AND CIRCULAR ECONOMY		
Possible impact from the use of conventional raw materials	I	✓
Circularity	I	✓
Waste generation	I	✓
Transition risks due to the use of resources and the circular economy	R	–
Opportunity for new business models (e.g. Zara Pre-Owned)	O	–
Opportunity to improve efficiency in the consumption of natural resources	O	–
S1 - OWN WORKFORCE		
Quality employment	I	✓
Payment of adequate wages	I	✓
Efficient mechanisms for social dialogue and respect for the rights of freedom of association and collective bargaining	I	✓
Work-related accidents and occupational diseases	I	✓
Professional development	I	–
Possible impacts on vulnerable groups	I	✓
Possible loss of personal data	I	✓
Risks related to human capital	R	–
Business development opportunities by attracting and retaining talent	O	–

	Type (I/R/O)	Affectation on Human Rights
S2 - WORKERS IN THE VALUE CHAIN		
Working conditions	I	✓
Achievement of adequate wages	I	✓
Social dialogue and respect for the rights of freedom of association and collective bargaining	I	✓
Work-related accidents and occupational diseases	I	✓
Possible impacts on vulnerable groups	I	✓
Risks related to value chain workers	R	–
S3 - AFFECTED COMMUNITIES		
Value creation and community investment	I	✓
Possible violations of local communities' rights	I	✓
Risks related to local communities' rights	R	–
S4 - CONSUMERS AND END-USERS		
Possible loss of our customers' personal data	I	✓
Possible impacts related to the health and safety of our products	I	✓
Possibility of consumer discrimination	I	✓
Responsible marketing practices and transparency	I	–
Risks related to consumers' rights	R	–
Opportunity to attract new customers through responsible practices	O	–
G1 - BUSINESS CONDUCT		
Possibility of ineffectiveness of the grievance mechanisms	I	✓
Promotion of regulatory development and industry improvement	I	–
Possibility of corruption, fraud, bribery and other unlawful acts	I	–
Supplier relations management and responsible purchasing practices	I	✓
Risks arising from the relationship with key suppliers	R	–
Cybersecurity risk	R	–

4. Risk Management

GENERAL REQUIREMENTS FOR ESG DISCLOSURE

Elements	Content
Description of processes and related policies the organisation uses to identify, assess and prioritise sustainability-related risks and opportunities	• A description of the methodologies, assumptions and proprietary tools applied in the sustainability-related risks and opportunities identification, assessment and prioritization processes • An overview of the process(es) to identify, assess and prioritise the organisation's potential and actual impacts on people and the environment • An overview of the process(es) used to identify, assess and prioritise sustainability-related risks and opportunities that have or may have financial effects
Description of the extent to which, and how, the processes for managing sustainability-related risks and opportunities are integrated into the organisation's overall risk management process	• How the process(es) to identify, assess and manage sustainability-related risks are integrated into the enterprise's risk management framework and used to evaluate overall risk profile and risk management processes • How the process(es) to identify, assess and manage sustainability-related opportunities is/are integrated into the undertaking's overall management process (where applicable) • whether the process(es) has/have changed compared to the prior reporting period, when the process(es) was/were modified for the last time and future revision dates of the materiality assessment. • Policies and actions adopted to address material impacts and/or risks and/or to pursue material opportunities.

GUIDANCE ON DEVELOPING RISK MANAGEMENT DISCLOSURE CONTENT FOR MANUFACTURING SECTOR

Risk Management disclosure aims to provide information on how the organisation identifies, assesses, prioritises and monitors sustainability-related risks and opportunities and how these fits in the enterprise risk management system.

Integrating ESG considerations into a organisation's existing risk management framework supports the achievement of both overall business objectives and specific ESG goals. Manufacturing enterprises may refer to the Enterprise Risk Management (ERM) – ESG Framework developed by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), to ensure that sustainability-related risks are identified, assessed, prioritized, and aligned with business operations. Organizations should also refer to regulations on environmental, social, and governance risk management as defined by relevant sector-specific regulations.

Manufacturing enterprises can refer to the General Handbook – Part 2, section 2.2.2 and Part 3, section 3.6.

Example 7: ESG Disclosure – Risk Management – Iron & Steel Sub-sector

Leading global steel manufacturing group based in China[79]

Risk Management and Monitoring System

Under the supervision and guidance of the Board of Directors, we have established a comprehensive risk prevention and control management framework, including:

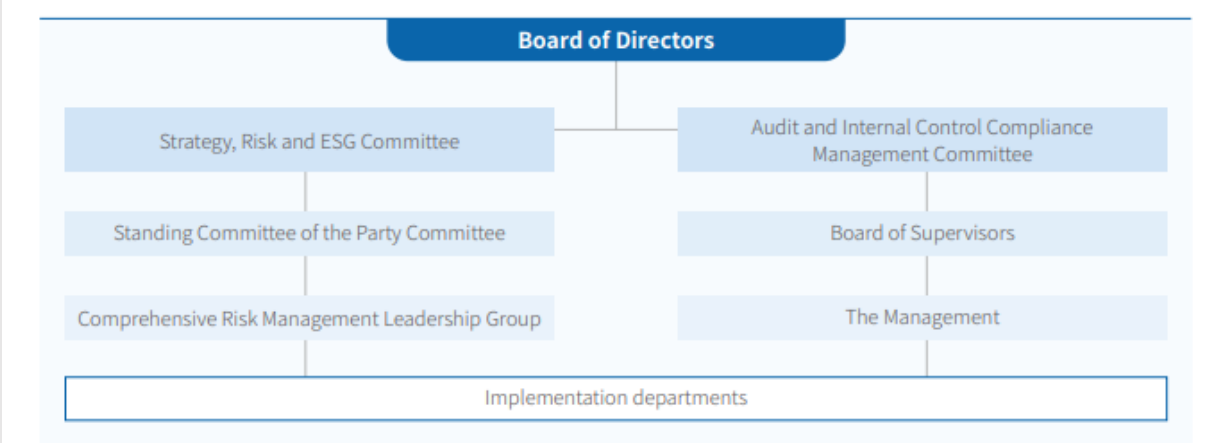
- Strategy, Risk and ESG Committee – the highest management body for comprehensive risk management at corporate level, to review the effectiveness of control over the Company's major risks, comprehensive manage the Company's risks, improve the Company's risk management system capabilities.
- The Audit and Internal Control Compliance Management Committee – supervising and auditing the risk management performance during operations.

- Operation Improvement Department – reporting the Company's risk management system establishment, key risks control, professional risk controls, and work plans to the Company's Strategy, Risk and ESG Committee and the Board of Directors.

Risk Monitoring and Assessment Activities

In addition, our audit supervision department incorporates risk management supervision assignments into annual work plans. The measures include:

- Conducts supervision and inspection on the implementation and effectiveness of risk management measures through audit projects and internal control evaluations every year.
- Promptly reports to the Audit and Internal Control Compliance Management Committee major defects or major risks identified during the audit.



Risk Management Framework

At executive level, Company fully advances risk management and establishes three lines of defense for risk management to ensure the effective operation of risk management system.

Risk management system

- Study the risk mechanism, identify factors that significantly impact business objectives.
- Develop a risk warning model and risk control mechanism for important factors.
- Assignment of responsibilities: Production facilities and sales departments are designated as the first responsible units in comprehensive risk management, in order to strengthen the Company's risk prevention capacity.

ESG Risk Integration

The Company has incorporated ESG risks such as climate change, environmental compliance, and labor management into the existing risk management system to fulfill the social responsibility as a SOE.

The Company conducts risk identification and evaluation on a quarterly basis, including identification and response to existing and potential risks of bulk raw materials and fuels, the fluctuation in carbon steel prices and environmental

protection. Additionally, Company conduct evaluation and analysis on risk exposures through formal management process.

Risk Response Measures to address critical impacts and risks, taking advantage of critical opportunities

Risk	Response
Bulk raw material and fuel risk	The procurement of bulk raw materials and fuels is affected by macroeconomic policies, changes in supply and demand balance, and supply and demand game; therefore, price fluctuates greatly, which may lead to increased procurement costs, continuous supply, and inventory depreciation. In 2023, the Company established a collaborative mechanism for raw material risk management based on market trends, taking into account production scale and demand, supply guarantee inventory, developed risk management measures based on macro and industry early warning indicators by categories, and created a raw material inventory risk warning mechanism. In addition, we considered the attributes of raw materials purchased and optimized procurement mode, to engage in coordinated operation of strategic procurement and competitive procurement. We improved the risk transfer strategy, upgraded procurement standards and systems, incorporated green procurement into the entire process of raw materials, products, and services procurement, continuously advanced pollution and carbon reduction and promptly adopt established measures against the risks early warned.
Product differentiation risk	Product differentiation capability is an integral component of Baosteel's core competitiveness, which helps Baosteel to maintain product market share, equip Baosteel with certain market bargaining power, and avoid vicious homogenization competition. With the continuous improvement of equipment and technological capabilities of competitors in recent years, the violent competition in steel products has intensified, and the proportion of product homogeneity has gradually increased. In 2023, Baosteel developed the risk control strategy of "actively facing the major changes in automotive industry and reshaping the competitiveness of Baosteel's automotive plate products" in response to the dramatic changes in automotive industry and the development trend of new energy, strengthened risk evaluation and response, and formulated risk response plans.

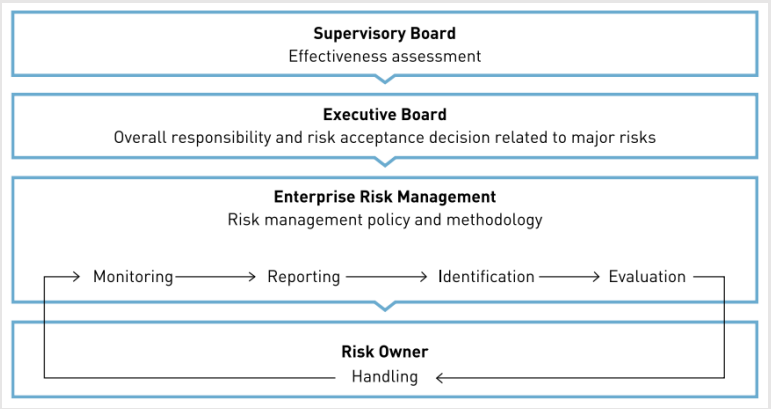
Beyond that, Baosteel evaluates and responds to such major medium and long-term emerging risks as information security risk, to further bolster risk prevention and control awareness and capabilities.

Example 8: ESG Disclosure – Risk Management – TCLF Subsector

The largest global sportswear manufacturing group based in Germany

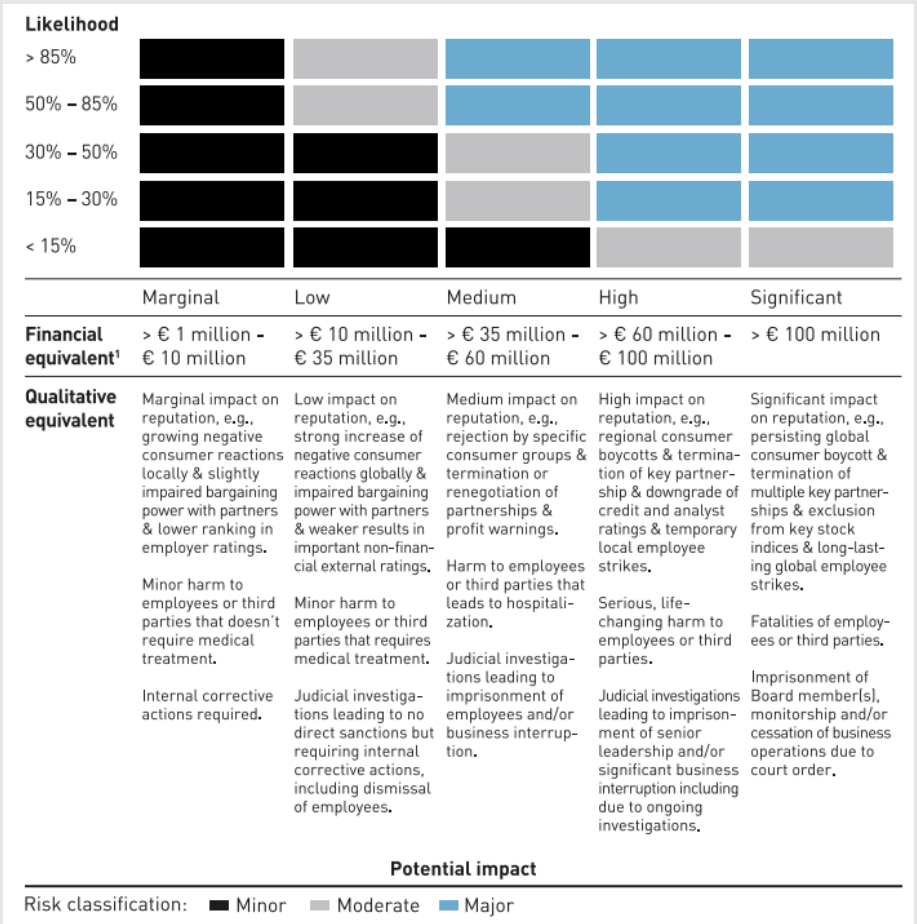
The Group's risk and opportunity management system is based on the Corporate Risk Management Frameworks and internal controls developed and published by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In addition, the Group has adjusted its risk and opportunity management system to enhance its ability to reflect in accordance with the structure and culture of the business. This system focuses on systematic identification, assessment, processing, reporting along with risk and opportunity monitoring. Furthermore, the Group uses the

quantitative concept for risk tolerance and risk appetite. Exposure is a liquidity-based measure and represents the maximum level of risk a Group can take before it is threatened with bankruptcy. Risk appetite refers to the maximum level of risk that is within the tolerance threshold and is related to the Group's liquidity objectives.



The Group's risk and opportunity management process is as follows:

- Executive Board: has the overall responsibility for establishing a risk and opportunity management system to ensure comprehensive and consistent management of all relevant risks and opportunities.
- Enterprise Risk Management: manages, operates, and develops the enterprise's risk and opportunity management system and is the owner of the centrally managed risk and opportunity management process on behalf of the Executive Board.
- The Supervisory Board is responsible for monitoring the effectiveness of the risk management system. These tasks are undertaken by the Audit Committee of the Supervisory Board. Operating independently of all other functions of the organization, the Internal Audit department provides objective assurance to the Executive Board and the Audit Committee of the adequacy and effectiveness of the company's risk and opportunity management system on a regular basis.
- The Internal Audit Committee undertakes the evaluation of the effectiveness of risk management processes and compliance with the Corporate Risk Management Policy as part of its regular audit activities with selected subsidiaries or functions of the Group on an annual basis.



The Group's risk assessment classification, including an equivalent financial impact analysis and a qualitative impact analysis, is given in the figure above.

5. Metrics and targets

GENERAL REQUIREMENTS FOR ESG DISCLOSURE

Elements	Content

Metrics in relation to material sustainability matters	• The organisation should disclose any metrics that it uses to evaluate performance and effectiveness, in relation to a material impact, risk or opportunity, explaining their significance, their implications.
	• Metrics should include:
	  ◦ Metrics defined in the organisation's selected reporting standard;
	  ◦ Metrics identified on an entity-specific basis, whether taken from other sources or developed by the organisation itself.

Targets to track effectiveness of policies and actions	• Disclose whether the target is absolute or intensity-based, the relevant time frame over which the target applies and the base year from which progress is measured • the specific quantitative or qualitative target the organisation has set or is required to meet; • the methodologies and significant assumptions used to define targets; • performance against each target and an analysis of trends or changes in the organisation's performance.

GUIDANCE ON DEVELOPING METRICS AND TARGETS DISCLOSURE CONTENT FOR MANUFACTURING SECTOR

Together with narrative disclosures under the governance, strategy and risk management core elements, metrics and targets disclosures will help to form comprehensive and decision-useful view of both qualitative and quantitative information. Manufacturers can refer to the General Handbook – Part 3, section 3.7 for more detailed information.

To monitor and disclose information about the ESG Action Plan, enterprises can refer to the disclosure recommendations of the following standards (not exhaustive):

- GRI standards: https://www.globalreporting.org/how-to-use-the-gri-standards/gri-standards-english-language/
- SASB standards: including disclosure guidance for 77 industries and sectors, including climate disclosure content, ensuring consistency with IFRS S2 standards. Please visit: https://sasb.ifrs.org/standards/download/
- Guidance on disclosure of information for transition plans towards a low-carbon economy issued by the UK's Transition Plan Taskforce (TPT), consistent with IFRS S2 standards and TCFD guidance. Please visit: https://itpn.global/tpt-legacy/.

Each business needs to assess the materiality and relevance of these disclosure topics and contents to its operations and objectives. At the same time, enterprises should also include reporting on environmental, social and governance indicators as required by law, in addition to international frameworks and standards. The table below summarizes some key indicators of ESG disclosure of GRI standards for reference by manufacturing businesses.

Table 13. Manufacturing sustainability topics, metrics and disclosure content - Source: GRI [81]

TOPIC	KEY METRIC
Air quality	Total gross air emissions

TOPIC	KEY METRIC
Water and wastewater management	• Total water withdrawal from all areas • Total water withdrawal from all areas with water stress • Total water discharge to all areas • Total water discharge to all areas with water stress • Total water consumption from all areas • Total water consumption from all areas with water stress • Percentage of suppliers with significant water-related impacts from water discharge that have set minimum standards for the equality of their effluent discharge
Biodiversity and ecological impacts	IUCN Red List species and national conservation list species with habitats in areas affected by operations
Waste and hazardous materials management	• Total weight of waste diverted from disposal • Total weight of waste directed to disposal • Total weight of waste generated
GHG Emissions	• Scope 1 emissions • Scope 2 emissions • Scope 3 emissions (at least for the categories of …) • Emissions of ozone-depleting substances (ODS)
Energy management	• Total energy consumption from own operations • Total energy consumption outside of own operations • Amount of reductions in energy consumption achieved as a direct result of conservation and efficiency initiatives • Reductions in energy requirements of sold products and services achieved • Energy intensity ratio
Climate adaptation, resilience, and transition	• Exposure to carbon-related assets of a portfolio • Total carbon emissions of a portfolio • Weighted average carbon intensity of a portfolio • Carbon efficiency of a portfolio
Materials Sourcing & Efficiency	• Materials used by weight or volume • Recycled input materials used • Reclaimed products and their packaging materials
Human rights and community relations	• Incidents of violations involving rights of indigenous peoples • Operations with local community engagement, impact assessments, and development programs • Operations with significant actual and potential negative impacts on local communities • Security personnel trained in human rights policies or procedures • Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk
Product quality and safety	• Assessment of the health and safety impacts of product and service categorie • Incidents of non-compliance concerning the health and safety impacts of products and services
Customer welfare	• Revenue from products labelled or marketed to promote health and nutrition attributes • Discussion of the process to identify and manage products and ingredients related to nutritional and health concerns among consumers
Selling practices and product labelling	• Requirements for product and service information and labeling • Incidents of non-compliance concerning product and service information and labeling • Incidents of non-compliance concerning marketing communications
Labor practices	• Average hours of training per year per employee • Programs for upgrading employee skills and transition assistance programs

TOPIC	KEY METRIC
	• Percentage of employees receiving regular performance and career development reviews • New employee hires and employee turnover • Benefits provided to full-time employees that are not provided to temporary or part-time employees • Parental leave • Operations and suppliers at significant risk for incidents of child labor • Operations and suppliers at significant risk for incidents of forced or compulsory labor
Employee health and safety	• Workers covered by an occupational health and safety management system • Work-related injuries
Employee engagement, diversity and inclusion	• Incidents of discrimination and corrective actions taken • Diversity of governance bodies and employees • Ratio of basic salary and remuneration of women to men

Metrics and targets for iron and steel sector

Each enterprise needs to assess the materiality and relevance of these topics and disclosures to its operations and objectives. These recommendations are developed based on the SASB Standard – Iron and Steel Manufacturing (together with IFRS S2 Climate-Related Disclosures),[82] which are indicators that investors consider important for iron and steel enterprises. Enterprises should consider reporting the metrics in the table below on the basis of considering the available resources to collect, track and aggregate data for reporting.

TOPIC/ SUB-TOPIC	KEY METRIC
Air quality	
	Air emissions of the following pollutants: (1) CO, (2) NO_x (excluding N_2O), (3) SO_x, (4) particulate matter (PM_{10}), (5) manganese (MnO), (6) lead (Pb), (7) volatile organic compounds (VOCs), and (8) polycyclic aromatic hydrocarbons (PAHs)
Water and wastewater management	
	(1) Total water withdrawn, (2) total water consumed; percentage of each in regions with High or Extremely High Baseline Water Stress
Waste and hazardous materials management	
	(1) Amount of waste generated, (2) percentage hazardous, (3) percentage recycled
GHG Emissions	
	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations
	Discussion of long- and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets
Energy management	
	(1) Total energy consumed, (2) percentage grid electricity and (3) percentage renewable
	(1) Total fuel consumed, (2) percentage coal, (3) percentage natural gas and (4) percentage renewable
Materials Sourcing & Efficiency	
	Total weight or volume of materials that are used to produce and package the organisation's primary products and services during the reporting period[83], by: • Non-renewable materials used; • Renewable materials used
	Percentage of recycled input materials used to manufacture the organisation's primary products and services[84]
	Percentage of reclaimed products and their packaging materials for each product category[85]
Human rights and community relations	

	Percentage of operations with implemented local community engagement, impact assessments, and/or development programs[86]
	Total number of identified incidents of violations involving the rights of indigenous peoples during the reporting period and status of them[87]
Labor practices	
	The total number of employees and type of contracts[88]
	Average hours of training that the organisation's employees have undertaken during the reporting period[89], by: • Gender • Employee category
Employee health and safety	
	(1) Total recordable incident rate (TRIR), (2) fatality rate, and (3) near miss frequency rate (NMFR) for (a) direct employees and (b) contract employees
Employee engagement, diversity and inclusion	
	Number of incidents of discrimination[90]
	Percentage of individuals within the organisation's governance bodies[91]
	Percentage of employees per employee category[92]
	Ratio of basic salary and remuneration of women to men[93]

Metrics and targets for TCLF sector

GRI is currently developing its own standard for the textile industry, which is expected to have a public draft in Q1 or Q2 2025[94]. The Science Based Targets Initiative (SBTi), in conjunction with the World Resources Institute, published guidance for the Apparel and Footwear industry in 2019[95]. The International Sustainability Standards Board (ISSB) has released Industry-Based Guidance on the implementation of Climate Change-Related Disclosures, along with IFRS S2 standards, which aim to propose feasible indicators that businesses use to identify, measure and disclose information on risks and opportunities related to climate change.[96].

The table below recommends ESG disclosure on specific material topics along with corresponding metrics and disclosure content. These recommendations are developed in reference to SASB Standards – Apparel, Accessories & Footwear sector (accompanying IFRS S2 Climate-related Disclosures). Businesses should consider reporting the metrics in the table below on the basis of considering the available resources to collect, track and aggregate data for reporting.

TOPIC/ SUB-TOPIC	KEY METRIC
GHG emissions	
	Gross greenhouse gas emissions generated during the reporting period, expressed as metric tonnes of CO2 equivalent, classified as: (1) Scope 1 greenhouse gas emissions; (2) Scope 2 greenhouse gas emissions; and (3) Scope 3 greenhouse gas emissions:
Water and Wastewater Management	
	Percentage of (1) Tier 1 supplier facilities (2) supplier facilities beyond Tier 1 in compliance with wastewater discharge permits or contractual agreements
Biodiversity and ecological impacts	
	Percentage of (1) Tier 1 supplier facilities and (2) supplier facilities beyond Tier 1 that have completed the Sustainable Apparel Coalition's Higg Facility Environmental Module (Higg FEM) assessment or an equivalent environmental data assessment
Materials Sourcing & Efficiency	
Raw materials sourcing	(1) List of priority raw materials; for each priority raw material: (2) environmental or social factor(s) most likely to threaten sourcing, (3) discussion on business risks or opportunities associated with environmental or social factors and (4) management strategy for addressing business risks and opportunities

	(1) Amount of priority raw materials purchased, by material, and (2) amount of each priority raw material that is certified to a third-party environmental or social standard, by standard
Product Quality and Safety	
Management of Chemicals in Products	Discussion of processes to maintain compliance with restricted substances regulations
	Discussion of processes to assess and manage risks or hazards associated with chemicals in products
Labour Conditions in the Supply Chain	
Employee health and safety	Description of the greatest (1) labour and (2) environmental, health and safety risks in the supply chain
Labor practices	(1) Priority non-conformance rate and (2) associated corrective action rate for suppliers' labour code of conduct audits
	Percentage of (1) Tier 1 supplier facilities and (2) supplier facilities beyond Tier 1 that have been audited to a labour code of conduct, (3) percentage of total audits conducted by a third-party auditor

Example 9: ESG Disclosure – Metrics and Targets – Iron and Steel Sub-sector

Leading Steel Manufacturing Group in UAE[97]

The company is committed to environmental stewardship, social responsibility, and governance, and provides a roadmap for achieving our sustainability goals. These commitments are also outlined in our Group ESG Policy, which is periodically reviewed to ensure its relevance and effectiveness. Specifically, as follows:

- **Environmental**

The Group critical material topics include GHG emissions, energy management, circular economy and waste and water management. The company aims to significantly reduce emissions intensity and transition to 100% clean and renewable energy mix by 2030, which is essential for combating climate change and promoting sustainability. The further goal is to achieve net zero emissions by 2050, in line with the UAE's Net Zero Strategy.

- **Social**

Health and safety is critical, alongside human capital development, Emiratisation and engaging with our customers. Prioritising these topics ensures a safe working environment, promotes workforce diversity, and enhances employee skills, and ultimately contributing to skill force development and community well-being.

- **Governance**

The enterprise focuses on business integrity and ethics, corporate governance and responsible supply chain management. By prioritising ethics and transparency, the company aims to build trust with stakeholders and ensure compliance with regulatory standards, fostering long-term sustainability.

Category	Target	Baseline	Progress in 2024 towards 2030 target
GHG Emissions	Emirates Steel: reduce GHG emissions by 40% by 2030	Year 2019: 3.2 million tCO_2e	89%
	Emirates Cement: reduce GHG emissions by 30% by 2030	Year 2019: 2.59 million tCO_2e*	50%
Energy Management	100% of clean energy consumption in 2030 compared to the 2019 baseline	Emirates Steel: Year 2020: 0%	86%
		Al Ain Cement Factory: Year 2023: 0%	14%
	Reduce energy consumption by 7% until 2030	Emirates Steel: Year 2023: 17.85** GJ/t CrudeSteel	49%
		Al Ain Cement Factory: Year 2023: 3.4 GJ/t Cementitious	8%
Circular Economy and Waste	Emirates Steel: aims to increase the tons of by-products recycled to 95%	Emirates Steel: Year 2023: 89.9% of Tons of by-products recycled	100%
Water and Effluents	Planning for ISO 46001 (water efficiency management system), which will establish targets for water management	Emirates Steel: Year 2023	
Health and Safety	Emirates Steel: target a reduction of TRIR to 0.3 and below by 2030	Year 2019: 0.58	83%
Human Capital Development	Double female workforce	Female workforce in Year 2023 = 4%	0%
	Planning to increase training to 90-95 hours per employee by 2030	83 hours per employee in 2023	100%
Business Integrity and Ethics	Maintain a comprehensive 100% assessment of all assets for corruption risk	Year 2023= 100%	100%
Responsible Supply Chain	Emirates Steel aims to Suppliers screened for ESG criteria compliance	Emirates Steel: Suppliers screened for ESG criteria compliance in 2023 = 85%	100%
Corporate Governance	Targeting annual ESG related training to its Board members	Year 2023 = 0 Trainings	100%

Example 10: ESG Disclosure – Metrics and Targets – TCLF Sub-sector

Multinational fashion group based in Spain[65]

Group's 2040 net zero emissions target and 2030 emissions reduction target have been approved by the SBTi, in accordance with this organisation's criteria and considerations for the 1.5ºC emissions pathway. This ensures that they are consistent with climate science consensus and the Paris Agreement ambition. These targets affect both own operations (scope 1 and 2) and value chain (scope 3), regardless of their location. Furthermore, by 2030 Group aim to reduce our total emissions by at least 53%, including own operations and the value chain.

Target: reach net-zero GHG emissions by 2040

Breakdown by scope

/ Reduce scope 1 and 2 GHG emissions by 95% by 2040

/ Reduce scope 3 GHG emissions by 90% by 2040

Target: reduce our total emissions by at least 53% by 2030

Breakdown by scope

/ Reduce absolute scope 1 and 2 emissions by 95% by 2030

/ Reduce absolute scope 3 emissions by 51% by 2030

	Base year	Current year	Target year	
	2018	2024	2030	2040
Total emissions (t CO_2eq)	10,528,872	9,962,965	4,941,090	1,028,108
Scope 1 and 2 (t CO_2eq)	495,584	60,912	24,779	24,779
Scope 3 (t CO_2eq)	10,033,288	9,902,054	4,916,311	1,003,329

The Group has set specific indicators on greenhouse gas emissions to fulfill its commitment to reduce environmental impacts and comply with international standards, especially the Paris Agreement. Details of the roadmap for Scope 1, Scope 2 and Scope 3 Greenhouse Gas Emissions:

	Retrospective				Milestones and target years [1]			
	2024	2023	2018 (base year)	Comparison (2024/2023 %)	2027	2030	2040	Target (2024/2018 %)
Scope 1 GHG emissions								
Gross scope 1 GHG emissions (t CO_2eq)	59,572	49,686	76,136	20%	60,909	3,807	3,807	(22)%
Percentage of scope 1 GHG emissions from regulated emissions trading schemes (%)	-	-	-	-	-	-	-	-
Scope 2 GHG emissions								
Gross location-based scope 2 GHG emissions (t CO_2eq)	433,654	448,966	662,799	(3)%	NA	NA	NA	NA
Gross market-based scope 2 GHG emissions (t CO_2eq)	1,340	1,153	419,448	16%	335,558	20,972	20,972	(100)%
Scope 3 GHG emissions [2]								
C1. Purchased goods and services	6,696,995	7,102,152	7,264,232	(6)%	-	-	-	(8)%
C2. Capital goods	275,050	265,644	240,011	4%	NA	NA	NA	NA
C3. Fuel and energy-related Activities (not included in scopes 1 or 2)	42,536	36,576	140,189	16%	-	-	-	(70)%
C4. Upstream transportation and distribution	2,614,230	2,378,464	2,102,728	10%	-	-	-	24%
C5. Waste generated in operations	3,854	2,819	3,583	37%	-	-	-	8%
C6. Business travel	34,980	34,679	49,425	1%	-	-	-	(29)%
C7. Employee commuting	143,878	142,038	174,105	1%	-	-	-	(17)%
C11. Use of sold products	3,250,659	3,105,308	3,148,636	5%	NA	NA	NA	NA
C12. End-of-life treatment of sold products	236,398	225,882	180,123	5%	-	-	-	31%
C13. Downstream leased assets	0	256	0	(100)%	-	-	-	0%
C14. Franchises	129,183	125,012	118,903	3%	-	-	-	9%
Total gross indirect GHG emissions (scope 3) (t CO_2eq)	13,427,762	13,418,829	13,421,935	0%	8,026,630	4,916,311	1,003,329	0%
Total GHG emissions								
Total (location-based) GHG emissions (t CO_2eq)	13,920,988	13,917,482	14,160,871	0%	NA	NA	NA	NA
Total (market-based) GHG emissions (t CO_2eq)	13,488,674	13,469,668	13,917,519	0%	8,423,098	4,941,090	1,028,108	(5)%

PART C: ADDITIONAL GUIDANCE ON CLIMATE-RELATED DISCLOSURE

Climate-related information disclosure will gradually become an important mandatory requirement in the near future for manufacturers around the world. The Task Force on Climate-related Financial Disclosures (TCFD) has provided a globally recognized climate disclosure framework for manufacturing, and at the same time, other climate-related disclosure frameworks and standards are also referenced and aligned to ensure consistency with the TCFD.

Given the complexity of developing TCFD-aligned climate disclosures, enterprises in Vietnam need to carefully assess and consider their implementation roadmap based on stakeholder requirements and available resources. Businesses may choose to integrate and embed climate-related disclosures aligned with TCFD into their ESG reports by element or issue a standalone TCFD disclosure report.

can refer to climate-related disclosure guidelines in the General Handbook – Part 3, Section 3, for each reporting element. In addition, this part of the Sectoral guidance will focus on providing some additional guidelines for manufacturing enterprises to refer to when disclosing climate-related information in alignment with TCFD for 4 key elements: Governance, Strategy, Risk Management and Metrics and Targets.

1. Governance

TCFD CLIMATE-RELATED RECOMMENDED DISCLOSURES

Element	TCFD climate-related recommended disclosures
Board oversight of climate-related matters	• Organizational chart that illustrates which board committee(s) are responsible and the frequency (e.g., annually, quarterly, more than quarterly) of those committees • Summary of key issues and initiatives discussed with the board during the current reporting period • ESG experience of board members in a summary of board credentials and experience and/or individual biographies
Management's role in the governance processes, controls and procedures used to monitor, manage and oversee climate-related matters	• List of management level committees and or functions (e.g., Environmental and Social Risk Management function) related to climate change management • Frequency (e.g., annually, quarterly, more than quarterly) of committees or executives reporting to the board to assess and manage climate-related risks and opportunities
Integration of climate-related performance in incentive schemes	• Details of the board and executive member incentives linked to climate initiatives and a description of the criteria for the incentive compensation, including connection to specific metrics.

GUIDANCE ON DEVELOPING CLIMATE-RELATED GOVERNANCE DISCLOSURES FOR MANUFACTURING ENTERPRISES

To ensure the usefulness of published information on the integration of climate considerations into governance processes, businesses should:

- Explain when and how climate change becomes a key factor in the strategic decisions of the Board of Directors. For example, the use of carbon pricing in capital assessments, strategic shifts in the product portfolio, and acquisitions or divestments driven by climate considerations.
- Specify how executive compensation and incentives are evaluated based on metrics used to assess climate-related risks, opportunities, and key targets.
- Provide clear evidence of specific climate-related responsibilities assigned to members of the Board and Executive Management.

- Describe the organizational structures and reporting lines for climate-related issues governance.
- Interpret the relevant competencies of Board members to ensure they can make informed and sound decisions regarding climate change.

According to the recommendations of TCFD,[98] enterprises consider:

- Governance at the Leadership Level:
  - The Board of Directors (BoD) issues formal documents to elevate the importance of climate-related issues.
  - A robust governance and decision-making process at the BoD level supports effective implementation by management. These processes define how frequently the BoD should be updated on risks. For example, more frequent updates on short-term transition risks may be necessary to inform upcoming investment decisions.
- Ensuring Senior Management Support: Support from the C-suite (CEO, CFO, etc.) is essential for implementing TCFD recommendations, particularly the involvement of the Chief Financial Officer (CFO). C-suite engagement ensures the necessary resources are allocated, climate-related financial information is included in annual reports, and leadership alignment is maintained for reviewing and approving TCFD disclosures.
- Mobilizing a Cross-Functional Implementation Team:
  - A team and implementation process involving multiple departments ensures coordination among personnel who influence strategic, operational, and investment decisions.
  - Representatives with diverse skill sets from departments such as sustainability, risk management, finance, investor relations, business operations, communications, manufacturing, R&D, procurement, and strategy bring critical insights and expertise, ensuring climate-related issues are fully integrated into the business.

Example 11: Climate-related disclosure – Governance – Iron and steel sub-sector

A large steel manufacturing corporation based in Japan[99]

Board oversight of climate-related issues

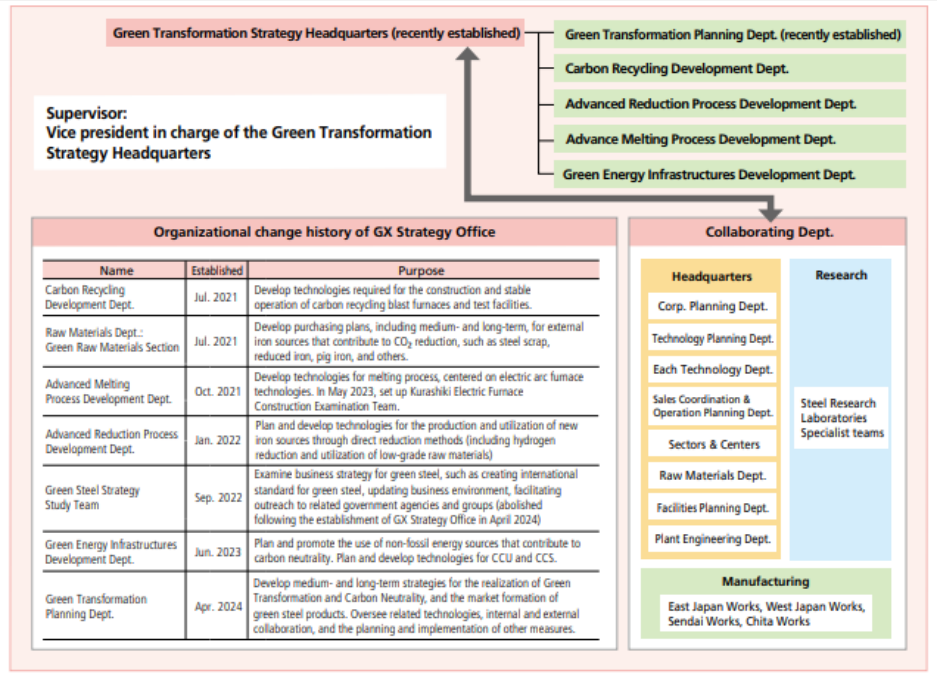
The Group's Board of Directors reported on the status of its initiatives on carbon neutrality and human rights due diligence at meetings to confirm progress and encourage discussion of upcoming challenges. The Group has also reported on issues related to sustainability and risk management, including the Group's approach to the Business Continuity Plan as well as the Group's approach and policies towards biodiversity, to enhance Board discussions.

Managing important issues such as climate change and other environmental challenges is considered by the Group Management Strategy Committee and reported to the Board of Directors. The Council also considers these issues and oversees initiatives.

Management's role in the governance processes, controls and procedures used to monitor, manage and oversee climate-related matters

The key for ensuring Group's sustainable growth is to develop and implement a medium- to long-term strategy for realizing Green Transformation (GX). In April 2024, the Green Transformation Strategy Headquarters was established to formulate and promote a Company-wide strategy to realize Green Transformation. The office is comprised of the recently established Green Transformation Planning Department and departments responsible for developing technologies, specifically the Carbon Recycling Development Department, Advanced Reduction Process Development Department, Advanced Melting Process Development Department, and Green Energy Infrastructures Development Department . The Green Transformation Planning Department is responsible for developing medium- and long-term strategies for realizing Green Transformation and the market formation and sales of green steel products.

The Group's management structure aims to promote carbon neutrality:

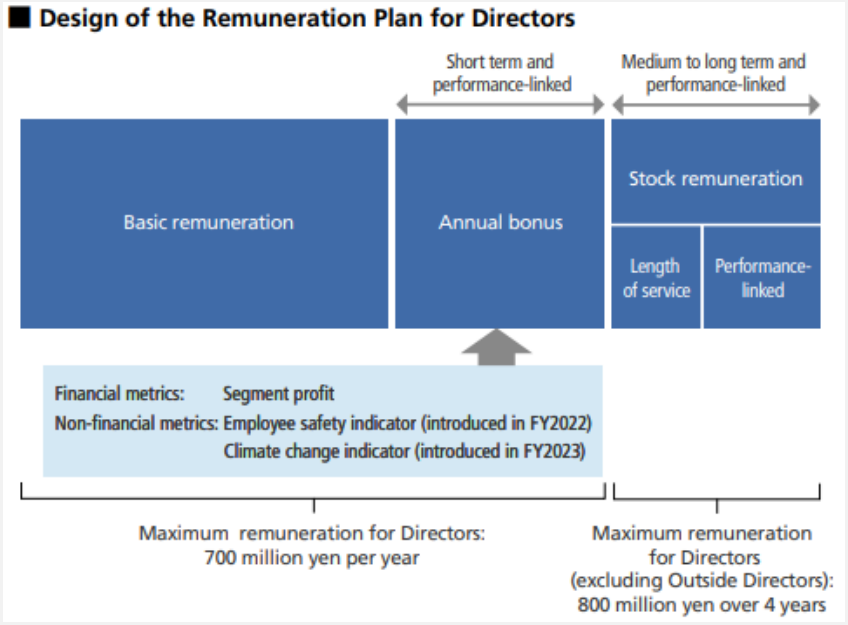


Name	Established	Purpose
Carbon Recycling Development Dept.	Jul. 2021	Develop technologies required for the construction and stable operation of carbon recycling blast furnaces and test facilities.
Raw Materials Dept.: Green Raw Materials Section	Jul. 2021	Develop purchasing plans, including medium- and long-term, for external iron sources that contribute to CO_2 reduction, such as steel scrap, reduced iron, pig iron, and others.
Advanced Melting Process Development Dept.	Oct. 2021	Develop technologies for melting process, centered on electric arc furnace technologies. In May 2023, set up Kurashiki Electric Furnace Construction Examination Team.
Advanced Reduction Process Development Dept.	Jan. 2022	Plan and develop technologies for the production and utilization of new iron sources through direct reduction methods (including hydrogen reduction and utilization of low-grade raw materials)
Green Steel Strategy Study Team	Sep. 2022	Examine business strategy for green steel, such as creating international standard for green steel, updating business environment, facilitating outreach to related government agencies and groups (abolished following the establishment of GX Strategy Office in April 2024)
Green Energy Infrastructures Development Dept.	Jun. 2023	Plan and promote the use of non-fossil energy sources that contribute to carbon neutrality. Plan and develop technologies for CCU and CCS.
Green Transformation Planning Dept.	Apr. 2024	Develop medium- and long-term strategies for the realization of Green Transformation and Carbon Neutrality, and the market formation of green steel products. Oversee related technologies, internal and external collaboration, and the planning and implementation of other measures.

Integration of climate-related performance in incentive schemes

The climate-related index is 1 of 2 non-financial indicators that evaluate the annual bonus for each position. This index is published in 2023, depending on the level of achievement of the KPIs selected for the relevant Operating Group from "Contributing to solving climate change issues (initiative to achieve carbon neutrality by 2050)".

Below is a Compensation System for Directors designed to promote the Group's sustainable growth, including the integration of Climate-related indicators to assess:

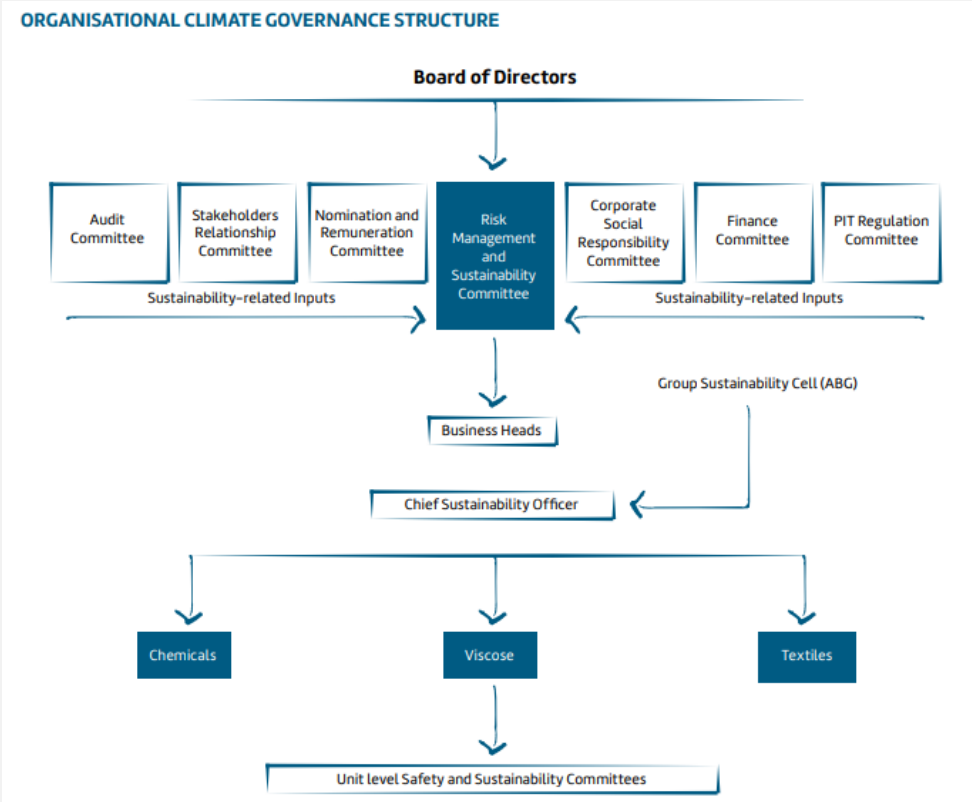


Example 12: Climate-related disclosure – Governance – TCLF sub-sector

India's Leading Textile Group[100]

Governance Structure

The Board of Directors provides strategic direction and oversight on climate-related issues. Governance mechanism facilitates seamless coordination among the Board of Directors, Management, Business Heads and Unit-level Committees to manage climate-related issues effectively.



Board oversight of climate-related issues

The Group uphold a strong commitment to good governance processes. The Company's Board of Directors, represented by its Risk Management and Sustainability Committee, provides essential guidance and direction to the management concerning the Company's sustainability and climate change-related risks. They actively collaborate on action plans to effectively mitigate these risks.

The Chief Sustainability Officer (CSO) collaborates closely with both the Risk Management and Sustainability Committee and various business units within the Company. Together, the CSO and the Sustainability teams in the business units conduct regular reviews of the progress made on all sustainability initiatives and ensure the implementation of necessary actions.

Key issues overseen by Board through Risk Management and Sustainability Committee:

- Guiding and directing the management to effectively implement strategies and plans for sustainable business operations.
- Monitoring and reviewing the progress made towards achieving targets related to climate-related issues.
- Reviewing and guiding risk management policies to ensure comprehensive risk mitigation throughout the organisation.

Management's role in the governance processes, controls and procedures used to monitor, manage and oversee climate-related matters

The sustainability SPOCs of each business unit meets quarterly to oversee enterprise risks, mitigation measures, and the sustainability performance of each business, including climate-related challenges.

At each unit/plant, Safety and Sustainability committee has been constituted, led by the Unit Head and comprised of members from critical functions. The Committee assumes the responsibility of identifying problem areas and implementing performance enhancing measures. It convenes monthly to review progress and subsequently reports its findings to the Business level Safety and Sustainability Committee.

Integration of climate-related performance in incentive schemes

Group's approach centres around incentivising to align the interests of our leaders with the long-term viability and health of our businesses. Group provide incentives for initiatives that focus on climate protection, such as reducing emissions,

enhancing energy efficiency, and broadening the range of sustainable products. To drive renewable energy projects and activities, a dedicated committee is in place. Moreover, the committee assigns objectives that are directly tied to the key result areas (KRAs) of the business unit managers.

2. Strategy

TCFD CLIMATE-RELATED RECOMMENDED DISCLOSURES

Elements	TCFD climate-related recommended disclosures
Impacts, risks and key opportunities and linkages to business strategy and model	• Description of material climate-related risks and opportunities over short-, medium- and long-term horizon, and their link to planning horizon in strategy development
	• Effects of climate-related impacts, risks and opportunities on strategy and decision making • Impact on business model and value chain, strategy and decision-making, financial position, financial performance and cash flow • Report key information on the organisation's transition plan to meet its commitments to reduce greenhouse gas emissions (if any) and/or respond to significant climate impacts, risks and opportunities, towards a low-carbon economy.
	• Resilience of the strategy to climate-related risks • Organisation should describe the resilience of its strategy and business model(s) in relation to climate change, including: (a) the scope of the resilience analysis (b) how the resilience analysis has been conducted, including the use of climate scenario analysis • the results of the resilience analysis including the results from the use of scenario analysis.

GUIDANCE ON DEVELOPING CLIMATE-RELATED STRATEGIES FOR ENTERPRISES IN THE MANUFACTURING INDUSTRY

i. Transition risk

The manufacturing sector, with its high-emission activities, is facing significant challenges in carbon reduction. The rapid transition toward net-zero emissions presents substantial policy and technological challenges for manufacturing businesses. Carbon taxes will increase production costs for carbon-intensive products such as cement, petrochemicals, and concrete, giving a competitive edge to low-carbon producers. High-emission sub-sectors may also face increased exposure to litigation and reputational risks. The transition risks confronting the manufacturing sector also pose threats to workers and communities that rely on the industry for employment and income. Therefore, businesses need to adjust capital allocation in line with a Just Transition approach, taking into account the impact of the transition on vulnerable groups affected by manufacturing activities, including workers and local communities.

The UNEP FI Report, 2023 on Climate Risks in the Industrial Sectors[101] has made recommendations on several Adaptive and Mitigating Actions of Transition risks as follows:

- Investing in low-carbon operating models: Many activities in the industrials sector are highly carbon intensive and hard to decarbonise. However, some firms are beginning to take steps towards the adoption of lower-carbon operating models. This involves shifting to low-carbon sources of energy, investing in efficiency, and determining new processes that produce less carbon, among other measures. This process of “greening” typically requires investment in necessary capital assets as well as in systems to research

and develop low-carbon energy sources. The ultimate result of this reprioritised focus should be seen in a firm's declining emissions intensity and a growing share of energy consumption from renewable sources. A firm should develop a transition plan to outline its journey to low-carbon operations and specify how different parts of its business will evolve during the transition.

- Environmental and social stewardship: Strong environmental and social practices are essential across all economic sectors. However, given the historic (and ongoing) environmental issues associated with the industrials sector (from toxic air pollution endangering human health to leaks of hazardous materials devastating ecosystems), environmental and social stewardship needs to be a top priority for firms in the sector. Asset owners should promote zero-waste solutions that minimise pollution and prevent waste created from damaging neighbouring natural areas. Asset owners should also consider the potential benefits of nature-based solutions, such as wetlands that protect against flooding or tree cover that lowers heating and cooling costs for industrial operations. New developments should consider how to create factories and other assets that not only enhance community livelihoods but also integrate with existing ecosystems and maximize shared value potential..

ii. Physical Risks

Manufacturing enterprises are subject to various levels of physical risks from climate change depending on the geographical location and nature of the supply chain. The increased frequency and severity of hurricanes and floods can cause delays, supply chain disruptions, and chemical leaks (NGFS, 2018).[102] Rising global and local temperatures can also lead to higher energy costs, lower productivity, and risks to workers' health and safety (IEA, 2018b).[103] Drought is a similar problem. As the prevalence and severity of drought increases, water-intensive industries such as chemical and paper production also face an increase in associated impacts (Aquatech, 2019).[104] Likewise, wildfires pose a physical risk to supply chains and manufacturing facilities located in at-risk geographic areas. The most affected manufacturing industries include the production of electronic products (especially semiconductors), petroleum, coal, plastics, and chemicals (Moody's, 2021).[105] The table below summarizes the impact of various physical risks on manufacturing subsectors according to Moody's 2021 Report on Critical industries have substantial exposure to physical climate risks:[106]

Table 14: Manufacturing subsectors' exposure to physical climate hazards – Moody's Report 2021[107]

			PERCENT OF ASSETS WITH AT LEAST HIGH EXPOSURE					
NAICS MANUFACTURING SUBSECTORS[3]	COMPANY COUNT	FACILITY COUNT	FLOODS	HEAT STRESS	HURRICANES & TYPHOONS	SEA LEVEL RISE	WATER STRESS	WILDFIRES
Computer and Electronic Product	290	60,183	17-22%	40-45%	11-16%	0-5%	45-50%	23-28%
Petroleum and Coal Products	41	21,433	16-21%	48-53%	10-15%	1-6%	45-50%	21-26%
Electrical Equipment, Appliance, and Component	55	17,789	18-23%	49-54%	12-17%	0-5%	44-49%	19-24%
Nonmetallic Mineral Product	69	31,858	19-24%	50-55%	7-12%	0-5%	43-48%	21-26%
Food	137	40,765	18-23%	55-60%	7-12%	05%	44-49%	17-22%
Chemical	346	92,643	18-23%	54-59%	12-17%	1-6%	45-50%	18-23%
Primary Metal	76	19,778	21-26%	45-50%	13-18%	1-6%	39-44%	18-23%
Plastics and Rubber Products	41	14,726	18-23%	54-59%	8-13%	0-5%	42-47%	17-22%
Transportation Equipment	185	75,385	18-23%	44-49%	9-14%	1-6%	42-47%	17-22%
Beverage and Tobacco Product	70	29,385	17-22%	37-42%	6-11%	0-5%	31-36%	15-20%
Machinery	147	13,906	17-22%	36-41%	10-15%	0-5%	44-49%	17-22%

UNEP FI's report, 2023 on Climate Risks in the Industrials Sectors[108] has made recommendations on Adaptive and Mitigating Actions of Physical Risks for Manufacturing Enterprises as follows:

- Resiliency planning: Firms can develop resiliency, and adaptation plans for their most important sites as well as for their supply chains. These plans can begin with an assessment of current climate risks and asset vulnerabilities. They should also explore different climate scenarios that focus on how the frequency and severity of risks may change over time. Resiliency planning should also create procedures for business units to respond to potential disruptions in upstream supply and downstream consumption. Clients of the industrials sector may focus on developing green infrastructure and payments for ecosystem services. Manufacturers can also strengthen synergies among adaptation measures and other environmental issues, such as floods and droughts, water scarcity, biodiversity conservation, air quality, and resource efficiency.
- Climate-ready infrastructure: Given the capital-intensity of the industrials sector, firms in the sector should invest in climate-ready assets that will stand up to worsening climate hazards. This begins in the planning

process for new assets by enacting building standards that are not just appropriate for today's conditions, but also adequately consider potential tail-risk events in the future. For existing infrastructure, retrofits and climate defences may be considered, such as sea walls and back-up power generation located on site. The most effective of these investments may be those that offer environmental co-benefits. Examples of projects that build resiliency while also supporting nature include the restoration of mangrove forests and wetlands. The diffusion of financial tools aimed at rewarding resilient enterprises or enterprises belonging to resilient industrial clusters will be beneficial in promoting adaptation actions in the industry sector.

Key climate risks for the industrials sector are proposed in the UNEP FI Report, 2023 on Climate Risks in the Industrials Sectors[109] as follows.

Table 15: Key climate risks for the industrials sector[110]

	Risk	Explain
Transition risks	Increasing carbon price	High emitters in the industrials sector, such as cement and steel, will be negatively impacted by carbon pricing, due to rising costs or reduced demand due to higher prices.
	Public policy restrictions	More stringent regulatory requirements for industrial facilities will increase environmental regulatory pressure to decarbonize and limit industrial pollution. For international producers, rules regulating the carbon intensity of imported industrial products will pose significant challenges.
	Technological shift and advancement of low-carbon technologies	Technological advances in low-carbon alternatives, along with rising carbon prices and other regulatory restrictions, will drive a shift from conventional industrial products to low-carbon alternatives
	Emerging legal risks	Industrial sector companies will face reputational damage if they are too slow in responding to shifting demand patterns from consumers and shareholders for more sustainable inputs, production processes, and disclosures.
	Rise in reputational risk	Businesses can lose credibility if they do not keep up with consumer trends and shareholder requirements for green materials, environmentally friendly production processes, and information transparency.
Physical Risks	Intense storms and flooding disruptions	Storms and flooding events will become more frequent and severe, increasing the risk of damage to production facilities and disruptions in supply chains.
	Droughts	Greater severity and frequency of droughts in specific geographies will negatively impact industrial sector companies with water-intensive manufacturing processes.
	Temperature increase	Higher average temperatures will impede worker productivity, hamper industrial cooling processes, and increase expenses for air conditioning.
	Wildfires	Wildfires threaten to damage industrial facilities, reduce the water supply for industrial operations, and create hazardous working conditions for employees.

Additional Disclosure of Climate Risks and Opportunities and Transition Plans of the Iron and Steel Sub-sector

A. Disclosure on efforts to reduce GHG emissions

The largest amount of GHG emissions in the iron and steel industry occurs during the production phase. Therefore, iron and steel enterprises can demonstrate their contributions to solving the problem of climate change through a report on efforts to reduce GHG emissions from improving efficiency in the production stage. Steel production technology can be classified into blast furnace and electric furnace. Since the raw material for the electric furnace is scrap steel produced according to the blast furnace process and used as a product, the World Steel Association (worldsteel) has developed ISO 20915 on GHG emissions which considers the blast furnace method and the electric furnace method as a single steel material recycling system. For blast furnaces, technology for the production of iron by dehydrogenation and other platform improvement technologies are being developed to reduce GHG emissions. Businesses must therefore publicize measures on climate change through related efforts.

TCFD's 2022 Guidance on Climate-related Financial Disclosures 3.0[111] for the Iron and Steel Manufacturing industry has made the following recommendations on climate-related disclosures:

1. Commitment of efforts to reduce GHG emissions during the production phase

- Efforts to reduce GHG emissions in the production process through improving the efficiency of the iron and steel production process: Enterprises should prioritize reporting on emission intensity (GHG emissions per unit of output) to demonstrate improvements in operational techniques and from capital investment. To understand the numerical value that is quantified on the basis of intensity, the business should take into account the establishment of reporting boundaries, the ratio of blast furnaces to electric furnaces, etc. Moreover, to show the technology level of the enterprise compared to the world or industry average, the business can refer to the benchmark values in the report. For example, efforts to improve efficiency in the production process in terms of energy intensity.
- Efforts to develop and disseminate new technologies that help reduce GHG emissions during the production phase. Examples: Progress or prospects for efforts to significantly reduce GHG emissions during the production phase (e.g., development of technologies for the production of hydrogenated iron).
- Resource recycling efforts through the recycling of used products and by-products generated from the production stage, as well as through the use of waste plastics, to indirectly contribute to the reduction of GHG emissions. Example:
  - The material life cycle of production processes.
  - The recycling rate of by-products generated from the manufacturing process.
  - Efforts to replace coke by using waste plastics as fuel and chemical materials.

2. Efforts to reduce greenhouse gas emissions during the use period:

Efforts to contribute to reducing GHG emissions in the value chain: Businesses should come up with a strategy to develop and disseminate products that contribute to the creation of end products with lighter weight, longer lifespan and improved energy efficiency.

3. Other efforts

Efforts to contribute to the reduction of GHG emissions through the provision of technology: The transfer of energy-efficient technologies abroad effectively supports the reduction of GHG emissions at the global level. Accordingly, the iron and steel industry has been actively disseminating advanced energy-efficient technologies to developing countries in various ways. Publication example of: The amount of money that contributes to the reduction of greenhouse gas emissions through the provision of technology.

B. Transition Plan:

The Transition Plan Taskforce's (TPT) Transition Plan Disclosure Guidelines [112] have set out the factors that promote carbon reduction in recognized industries as follows for businesses to refer to, implement and disclose information about transition plans:

- Increase energy efficiency and material efficiency for production processes
- Expanding the scale of secondary steel production
- Develop and scale up near-zero-emission manufacturing technologies
- Participate in reducing upstream emissions

Some additional reference sources for enterprises in the iron and steel industry:

1. Climate Bonds Initiative (CBI), The Steel Criteria, 2023

2. CDP Global, Climate Change 2023 Reporting Guidance, 2023

3. Assessing low-Carbon Transition Initiative (ACT), ACT Iron & Steel Methodology, 2021

4. The Institutional Investors Group on Climate Change (IIGCC) and Climate Action 100+ (CA100+), Global Sector Strategies: Investor Interventions to Accelerate Net Zero Steel, 2021

5. E3G and Pacific Northwest National Laboratory (PNNL), 1.5°C Steel. Decarbonising the steel sector in Paris-compatible pathways, 2021

6. International Energy Agency (IEA), Steel, website as of 2024

7. International Financial Reporting Standards (IFRS), IFRS S2: Industry-based Guidance on implementing Climate-related Disclosures: Volume 9 – Iron & Steel Producers, 2023

8. Mission Possible Partnership (MPP), Making Net-Zero Steel Possible: An industry-backed, 1.5oC-aligned transition strategy, 2022.

9. Oxford Smith School of Enterprise and the Environment, Assessing the Credibility of Climate Transition Plans in the Steel Sector: Discussion Paper, 2023

10. Science Based Targets initiative (SBTi), Steel Science-Based Target-Setting Guidance, 2023

11. Transition Pathways Initiative (TPI), Steel - Transition Pathway Initiative, website as of 2024

Additional Notes on Disclosure of Climate Risks and Opportunities and Transition Plans of the DMDG Sector

A. Climate risks and opportunities

The DMDG industry is one of the significant sources of greenhouse gas emissions and faces increasing risks due to rising emissions and climate changes. The Fashion Industry Charter For Climate Action Playbook[113] has outlined a number of climate risks and opportunities for the industry as follows:

1. Risks

- Water shortage and water security (for cotton production, textile mills, etc.)
- Risks to physical and business continuity to facilities and infrastructure due to more frequent and severe climate events (e.g. hurricanes, floods, prolonged hot weather)
- Accessibility and price fluctuations of raw materials such as cotton
- Legal risks (e.g., emission caps, carbon taxes)
- Access to labor due to demographic changes due to climate change
- Changes in consumer demand due to changing weather patterns
- Reputational risks from campaigns and stakeholder pressures

2. Opportunities

- Cost savings from reduced energy consumption and reduced waste
- Access to more reliable and less volatile energy sources
- Driving innovation in materials, products, services, and low-carbon business models
- Brand and reputation benefits with stakeholders including investors, employees, consumers, policymakers, NGOs, etc.

B. Transformation Plan

The Transition Plan Taskforce's (TPT) Transition Plan Disclosure Guidelines [114] have set out the factors that promote carbon reduction in recognized industries as follows for businesses to refer to, implement and disclose information about transition plans:

- Improve the combination of diverse materials and reduce production emissions
- Enhancing recyclability and promoting recycling rates
- Electrifying the fleet of vehicles and promoting low-emission fuels for last-mile deliveries

- Reducing carbon emissions in the supply chain

Some additional reference sources for businesses in the DMDG industry:

1. British Fashion Council, The Circular Fashion Ecosystem: Blueprint for the Future, 2021.

2. British Retail Consortium, Cutting Carbon in the Final Mile, 2022.

3. Ellen MacArthur Foundation, A new textiles economy: Redesigning fashion's future, 2017.

4. Environmental Audit Committee, UK Parliament, Fixing Fashion: Clothing Consumption and Sustainability, 2019.

5. International Financial Reporting Standards (IFRS), IFRS S2: Industry-based Guidance on implementing Climate-related Disclosures: Volume 1 – Apparel, Accessories & Footwear, 2023.

6. McKinsey & Company, Fashion on Climate, 2020.

7. Science Based Targets initiative (SBTi), Apparel and Footwear Sector: Science-Based Targets Guidance, 2022.

8. Science Based Targets initiative (SBTi), Forest, Land and Agriculture Science-Based Target-setting Guidance: Version 1.1, 2022.

9. Textile Exchange, Climate+ Dashboard, website as of 2024.

10. United Nations Framework Convention on Climate Change and Partnership for Sustainable Textiles, Fashion Industry Charter for Climate Action: Playbook for Climate Action, 2020.

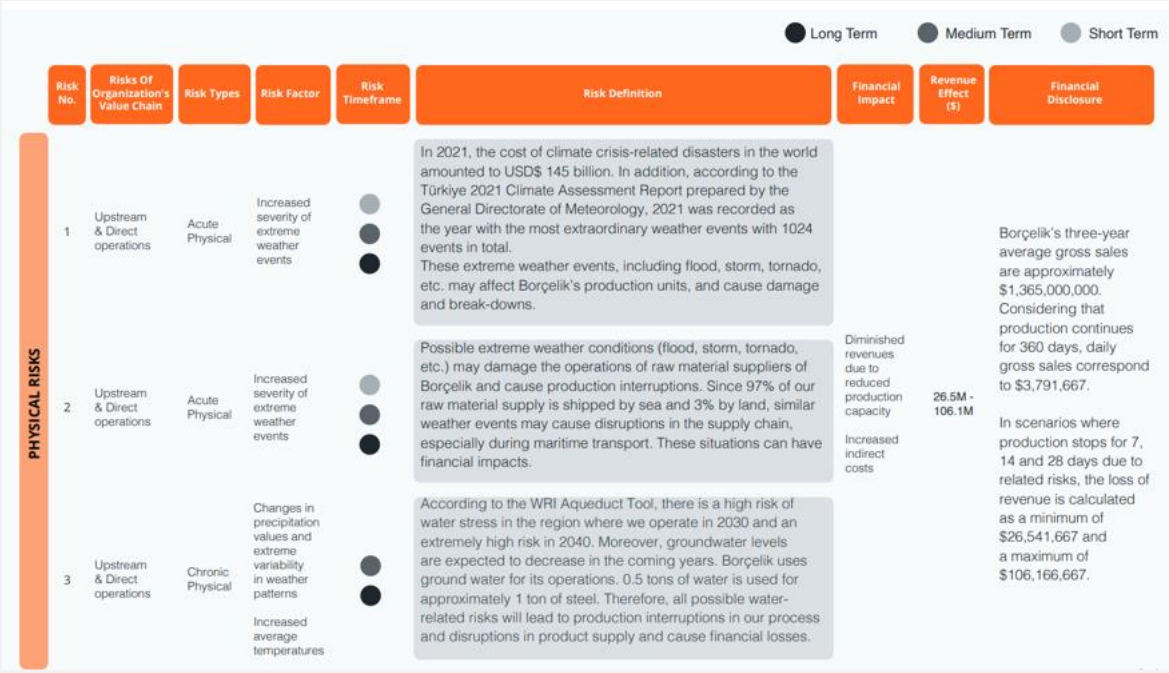
11. WRAP, Textiles 2030 Roadmap, 2021.

Example 13: Climate-related disclosure – Strategy – Iron and steel sub-sector

Leading Steel Manufacturing Enterprise in Turkey[115]

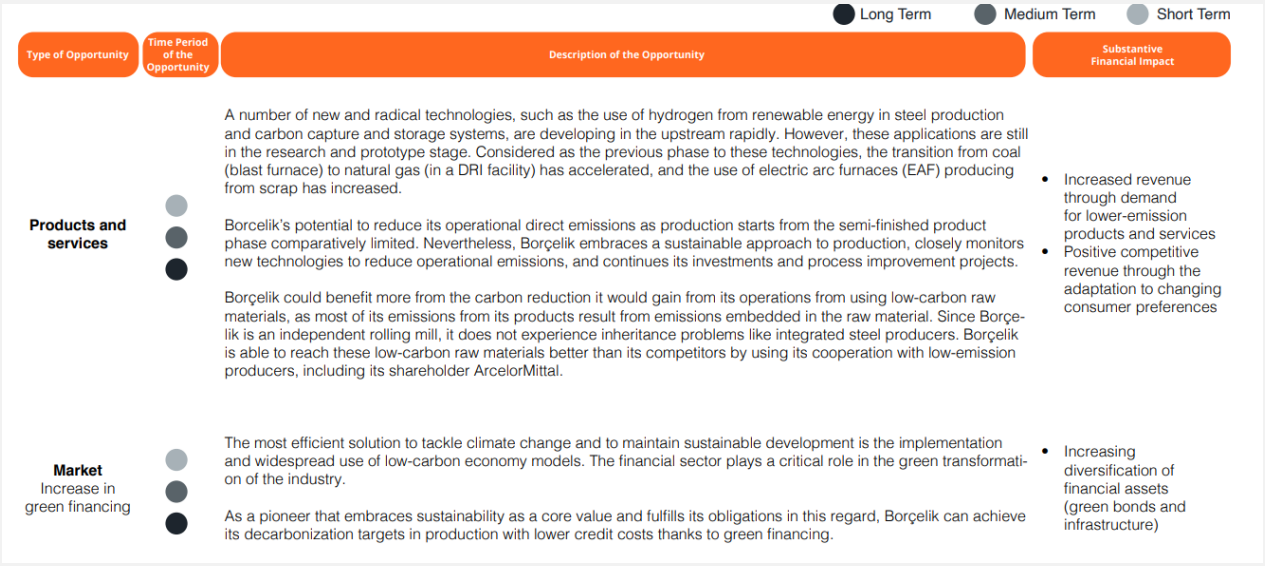
The enterprise divides the strategic time into three stages: short-term (0-5 years), medium-term (6-15 years) and long-term (16-35 years), based on the Responsible Steel Standard. Accordingly, 2030 is identified as a short-term goal, while 2050 is a long-term goal.

Risks and opportunities with significant strategic impact are assessed based on their location in the value chain, type, timing and likelihood of occurrence, extent of impact, and financial impact. This process is carried out through qualitative and quantitative analysis, based on long-term scenarios in order to create accurate forecasts.



The business focuses on investing in low-carbon emission technologies, energy efficiency, new products and services, along with expanding markets and assets to adapt to the low-emission economy driven by climate change. Key

opportunities include reducing the impact of carbon costs, increasing sales from eco-friendly products, and strengthening competitive advantage through changing consumer tastes. Examples of climate-related opportunities:



Business transformation plan

Both climate-related risks and opportunities are leveraged by businesses to grow their businesses, which are published in the "Implementation and Mitigation Strategy": The company's climate-related strategy includes adjusting its procurement policy to purchase raw materials, managing operations to save energy and resources, innovating and practicing R&D to develop low-emission products and processes, investment programs to reduce emissions, IT system infrastructure to calculate and monitor emissions, management approaches, corporate risk management, human resources to raise employee awareness of the climate, sales and marketing strategies including corporate education and communications, and financial issues for green finance. All of the above-mentioned activities are integrated into the corporate strategy.

Strategy resilience and resilience to climate-related risks

The company has implemented the climate change scenario, which is a forecast of greenhouse gas (GHG) emissions used by analysts to assess the future prospects of climate change. Focusing on more variables and roadmaps towards the future than historical data, these scenarios not only recognize potential climate-related risks, but also guide companies in their strategic planning process by providing insights into energy efficiency, changes in energy sources and technologies, and new markets.

As an enterprise operating in the steel sector, the company has developed two transformation scenarios to ensure flexibility for short-term, medium-term and long-term strategies, which are determined by the method of calculating changes in carbon prices over time, the allocation of energy resources in the future, etc technological developments such as CCS efficiency and application, as well as the formulation of regulations.

- Scenario 1: IEA SDS scenario, in line with both globally committed targets and targets announced by Türkiye.
- Scenario 2: the IEA's 2DS scenario, in line with the 2°C target, takes into account the challenges faced by the green transition in the steel industry and worst-case scenarios such as potential energy cuts and slow technological development.

Example 14: Climate-related disclosure – Strategy – TCLF sub-sector

India's leading textile and garment group Degree[100]

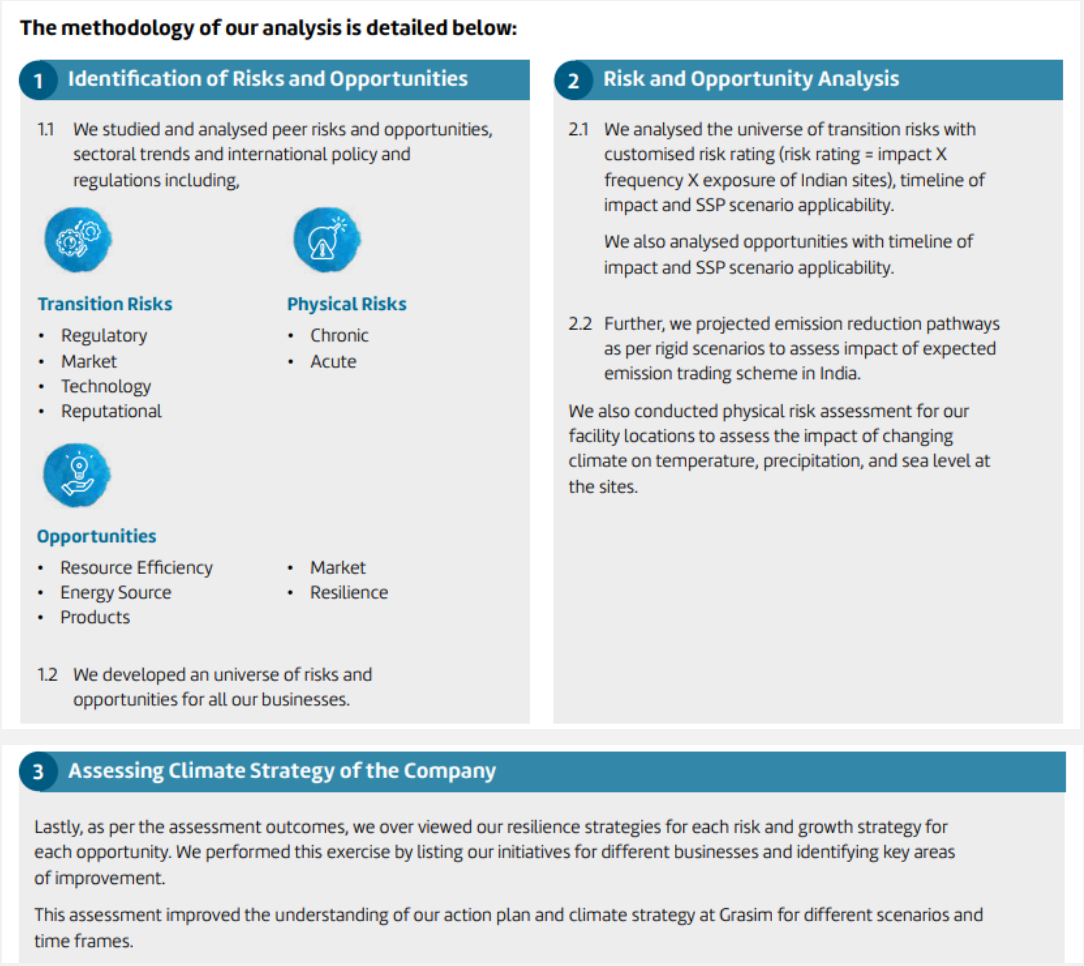
Key climate-related risks and opportunities in the short, medium and long term, and their linkages with phased strategic planning

The Group has conducted a comprehensive climate risk assessment, including scenario analysis, to assess the impact of climate change on its business and strategy. This process considers physical risk and conversion risk, ensuring access from management to each business unit. The company also identifies climate-related opportunities by leveraging the

green transition trend to develop sustainable products, improve energy efficiency, invest in renewable energy, and enhance its position in the market through emission reduction initiatives.

Impact of climate impacts, risks and critical opportunities on strategy and decision-making

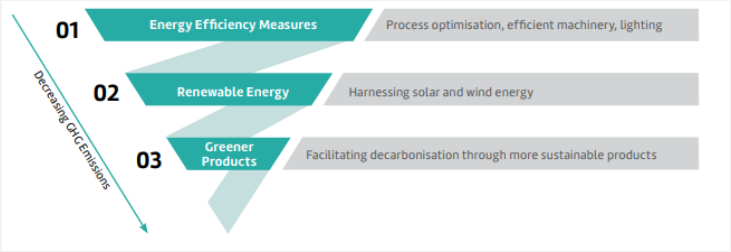
The goal of the business is to integrate climate risks and opportunities into the business strategy in an efficient and resource-efficient manner. With the recommendations of the TCFD (Task Force on Climate-related Financial Disclosures), the company conducted a comprehensive climate risk assessment, including scenario analysis, in the 2021–2022 financial year. This assessment includes both physical and transition climate risks. The Group applies both top-down and bottom-up analysis methods to ensure comprehensive assessment coverage. Each business unit within the Group proactively assesses how climate-related risks may affect its future business strategy and forecasts. At the same time, businesses also review their strategies to identify and effectively take advantage of relevant opportunities.



Impact on business model and value chain, strategy and decision-making, financial position, financial performance and cash flow

Businesses integrate environmental factors into their decision-making processes, ensuring that reducing carbon emissions is always at the heart of all operations. The ambitious emission reduction targets of each business unit reflect the company's ongoing commitment to protecting the environment. To achieve these goals, businesses focus on three main areas:

1. Improve energy efficiency
2. Application of renewable energy sources
3. Driving innovation to create greener, more sustainable product lines



Your Climate Transition and Carbon Emission Reduction Plan

For transformation risks, enterprises classify risks into four main groups, including: legal and policy risks, market risks, technology risks and regulatory compliance risks. Each risk group is specifically described and tied to specific resilience enhancement measures. Example:

Regulatory Risk

Risk	Risk Description	Resilience Measures
Enhanced emissions-reporting obligations	The regulatory environment in India concerning climate change and sustainability is rapidly evolving. Presently, listed companies are required to disclose their environmental, social, and governance (ESG) data in accordance with the Business Responsibility and Sustainability Report (BRSR) framework mandated by SEBI (Securities and Exchange Board of India). Moreover, SEBI is now making it mandatory for this ESG reporting framework to undergo assurance.	At Grasim, current regulations are always prioritised and adhered to avoid any non-compliance. We are actively exploring opportunities for increasing the integration of renewable and alternative energy sources like solar and wind energy and natural gas, among others. Embracing these sustainable options will significantly decrease our reliance on fossil fuels and minimise our exposure to regulations like coal cess in India. In our Chemicals business, we have already set a target to procure 25% of our power requirements from solar and wind sources by FY2024-25.

For physical risks, businesses focus on acute risks from extreme weather events and chronic risks due to long-term climate change. The main objective is to assess the impact of these risks on business units. The process of determining climate risk begins with a site-by-site baseline physical risk analysis, based on a review of historical weather data and their impact on production. Example:

Risk	No. of Sites with High Risk	Impact of Risk	Resilience Measure
Heatwave	12	Revenues fall and costs rise due to negative impacts of climate change on the workforce (e.g., health, safety, absenteeism)	During heatwaves, we are taking various measures to provide refreshments whenever required to the employees during extremely high temperatures. Healthcare facilities are present for employee wellbeing.

Strategy resilience and resilience to climate-related risks

Enterprises provide scenarios for each risk group and the corresponding resilience and resilience for those risk groups:

Scenario	IEA NZE Scenario for Global Industrial Sector	SSP 1-1.9 Scenario for Global Industrial Sector	SSP 1-2.6 Scenario for Global Industrial Sector
Net- Zero Emissions Target Year	2050	2050	Near 2075
Scenario Description	In this scenario, electricity linked emissions from electricity are projected to fall fastest. By 2030, the fall in industry and transport related emissions is projected to accelerate. Bioenergy with Carbon Capture and Storage (BECCS) and Direct Air Carbon Capture and Storage (DACCS) technologies are estimated to remove around 1.9 Gt CO_2 by 2050.	This represents the IPCC's most optimistic scenario, depicting a world where global CO_2 emissions reach Net Zero by approximately 2050. In this scenario, societies are envisaged to transition towards more sustainable practices, prioritising overall well-being over mere economic growth. Investments in education and health are expected to increase and societal and economic inequality is expected to fall. Extreme weather events are expected to become more prevalent. However, it is expected that the world would have averted the most severe consequences of climate change.	In the next-best scenario as per IPCC, global CO_2 emissions come down exponentially but fast enough, reaching Net Zero after 2050. Nevertheless, temperatures are projected to stabilise around 1.8°C higher by the end of the century.
Temperature Increase °C	1.5°C	1.5°C	Below 2°C
Data Source	IEA NZE Report	SSP Public Database (Version 2.0)	SSP Public Database (Version 2.0)

3. Risk Management

TCFD CLIMATE DISCLOSURE REQUIREMENTS

Elements	TCFD climate-related recommended disclosures
Description of the extent to which, and how, the processes for managing climate-related risks and opportunities are integrated into the organisation's overall risk management process	• Describe the organization's processes for identifying and assessing climate-related risks.
	• Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.

GUIDANCE ON DEVELOPING CLIMATE-RELATED RISK MANAGEMENT DISCLOSURES FOR MANUFACTURING SECTOR

The integration of climate risk and opportunity management processes into a business's risk management process aims to ensure that the characteristics of climate risks (e.g., their scope, scale, non-linearity, and connectivity) are considered and evaluated in the risk management and decision-making process. Businesses can refer to the General Handbook – Part 2, section 2.2.2.

Example 15: Climate-related disclosure – Risk management – Iron and steel sub-sector

Leading steel manufacturer in Turkey Anonymous[115]

The business assesses significant climate risks through its Board of Directors, Sustainability Council, and Sustainability Committee.

Climate risk studies are integrated into the organization's overall risk management program, ensuring alignment with existing systems. The Internal Control Department plays an important role in developing an integrated risk management structure.

In the process of risk analysis, the enterprise determines the scale of the impact and the likelihood of occurrence, then develops an action plan according to specific time periods:

- Short-term: 0-5 years
- Medium-term: 6-15 years
- Long-term: 16-35 years

**The timeline is determined according to the Responsible Steel Standard, with 2030 being the short-term milestone and 2050 being the long-term milestone.*

The Sustainability Council supports the Sustainability Committee, which is responsible for climate risk management, identifying new risks, prioritizing risks, developing emergency plans, and monitoring control measures.

Climate Change Policies and Solutions

Businesses carry out the process of identifying climate risks, assessing financial impacts, and developing response plans through specialized committees.

1. Identify and prioritize climate-related risks
2. Assessment: Assessment of the financial impact of risks
3. Climate-related action response and management
4. Manage and monitor the risk management process

Risk studies in the enterprise are divided into distinct stages, with the individuals and departments involved assigned specifically at each stage. Each member participates in the risk assessment process with a high sense of responsibility.

Depending on the severity of the risk, decisions related to risk management will be made by the Board of Directors and the Sustainable Development Council, together with the executive boards of the relevant departments, under the supervision of the Sustainable Development Committee and the Sustainable Development Council.

Actions and resources related to climate change mitigation and adaptation

Businesses have decided to invest in renewable energy sources to eliminate potential risks. The decision also supports the goal of reducing carbon emissions by 47% by 2030, while aiming to reduce the cost of using electricity.

Construction of a pilot solar power plant (SPP) with a capacity of about 180 MWh on an area of 1,120 m² on the roof of the Gemlik plant. However, after observing the impact of industrial pollution in the area on performance, the extension of the pilot model to the entire factory roof has been postponed for further evaluation in the coming years.

Currently, the construction of a 1,600 MWh solar power plant on an area of 9,856 m² on the roof of the Steel Service Center in Manisa is being implemented, with the goal of being put into use in 2023.

In addition, the company has also decided to build a wind power plant (WPP) to meet electricity demand, in accordance with the "5.1.h" regulation in Turkey. This regulation allows the construction of power generation facilities with a capacity of up to twice the total capacity consumed under the contract without a production license, and without a limit on installed capacity.

Example 16: Climate-related disclosure – Risk management - TCLF Sub-sector

India's Leading Textile Group[100]

Risk management mechanism of the enterprise

The enterprise applies the climate risk management mechanism through the Board of Directors and the Risk and Sustainability Management Committee (RMSC), ensuring the monitoring and orientation of the climate change response strategy. Climate risk management structure:

- The RMSC Committee is responsible for guiding the management, monitoring the progress of climate goals and developing risk management policies.
- The Chief Sustainability Officer (CSO) works closely with RMSC and business units to monitor progress and implement related initiatives.
- The senior leadership team (CFO, CTO, CIO, CMO) meets quarterly to review risk mitigation progress, with an updated report submitted to the RMSC every six months.
- The unit-level Safety and Sustainability Committee (SSC) meets monthly to implement and monitor climate targets, and provides quarterly reports on risk mitigation activities.

Climate Change Policies and Measures

Similar to other corporate risks, corporate climate change-related risks are integrated into the Group's strategic review and other investments, thereby guiding the management of climate-related risks and opportunities.

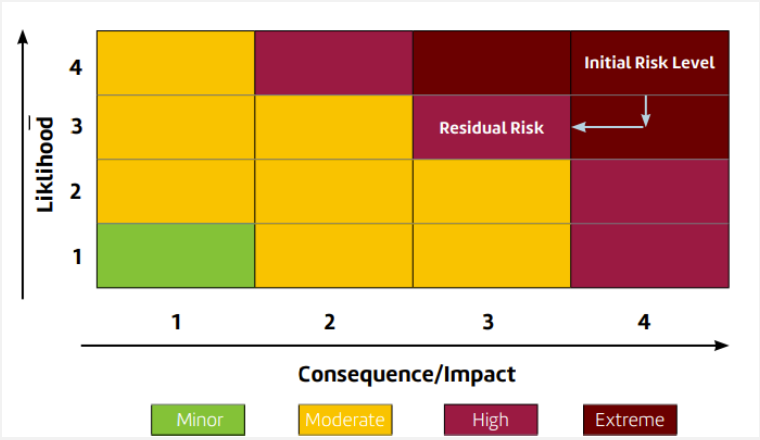
The business risk identification process includes both internal and external methods.

- Internal methods include interviewing senior management, reviewing technical and financial documents, analyzing historical data, and drawing lessons from past events.
- External methods include assessing the business environment, market trends, and regulatory and technological developments.

Businesses have integrated technology into their risk management processes, leveraging tools and applications such as SAP and Enablon. The company also periodically conducts materiality analysis to identify key topics for the Group and its stakeholders. As a multi-industry corporation, each of our business units conducts a detailed material assessment, focusing on operations and stakeholders.

The business adheres to the TCFD framework for climate risk analysis, focusing on historical data on floods, droughts, and hurricanes. Using geographic tools to assess risk, businesses identify necessary mitigation and adaptation measures. Risk is assessed based on financial impact and likelihood of occurrence, with rating criteria ranging from mild to severe.

The risk portfolio is updated periodically, helping to prioritize material risks and adjust strategies accordingly to ensure sustainable business operations. Framework for assessing the level of impact and likelihood of occurrence:



Actions and resources related to climate change mitigation and adaptation

Businesses use systematic risk management methods to continuously monitor and analyze potential risks. This approach includes an enterprise-wide risk identification, assessment, and management process involving multiple areas of expertise, in order to achieve strategic and business objectives. Risks are classified into 6 main groups.

External Risks:
These risks arise from incidents impacting external environments in which we operate (e.g., Natural disasters, Terrorism, etc.).

Strategic Risks:
These risks may arise from the actions of other participants in the marketplace and/or the opportunities selected and decisions made by the business.

Compliance Risks:
These are associated with non-conformance or inability to comply with the applicable rules and regulations.

Operational Risks:
These include the risks concerned with the business processes employed to meet the objectives.

Financial Risks:
These are related specifically to the processes, techniques and instruments utilised to manage our finances and sustain effective financial relationships with customers and third parties.

Knowledge Risks:
These are associated with the management and protection of knowledge and information, including Cyber Security.

Each identified risk will be assigned to a person in charge, who will actively manage the risk through a comprehensive action plan. To ensure the Risk Management Framework and related processes and controls are implemented efficiently and effectively, testing and assurance are carried out at various levels:

- **Senior management** adopts reports and monitoring processes.
- **Internal audit**, periodically review each unit for the risks identified, their impacts, and steps taken to mitigate them.
- **The Audit Committee**, through monitoring, monitoring and reporting of risks as well as mitigation efforts.
- **Independent external auditors**, providing audit opinions as required by law

4. Metrics and targets

TCFD CLIMATE-RELATED RECOMMENDED DISCLOSURES

Components	Contents of information disclosure according to the TCFD
Metrics and targets	• Indicators of Climate-related Material Issues
	• Targets for risks and opportunities related to climate change

GUIDANCE ON DEVELOPING CLIMATE-RELATED METRICS AND TARGETS FOR MANUFACTURING SECTOR

Metrics and targets represent how the business measures and monitors climate-related risks and opportunities, implements response strategies, and makes progress in mitigating, managing, and adapting to key issues. Metrics that can be used for a variety of purposes include: Measuring the inputs and outputs of analytical models, managing business efforts to address climate change; and analyzing and assessing the impact of climate change on financial performance and prospects.

Additional climate indicators and targets for iron and steel enterprises to refer to in information disclosure

Combined with the indicators and targets mentioned in the sections above for manufacturing, the table below summarizes additional disclosure recommendations under the Transition Plan Taskforce's (TPT) Transition Plan Guidance.[116] Businesses should consider reporting the metrics in the table below on the basis of considering the available resources to collect, track and aggregate data for reporting.

Portfolio of Climate Indicators and Targets as recommended by the Transition Plan Taskforce[117]
Metrics and Objectives for governance, stakeholder engagement, business and operations
• Energy management: (1) total energy consumption, (2) grid rate and (3) renewable energy rate; • Fuel management: (1) total fuel consumption, (2) coal ratio, (3) natural gas ratio, and (4) renewable energy ratio; • Water management: (1) total amount of water exploited, (2) total amount of water consumed; Percentage of each type in areas with high or extremely high water stress • According to the steel production process: total consumption, scrap consumption, output and capacity • Current production capacity and target for CCUS; • Number of plants expected to use CCUS and expected GHG capture rate
KNK Emissions Indicators and Targets
• Total global emissions Scope 1, the percentage of emissions that are within the permissible levels under emission restriction regulations • GHG Emissions Scope 1 and 2 per unit of crude steel produced (tCO2e/ton of steel) • Current and projected Scope 1, 2 and 3 GHG emissions by plant • Production Process Emission Intensity (Range 1, 2, and 3 Emissions per unit of output) • Scope 1, 2 and 3 GHG emissions are expected to be reduced due to technological change at the asset, production process and enterprise levels (tCO2e and tCO2e per unit of output); • Scope of the target: The Science Based Targets Initiative (SBTi) states that steel producers should include all emissions within the scope of their core iron and steel production and business activities in the target. This includes emissions from intermediate products sold such as excess coke under scope 3, classification 10 manufacturing and processing of sold products. The SBTi states that iron and steel enterprises need to set targets that include emissions related to fuels and energy classified 3 - Scope 3.

Additional climate indicators and targets for DMDG businesses to refer to in the information disclosure

Combined with the indicators and targets mentioned in the sections above for manufacturing, the DMDG, the table below summarizes additional recommendations under the Transition Plan Taskforce's (TPT) Transition Plan Guidance.[118] Businesses should consider reporting the metrics in the table below on the basis of considering the available resources to collect, track and aggregate data for reporting.

Portfolio of Climate Indicators and Targets as recommended by the Transition Plan Taskforce[119]
Metrics and Objectives for governance, stakeholder engagement, business and operations
• Source of raw materials: (1) the amount of raw materials prioritized for purchase, according to the type of raw materials, and (2) the quantity of each preferred raw material certified according to third-party social or environmental standards, according to each standard • Number of (1) Tier 1 suppliers and (2) non-Tier 1 suppliers • Percentage of suppliers, by spending or emissions, have a Science Based Target • Water footprint of newly sold products • Indicators and targets to reduce excess production • % reduction for returns in e-commerce • % recycled content in carton box; • % recycled content in poly bags; • water consumption by list of raw materials • water scarcity by material list
KNK Emissions Indicators and Targets
• GHG emissions by product type (e.g., clothing, home textiles, and footwear) and material type (e.g., synthetic, animal, plant-based, and cellulose) • Emissions falling under the relevant classifications in Scope 3 may include: purchased goods and services – category 1 and use of products sold – category 1 • Forest, land and agriculture (FLAG) indicators and targets (emissions from land use change and land management, as well as carbon removal and storage).

Example 17: Climate-related Disclosure – Metrics and targets – Iron and steel sub-sector (1/2)

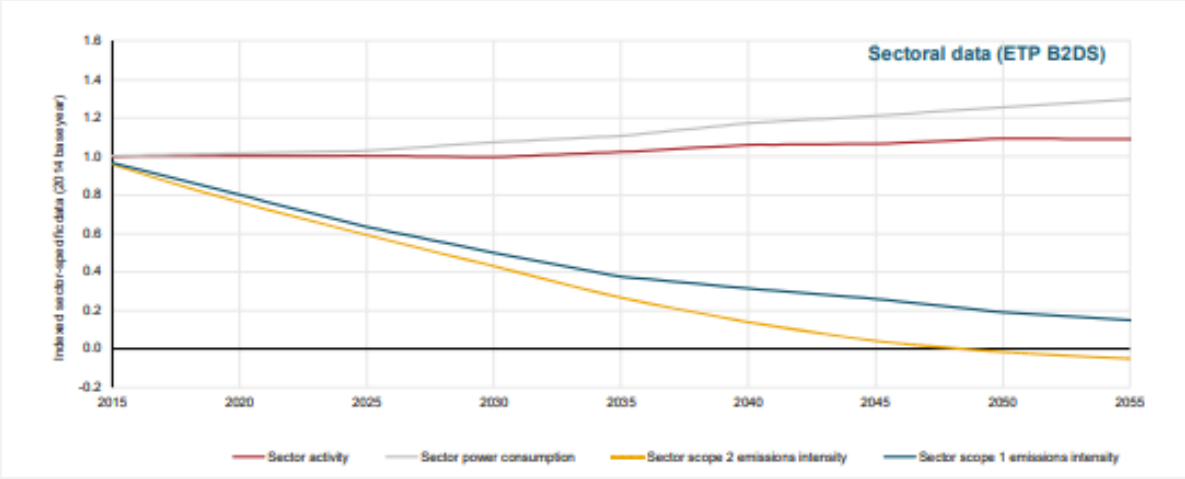
Iron and steel enterprises based in Taiwan[120]

Businesses use science-based emission reduction targets as a basis to evaluate climate change-related indicators and targets at their businesses. Every month, the enterprise holds a meeting on the progress of implementing the target, the General Director will monitor and evaluate the difference between the actual performance and the target of greenhouse gas emission intensity at each facility, and determine necessary measures.

Targets for areas related to climate change

Businesses set goals:

- Emissions: Reduce total emissions by 30% by 2030 compared to 2005 levels.
- Renewable energy: Use over 30% of renewable energy in total electricity consumption by 2030.



IEA ETP B2DS scenario

Review all target modelling data

	Base year (2019)	Target year (2030)	% Reduction
Company | Scope 1 emissions (tCO2)	181,832.00	322,077.06	-77.1%
Company | Scope 2 emissions (tCO2)	630,931.00	339,224.11	46.2%
Company | Scope 1+2 emissions (tCO2)	812,763.00	661,301.17	18.6%
Company | Scope 1 emissions intensity (tCO2/t)	0.107	0.190	-78.1%
Company | Scope 2 emissions intensity (tCO2/t)	0.370	0.200	45.9%
Company | Scope 1+2 emissions intensity (tCO2/t)	0.477	0.368	22.8%

Executive management remuneration rates related to climate change considerations

The enterprise has established a reward mechanism related to climate change issues, with the Board of Directors monitoring and directing the following systems:

- Article 10 of the "Rules for Performance Evaluation of the Board of Directors" stipulates that the results of the Board's performance evaluation shall be the basis for the appointment or nomination of directors, and the results of each director's performance evaluation shall be used to determine the salary and remuneration.
- In December 2021, the company amended the "Regulations on Performance Evaluation of the Board of Directors", adding content related to climate change to strengthen the supervision of the management structure and promote participation in climate management.
- In addition, the company has established the "Improvement Proposal Management Regulation", which receives proposals related to climate strategy, greenhouse gas emission reduction and energy efficiency. Proposals will be reviewed and rewarded based on the evaluation results and actual effectiveness of the project.

Example 18: Climate-related Disclosure – Metrics and targets – Iron and steel sub-sector (2/2)

Leading Steel Manufacturing Enterprise in Turkey[121]

Greenhouse Gas Emissions: Scope 1, Scope 2, and also Scope 3 *(if applicable)*

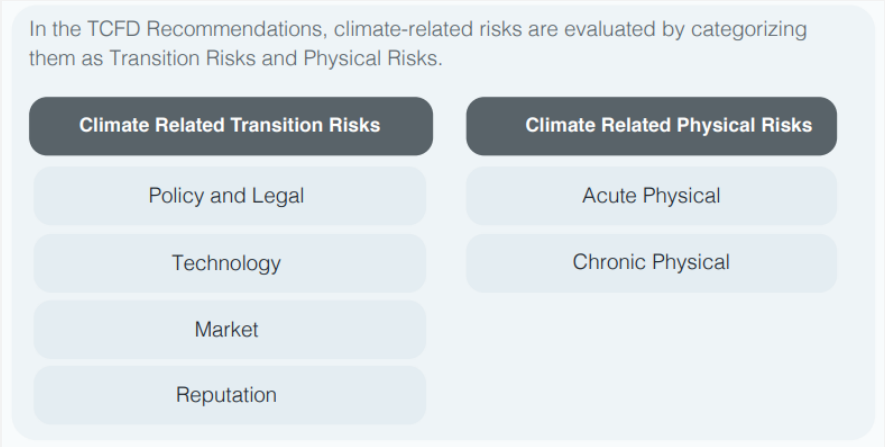
The company has published greenhouse gas emission information according to Scope 1, 2 and 3, in which Scope 1 and 2 are verified by a third party according to the GHG Protocol. Scope 3 focuses on the procurement of goods and the transportation of raw materials. The business also tracks the intensity of emissions on revenue, comparing the effectiveness of EAF and BOF technologies.

tCO_2e GHG Emissions	2019	2020	2021
Scope 1	97,872	95,504	99,626
Scope 2	74,226	74,396	79,394
Scope 3, Category 1	3,286,329	3,053,474	3,444,844
Scope 3, Category 4	45,529	47,183	43,239

tCO_2e/ Million USD	2019	2020	2021	2022 (Expected)
Revenue, Million USD	1,167	1,087	1,842	1,421
tCO_2e per Million USD Revenue	147	156	97	126

Transition risks and physical risks associated with climate change

The impact of risks related to climate change is assessed based on the level of revenue loss. Specifically, revenue losses of 5 million USD or more in the short term, 10 million USD or more in the medium term and 40 million USD or more in the long term are considered to have a great strategic impact on the business. The reason why businesses choose revenue as the evaluation criterion is because every loss ultimately leads to a decrease in sales, and the use of a common unit of measurement makes comparisons easier. Operating costs arising from risks are often insignificant compared to revenue losses. On the other hand, the cost of actions aimed at eliminating risk is also clearly stated in the report.



Climate opportunities

Use of capital

The Board of Directors approves the allocation of capital for climate-related initiatives as part of the financial indicators of the sustainable development strategy. The climate-related budget is approved by the Board of Directors on a regular

basis once a year, and any significant expenditures related to it will also be reviewed and approved by the Board of Directors as necessary.

Internal Carbon Pricing

- First scenario: This is the IEA SDS scenario, which is in line with both the globally committed goals and the targets that Turkey has announced.
- Second scenario: This is the IEA 2DS scenario, which is consistent with the goal of limiting global temperature rise to 2°C, while taking into account the challenges of the steel industry's green transition as well as worst-case scenarios such as potential energy shortages and technological slowdowns.

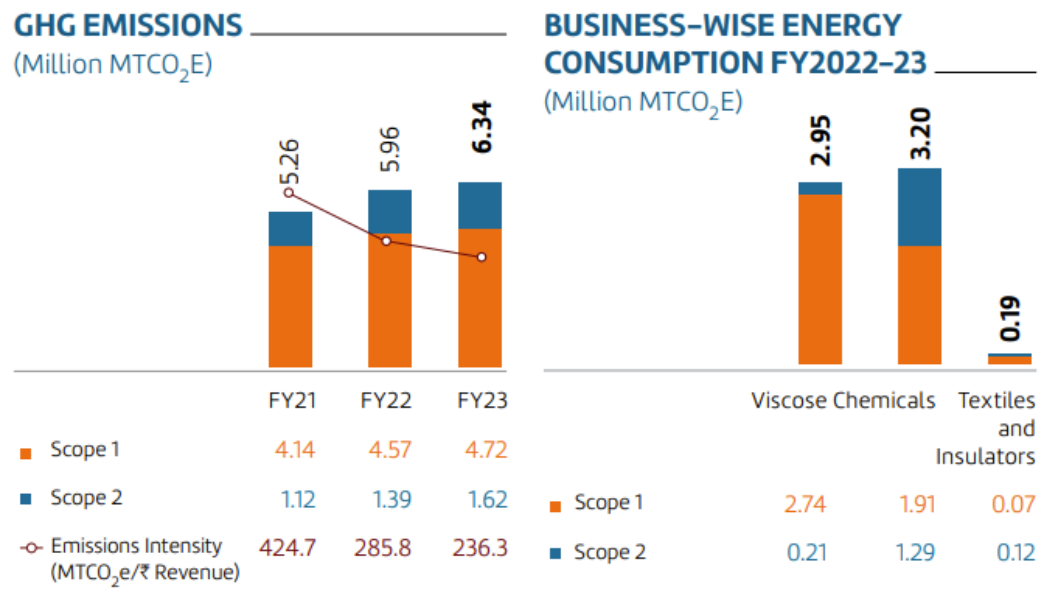
Carbon Pricing

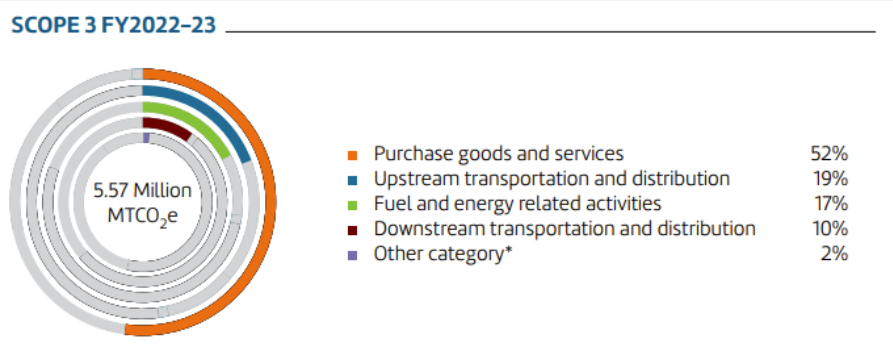
USD/tCO$_2$	2030	2040	2040
SDS	100	140	160
2DS	93	152	210

Example 19: Climate-related Disclosure – Metrics and targets – TCLF sub-sector

Textile and garment group Indian head[100]

Enterprises have complied with the GHG Protocol to calculate and report GHG emissions, including Scope 1 (direct emissions), Scope 2 (electricity consumption), Scope 3 (indirect emissions). The report complies with the WBCSD and WRI, ensuring transparency and accuracy.





Climate opportunities

The business believes in reducing carbon emissions in its manufacturing operations and contributes to India's net-zero emissions goal through the development of more sustainable products. Since then, climate-related opportunities have been identified as follows:

- Resource efficiency: Implement more efficient production and distribution processes.
- Energy sources: Use green energy sources with lower emissions.
- Markets: Expand access to new markets.
- Products and services: Develop and expand a sustainable product portfolio with a low carbon footprint.
- Resilience: Enhanced adaptability to changes in regulation and market conditions.

Targets for areas related to climate change

Businesses set targets for each of the following areas: GHG emissions, Water and Energy use. Concrete:

OUR TARGETS

Business	Focus Area	Target	Target Year	Progress
Chemicals	GHG Emission (Scope 1 and 2) in the main product	30% reduction	2030	Initiatives like exploration of energy-efficient technologies and improving operational efficiencies and the share of renewable and alternative energy are in progress.
VSF	GHG Emission Intensity	50% reduction	2030	Grasim's VSF business is in the process of developing a roadmap to reduce GHG emissions led by specified targets.
	Net Zero emissions		2040	

OUR TARGETS

Focus Area	Description	Business	Target	Target Year	Baseline year	FY 23 Status
Water Management	Reduction in water intensity	VSF	50%	2025	2015	The VSF business has reduced water consumption by nearly 55% by the end of FY2022-23.
	Reduction in effluent discharge and maximise water recovery	Textiles	-	-	2017	The quantity of treated water has increased from 4% in FY2016-17 to 57% in FY2022-23.

OUR TARGETS

Business	Target	Target Year	Progress
Chemicals	25% Renewable Power Share	2025	8% Renewable Power achieved.
Textiles	70% Renewable Power	2030	The domestic textiles business has installed a 6.2MWp rooftop solar power plant. One of our facilities runs boiler operations using 100 % non-fossil fuel.

APPENDIX A: LIST OF SUBSECTORS OF THE MANUFACTURING INDUSTRY GUIDE

Organizations within the scope of this Industry Guidance are enterprises operating in the level 1 industry – Industry C – Processing and processing industry according to Decision No. 27/2018/QD-TTg on the promulgation of Vietnam's economic sector system, including: "Processing and manufacturing include activities that transform physically, the chemistry of the material, the material or the transformation of its constituent components, to create a new product." According to Decision No. 27/QD-TTg, the processing and manufacturing industry (Level 1) is divided into 24 sub-sectors (Level 2), further classified into 71 groups (Level 3). These 71 groups were then divided into 139 classes (Level 4) and further classified into 175 subclasses (Level 5).

Below is the detailed classification of the processing and manufacturing industry based on Decision No. 27/2018/QD-TTg.

Classification system	Section	Division	Description
Decision no. 27/ QD-TTg	**C**		**MANUFACTURING**
		10	Manufacture of food products
		11	Manufacture of beverages
		12	Manufacture of tobacco products
		13	Manufacture of textiles
		14	Manufacture of wearing apparel
		15	Manufacture of leather and related products
		16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of products of straw and plaiting materials;
		17	Manufacture of paper and paper products
		18	Printing and reproduction of recorded media
		19	Manufacture of coke and refined petroleum products
		20	Manufacture of chemicals and chemical products
		21	Manufacture of pharmaceuticals, medicinal chemical and botanical products
		22	Manufacture of rubber and plastics products
		23	Manufacture of other non-metallic mineral products
		24	Manufacture of metals
		25	Manufacture of fabricated metal products, except machinery and equipment
		26	Manufacture of computer, electronic and optical products
		27	Manufacture of electrical equipment
		28	Manufacture of machinery and equipment n.e.c.
		29	Manufacture of motor vehicles and other motor vehicles
		30	Manufacture of other transport equipment
		31	Manufacture of furniture
		32	Other manufacturing
		33	Repair, maintenance and installation of machinery and equipment

This industry guide also conducts a case study for two subgroups in the manufacturing industry, due to the scale and scope of significant impacts on the economy, environment and society of Vietnam, including:

1. **Textile, leather and footwear industry:** including the following sub-sectors: (i) 13 – Textile, (ii) 14 – Apparel production; (iii)1 5 – Production of leather and related products.
2. **Iron, steel and iron and steel products:** including the following subsectors:

- Sector 24 – Metal production, Group 241 - 2410 - 24100: Production of iron, steel, cast iron and Group 243 – 2431 - 24310: Casting iron and steel;
- Sector 25 – Production of products from prefabricated metals: includes only the production of products from iron and steel.

according to Decision No. 27/2018/QD-TTg on promulgating the system of economic sectors of Vietnam

The description of the activity in each subdiscipline is outlined in the table below:

Classification system	Industry	Subdivision	Major Name	Activity
Decision 27/ QD-TTg				
	C		**PRODUCTION**	
Textile, leather and footwear industry				
		13	Weave	Producing yarn, weaving fabrics, finishing textile products, producing products from woven fabrics, except for clothes (for example, household fabrics, towels, floor mats, ropes, etc.).
		14	Apparel production	Sewing (processed or ready-to-sew garments) with all raw materials (e.g. leather, textiles, knitted fabrics or crochets), all types of pants, shirts (outerwear or underwear of men, women, children; work clothes, home clothes or clothes of urban people...) and accessories.
		15	Production of leather and related products	Collecting, dyeing and processing raw leather into leather by submerging, processing leather into products for final use. It also includes the production of similar products from other raw materials (imitation leather or leather replacement), such as rubber footwear, bags from textile products. Products made from leather substitutes also fall into this group, as they are produced using the same methods as manufactured leather products (e.g. bags) and are usually produced in the same unit.
Industry: Manufacturing of iron, steel and iron and steel products				
		24	Metal production	Headings 241 - 2410 - 24100: Production of iron, steel and cast iron, including activities such as direct extraction from iron ore, production of molten or hardened steel and slag; converting steel slag into steel; ferrolloy production, steel production, plate production (e.g. discs, plates, boards, wires) and steel bar and tube production.
				Group 243 – 2431 – 24310: Iron and steel casting, including activities of iron and steel foundries.
		25	Manufacturing products from prefabricated metals (except for machinery and equipment)	Only includes the production of iron and steel products; including: Production of pure metal products (such as metal parts, crates and construction works) usually with a static, stationary function, which is the whole of the combined production or assembly of such metal products (sometimes with some other metals) into complex units unless they are construction works with a completely electrical or optical partial relocation. The production of weapons and ammunition is also classified as this industry.

APPENDIX B: MANUFACTURING INDUSTRY INITIATIVES

1. Sustainable Supply Chain

The goal of a sustainable supply chain is to create, protect and add long-term environmental, social and economic value for all stakeholders involved in the process of bringing products and services to market. Proactively selecting sustainable raw materials and actively cooperating with suppliers to ensure and enhance sustainable practices are key factors in promoting sustainability in the supply chain of manufacturing enterprises.

1.1. Sustainable sourcing of raw materials

A key factor in promoting sustainable production is the careful selection and sourcing of raw materials. This includes minimizing the use of raw materials, replacing environmentally harmful substances with more environmentally friendly options, adopting more sustainable advanced material technologies, and using methods such as additive manufacturing to streamline supply chains and reduce the volume of materials required for production.

1.2. Sustainable Supplier Management

Partnering with suppliers to address the most important issues related to sustainability in the value chain.
The goal of this collaboration is to build a common awareness of sustainability issues, encourage suppliers to proactively build their vision, strategy and improve their sustainability performance, thereby promoting closer cooperation between businesses and suppliers based on common goals.

Businesses can refer to the UN Global Compact guidelines for supplier assessment and management, according to which businesses need to set expectations, continuously monitor and cooperate with suppliers to overcome barriers in the improvement process. The guide provides recommendations on key topics including:

- Set up a supply chain map: A supply chain map helps businesses identify their suppliers and locate them in the supply chain. To do this effectively, businesses should:
  - Map the overall supply chain, record supplier data in a common system, and gradually gain a better understanding of supplier relationships at lower levels in the chain;
  - Leverage the purchasing team's knowledge-sharing system and direct collaboration with suppliers to map the entire supply chain.
- Supply chain prioritization: Through a detailed supply chain map, businesses can identify and prioritize the areas with the highest risk. There are 2 main steps to assess risk and impact in the supply chain:
  - Identify risk events: Businesses need to leverage internal and external expertise to identify the social, environmental, economic, and governance risks with the most serious negative impacts.
  - Assess the probability and severity of risk events: Businesses need to analyze these risks to understand the probability of occurrence and potential impacts on people, the environment, and corporate governance activities.
- Choosing a communication channel: The most important goal in communication activities is to raise awareness of the expectations of businesses for sustainable performance. In order for communication activities to be effective, businesses can:
  - Take advantage of existing customer-supplier communication channels: Businesses should consider regularly integrating sustainability expectations and conversations into these communication channels.
  - Add sustainability content to the agenda of supply chain forums: Identify businesses with the same sustainability goals, share business expectations, and learn from the approaches of others.
- Monitoring and evaluation: The monitoring system aims to monitor the effectiveness of suppliers' sustainability implementation and the level of compliance with the company's sustainability strategy. Enterprises need to choose appropriate monitoring methods to solve problems over time and propose a sustainable development program to effectively promote the desired goals, avoid relying too much on compliance audits.
- Remediation: Businesses need to develop a methodology to identify and encourage continuous improvement, which includes fixing non-compliance and investing in supplier management capacity.
- Capacity building: Remediation and monitoring efforts are most effective when combined with supplier management capacity building. Some of the opportunities in improving supplier capacity include:
  - Integrating knowledge and capacity building into the audit process;
  - Provide training on critical issues that are being complied with to suppliers or workers;
  - Provide tools for suppliers to proactively access and use independently;
  - Build and support a knowledge network for suppliers.
- Interaction with Sub-Suppliers: In addition to the difficulties mentioned above, working with sub-suppliers can also face other obstacles, such as a lack of transparency in the supply chain and limited impact on sub-

suppliers. When businesses identify high-risk sub-suppliers, they need to proactively work with these parties to address the negative impacts. If the cooperation effort is unsuccessful, the business should terminate the relationship, either directly or through intermediaries.

2. Product Life Cycle (Circular Model)

Although there is currently no widely accepted definition of circular economy, Kirchherr, J., Reike, D., & Hekkert, M. P. (2017) has come up with a definition of circular economy that ensures comprehensiveness and clarity as follows: "The circular economy describes an economic system based on business models that replace the concept of 'end-of-life' by **reducing, reuse, recycle and recover materials in production/distribution and consumption processes**. Accordingly, production activities at the micro level (products, enterprises, consumers), medium level (eco-industrial parks) and macro level (cities, regions, countries and beyond) are carried out with the goal of sustainable development, while ensuring environmental quality, economic prosperity and social justice, for the benefit of current and future generations."[122]

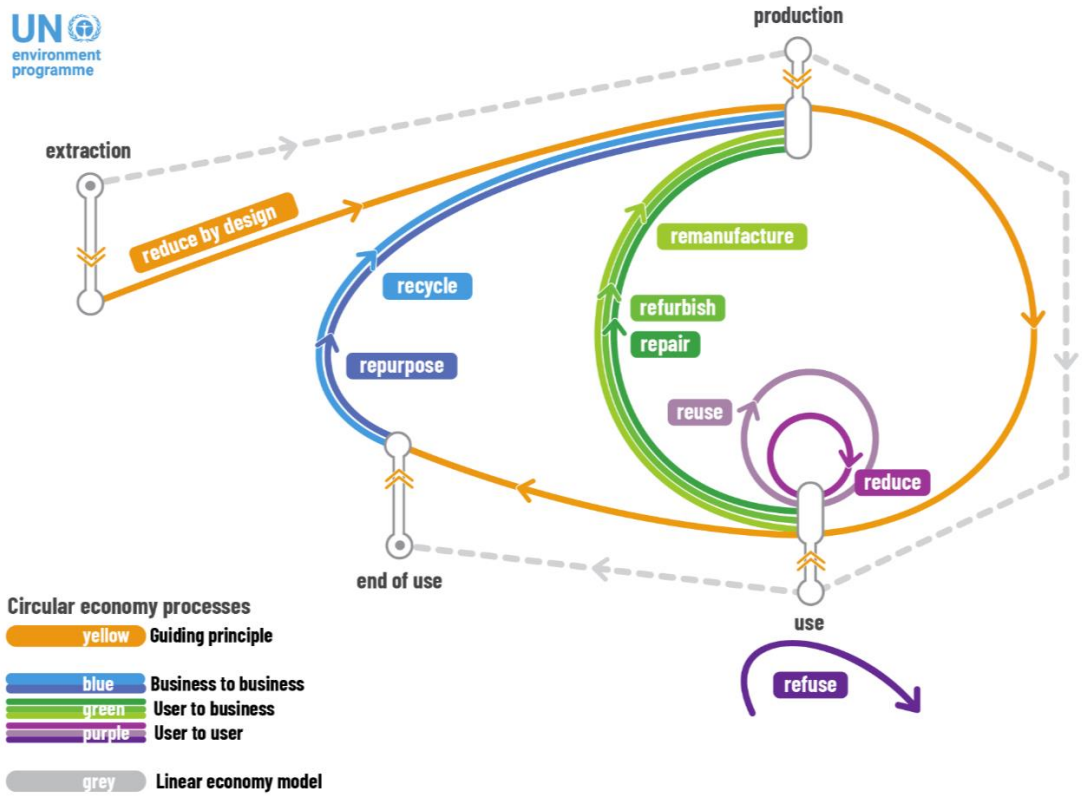
Broadly speaking, the Circular Economy model focuses on extending the use of resources during the product life cycle at the highest value.[123]

The United Nations Environment Programme (UNEP) offers an approach to building a circular model in the manufacturing industry, in which the foundation of the circular model is built on the principle of "Reduction from minimalist design". Applied from the first stage of product and service design, "Reduction from minimalist design" aims to minimize the amount of raw materials, especially hazardous materials and chemicals used in the production and/or use process. Next, the periodic model is built on the value retention loops:

- Short loops of user-to-user processes: in which the product or ingredient remains close to the user and its functionality. Processes include: Reject, Mitigation, and Reuse
- Medium/long loop of user-to-business processes: where the product or component is upgraded and the manufacturer is re-engaged. Processes include: Repair, Refurbishment, and Remanufacturing
- The long loop of business-to-business processes: in which the product or component loses its original function. Processes include: Reuse and Recycle.

The loops are shown through the figure below:

Figure 16: UNEP Circular Economy Approach - Source: UNEP[124]



In addition, the main implementation steps in the journey towards implementing the circular economy model are illustrated in the figure below. Businesses can refer to more details at https://www.ey.com/en_ch/services/sustainability/circular-economy.

Figure 17: Circular Journey[125] - Source: EY

3. Sustainable operation

A comprehensive sustainability plan helps businesses monitor and control the environmental impact of activities related to greenhouse gas emissions, resource use and pollution. Currently, there are many methods and initiatives that businesses can apply to improve their capacity to promote sustainability, especially with the help of advanced technologies that have been developed recently such as digitalization, digital product and service design, etc. cloud computing, IoT (Internet of Things), blockchain, AI (Artificial Intelligence) and advanced analytics.

The table below summarizes some of the top practices for reference purposes to support the sustainable performance of manufacturing businesses in the industry.

Table 16: Examples of Top Practices for Sustainable Manufacturing – Source: General

Examples of Top Practices
Reducing greenhouse gas emissions
1. **Direct Electrification and Renewable Heat**: Conversion from fossil fuels to direct electrification (using electricity for processes) and renewable heat sources (such as solar or geothermal) in production facilities. 2. **Hydrogen Gas**: Explore the potential of Hydrogen Gas as an alternative fuel for industrial processes. Green hydrogen (produced using renewable energy) can significantly reduce emissions. 3. **Data Sharing to Reduce Carbon Emissions**: Facilitate the exchange of supply chain data, focusing on the Product Carbon Footprint (PCF). PCF quantifies the amount of greenhouse gas emissions emitted from a product, thereby setting emission standards and promoting initiatives to reduce carbon emissions.
Resource Management (Water & Energy)
1. **Water Recycling and Treatment:** Implement water recycling programs to reuse wastewater, reducing dependence on freshwater sources. 2. **Water Use Audits:** Conducting regular water audits helps businesses identify weaknesses and opportunities for improvement in water use. 3. **Employee Awareness:** Implement a comprehensive water and energy management plan, providing employees with training on water conservation and energy efficiency. This can optimize water use in all operations. 4. **Energy Management System (EnMS):** Developing an EnMS is the foundation for continuous improvement of energy use and reduction of operating costs. Manufacturers can evaluate energy-saving technologies and best practices to minimize energy consumption using the ISO 50001 Standard. 5. **Energy Audit:** An energy audit involves a detailed examination of energy flows to identify weaknesses, compare performance, and recommend the implementation of energy-saving measures.
Pollution
1. **Properly dispose of chemicals, oils, and non-degradable materials.** 2. **Safe Storage and Handling of Hazardous Materials:** Follow the manufacturer's instructions for the storage and handling of chemicals. Label the containers accurately, avoid overstocking, and be careful during transportation to avoid accidental leaks.

Examples of Top Practices

3. **Non-Toxic Materials in Production:** Avoid using materials that emit toxic pollutants such as VOCs (volatile organic compounds), heavy metals, and low-level ozone. Replace hazardous materials with non-toxic alternatives to minimize health risks and environmental impacts.
4. **Waste to Energy Conversion Solution:** Convert non-recyclable waste into energy through anaerobic incineration or digestion. These facilities help reduce landfill waste and generate renewable energy.
5. **Expanded Manufacturer Responsibility (EPR) Program:** Invest in recycling infrastructure, promote sustainable packaging, and implement product recall programs to hold manufacturers accountable for end-of-life product management.
6. **Data-Driven Waste Management:** Intelligent waste management systems use sensors, GPS, and real-time data to optimize collection routes, reduce operating costs, and reduce emissions, allowing for more accurate forecasting and planning for waste treatment needs.
7. **Pollution Control Technology**: Uses technologies such as oxidation catalysts, regenerative heat oxidation (RTO) equipment, and rotary concentrators to destroy pollutants before they are released into the environment.
8. **Periodic Equipment Maintenance**: Implement a regular maintenance schedule for machinery to prevent the leakage of hazardous substances such as oil, antifreeze, and coolant, which can contaminate the water source.

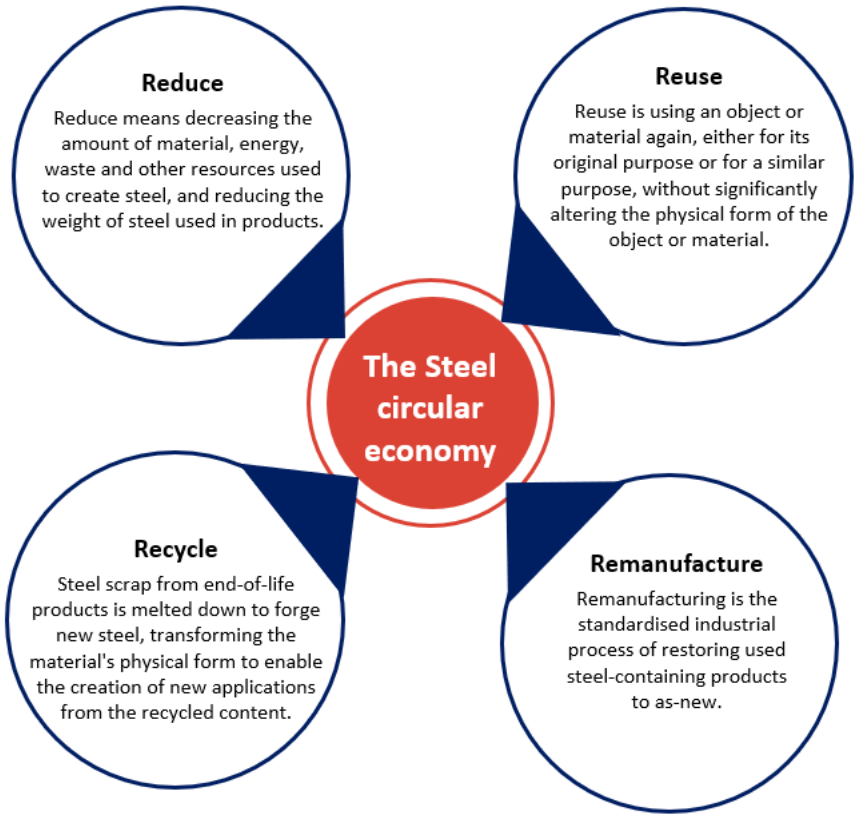
APPENDIX C: Iron and Steel Subsector Initiative

- For businesses in the Iron and Steel industry, sustainable transformation can be realized through three main pillars—namely: **(1) Recycling, (2) Decarbonization, (3) Improving social issues in the iron and steel industry** —which can contribute to the realization of the strategic ambition of sustainable development.
  - ***Circular:*** focus on designing products for reuse and recycling, enhancing sustainability and resource efficiency.
    - Cut
    - Reuse
    - Reproduction
    - Recycling
  - ***Decarbonization:*** permanently removing carbon emissions from a business's value chain by making a transition to greener production methods.
    - Fuel Shifting
    - Electrification of the thermal process
    - Waste heat recovery
    - Carbon Capture, Utilization, and Storage (CCUS)
  - ***Improving social issues in the iron and steel industry:*** establishing workplace health and safety programs to protect workers.

1. Circular Economy

In the circular economy, the steel industry can have a significant competitive advantage over other materials. All steel products should be designed to be efficient, durable, easy to reuse and remanufacture, and ultimately recyclable.

Figure 18: Key principles for the circular economy in the iron and steel sector – Source: worldsteel[126]



2. Decarbonization

a. Fuel Conversion

Fuel conversion in the iron and steel industry is a decarbonization strategy that involves switching from traditional organic fuels to lower-emitting alternatives such as biomass, plastics, and hydrogen. This includes the use of biomass or biochar to replace some or all of the coke in the blast furnace, the use of plastic as an alternative fuel source, and the use of hydrogen as a reducing agent to replace coke or natural gas. By adopting

these alternatives, the industry can significantly reduce CO2 emissions and move towards more sustainable steel production.
Each specific fuel conversion method brings its own benefits and challenges in pursuing green steel production. The table below characterizes some of the lower-emission alternatives for the iron and steel sector (not exhaustive).

Table 17: Low-emission alternatives for the iron and steel industry

Hydrogen
Serves as a reducing agent, replacing coke and natural gas, and when produced through electrolysis powered by renewable energy, allows the process to be almost carbon neutral. Use of hydrogen in production: • Hydrogen gas injection in blast furnaces: This method involves injecting hydrogen into blast furnaces to partially replace crushed coal injection (PCI), potentially reducing CO2 emissions by up to 20%. • Hydrogen as a reducing agent in DRI: Hydrogen is also being studied as a complete alternative to coke and natural gas in DRI processes. The hydrogen method with DRI produces reduced iron and steam, with the iron then being processed in an electric arc furnace.
Biomass and biochar
Serve as carbon-neutral, renewable solutions for coal and coke in the iron and steel industry, providing a viable fuel conversion solution for decarbonization. The utilization of these organic materials as combustion and reduction agents in the iron production process not only saves energy but also reduces greenhouse gas emissions. This approach is in line with global efforts to reduce reliance on fossil fuels and support the transition to sustainable and efficient iron production, providing a promising method for the industry in moving towards a low-carbon future.
Resin
Involves pumping waste plastic into blast furnaces to reduce dependence on traditional fossil fuels such as coal and coke. This approach has the potential to reduce CO2 emissions through the partial replacement of high-carbon emitting materials with plastics that have a lower carbon footprint when burned. The use of plastics in steel production must be managed to maintain the quality of raw materials and prevent pollution. Solving the problem of collecting, treating, and sorting waste plastics is critical in reducing emissions and ensuring the feasibility of the method.

b. Waste heat recovery

Waste Heat Recovery (WHR) in the iron and steel industry is a decarbonization strategy that uses heat exchangers, heat pumps, and other recovery systems to capture waste heat from production processes. This obtained heat is then reused for heating in the process or converted into electricity, improving energy efficiency and reducing CO2 emissions.
In the iron and steel industry, energy losses during production are largely in the form of waste heat, which presents a great opportunity for energy savings and efficiency improvements.

c. Electrification of the thermal process

Thermal process electrification in the iron and steel industry is a decarbonization strategy that uses electricity, specifically using electricity from renewable sources, to generate the amount of heat needed for steel production. This approach reduces the use of fossil fuels and CO2 emissions by directly converting electricity into heat or indirectly producing green hydrogen for use as a clean fuel in steelmaking processes.
Below are the details of the method of converting electricity into heat directly and indirectly during the steelmaking process.

Table 18: Direct and indirect heat conversion methods in steel production - Source: EY General

Method	Describe	Technology	Environmental Impact
Direct electrification	Use electricity to generate heat directly during the steelmaking process.	• Electric Arc Furnace (EAF) • Plasma Heater	Eliminate exhaust gases by avoiding fuel burning, converting kinetic energy into heat.
Indirect electrification	Use electricity to produce green fuels such as hydrogen, then use it in steel production.	• Water Electrolysis	When using green hydrogen in DRI processes, steel production can be nearly carbon neutral.

d. Carbon Capture, Utilization, and Storage (CCUS)

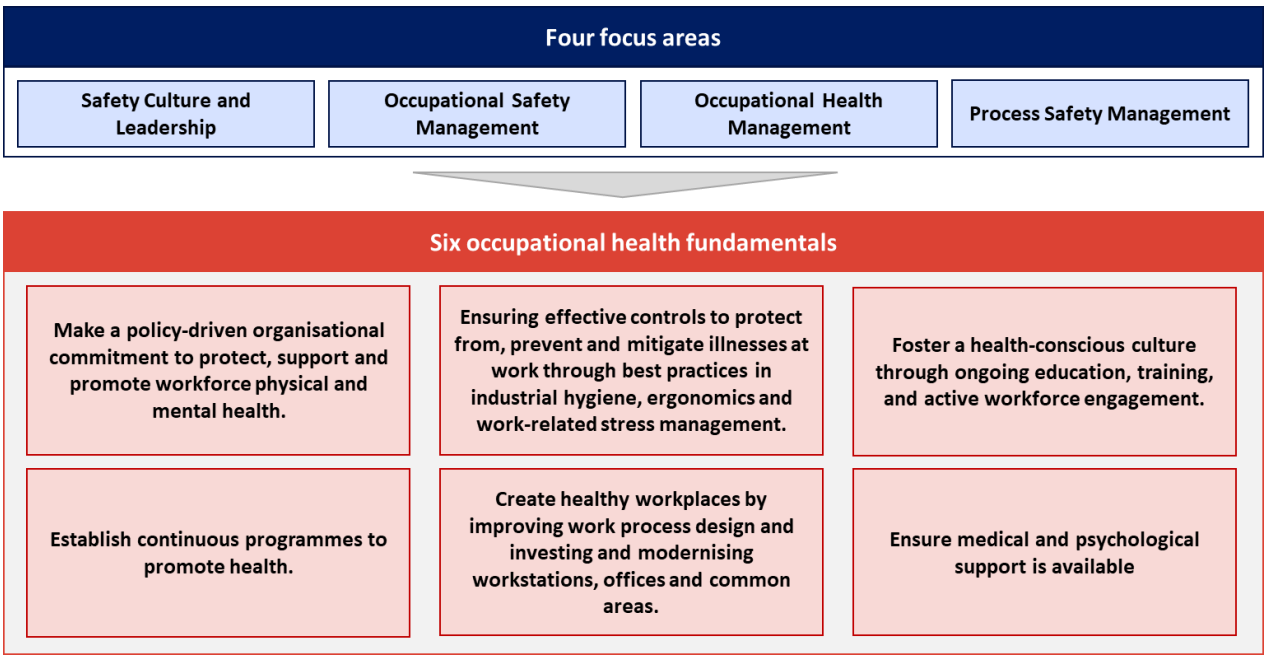
Carbon capture, utilization, and storage (CCUS) is a process that captures carbon dioxide emissions from significant emission sources such as iron and steel production facilities, transports CO2 captured and stored underground, or is leveraged to create marketable products.[127] The iron and steel industry, which faces significant CO2 emissions , especially from blast furnaces and direct reduction iron (DRI) plants, can leverage CCUS technologies to align with environmental goals and comply with regulations.

2. Improving social issues in the iron and steel sector

worldsteel has launched a strategic approach to improving social issues in the iron and steel industry consisting of two basic frameworks: the Four Focus Areas Framework and the Six Safety and Health Principles Framework for the steel industry. These two frameworks strengthen and link together, supporting the building of an inclusive health and safety culture that is essential for the sustainable development of the industry.[128]

The Four Focus Areas framework provides a comprehensive view of the components required for a robust health and safety management system. These areas emphasize the importance of leadership commitment, the management of both short-term safety risks and long-term health risks, and the prevention of serious incidents. The Six Principles of Safety and Health Framework for the Steel Industry establishes the basic principles that guide the industry's approach to injury prevention, managerial accountability, employee involvement, safe working conditions requirements, business interests that come from ensuring safety, and integrating safety into all regulations. production and business processes.

Figure 19: Four focus areas – health and safety management systems. Source: worldsteel[129]



APPENDIX D: TCLF sector initiatives

Achieving sustainability in the textile industry requires comprehensive changes throughout the life cycle of DMDG products. This includes design, supply, production, consumption, and processing. Sustainable development in fabric and garment production is based on the adoption of initiatives that focus on environmental protection, green production, resource conservation, recycling, proper chemical management, and improvement of working conditions. Initiatives are underway to drive this systemic change and shape the industry towards sustainable development goals. Strategic approaches need to be implemented throughout the supply chain. The table below summarizes top practices in addressing key topics of the DMDG industry.

Table 19. Best Practices for Socially Environmentally Sustainable DMDG Supply Chains

Practices / Topics	**Environment**				**Society**	
	Greenhouse Gas Emissions	Water & Wastewater Management	Biodiversity and ecological impacts	Raw Material Supply & Efficiency	Product Quality & Safety	Labor conditions in the supply chain
Circular Economy	X	X	X	X	X	
Traceability and transparency	X	X	X	X	X	X
Carbon Neutrality	X					
Sustainable sourcing			X	X	X	
Solutions to improve working conditions						X
Other Top Practices	X	X	X	X	X	X

1. Circular Economy

"Minimalist design" is a general principle of the Circular Economy, which is applied to the DMDG industry's supply chain through three UNEP methodological value retention processes, ensuring that materials can retain the highest value and remain in the textile value chain for the longest time.

Table 20. Three processes that maintain the value of the UNEP Circular method when applied to the DMDG field

The process maintains the "User to User" value: when a product or component becomes more relevant to the user and its functionality.	
Refuse	Users refuse to buy and/or consume less due to a more sustainable lifestyle. This signals that the textile industry should shift to more circular models.
Reduce	Users choose to use textile products and related services for a longer period of time and reduce the frequency of purchases. The value of textile products or services is retained for longer.
Re-use	Consumers choose to reuse and resell products by transferring them to other users, and reusability becomes a selection criterion when purchasing. The textile industry is encouraged to provide more durable, longer-lasting products and materials.
The process of maintaining the value of "User to business": when the product or component is upgraded by the manufacturer	
Repair	The manufacturer fixes a specific defect in the product to make the product able to function properly as originally intended, thereby extending the life of the product.
The process of maintaining the "Business to Business" value: when a product or component loses its original function	
Repurpose	Reuse and adjust the product or discarded component for another function. The conversion of use provides cost savings by reducing the cost of production, disposal of generated waste, and related disposal requirements.
Recycle	Prevents discharge and allows the material to re-enter the economic cycle. It usually involves the reprocessing of waste into products, materials, or other substances.

The transition to circularity requires the textile industry to adopt a holistic approach across the entire life cycle of textile products, including:

- ***In the design phase:*** Implement "minimalist design" from the early stages to ensure that clothes can be easily recycled and reused.
- ***In the production stage:*** Using recycled fibers, environmentally friendly chemicals and pioneering the application of zero-waste production methods such as taking advantage of scrap directly at the production site.
- ***Throughout the consumption period:*** Encourage customers **to reduce** and **refuse** to buy textile products that are harmful to the environment. In addition, innovative business models and usage concepts that emphasize **recycling** and **reuse** should be introduced, including the provision of repair kits and services as well as the resale of used products.
- ***Post-consumer stage****:* Strategies for the end of the product life cycle such as **recycling, reuse,** and **repurposing** are considered to be the main methods to close the life cycle of materials. This includes the development and widespread deployment of advanced sorting and recycling technologies that can separate fibers without compromising the original quality of the material.

Some of the key circular technologies in the DMDG industry, can be referred to in the 'ERA Industrial Technology Roadmap for Circular Business Technologies and Models in the Textile, Construction and Energy-Intensive Industries' developed by the European Commission.[130]

2. Traceability and transparency

Businesses can implement digital transformation programs, apply advanced technology to support improved traceability and transparency in the value chain, aiming to:

- Provide transparently standardized information about product provenance and other characteristics such as sustainability-related properties;
- Facilitate the sharing of reliable, up-to-date information in real time;
- Reliable digital identification of products, parts, and components;
- Collect and store information about these identifiers;
- Analyze large volumes of data to support risk improvement and operational management.

3. Carbon Neutrality

Measuring greenhouse gas emissions is an important first step in reducing a business's carbon footprint, allowing it to assess its impact on the climate and develop cost-effective emission reduction strategies. Recommended businesses:

- Measure both direct (Scope 1) and indirect (Scope 2 and 3) emissions. SMEs should prioritize resources to carry out Scope 1 and 2 emission inventory; for Scope 3, consider considering in the long term;
- Assess the entire supply chain's emissions to look for opportunities to reduce greenhouse gas emissions, thereby making sustainable decisions related to business operations and products purchased, sold and produced;
- Assess the amount of emissions and the ability to eliminate emissions of a particular product. GHG emissions lifecycle analysis helps businesses make informed choices to reduce emissions from the products they design, manufacture, sell, buy, or use.

According to *the OECD's Due Diligence Guidelines for Sustainable Supply Chains in the Textiles and Footwear sector*[131] , DMDG businesses should adopt a risk-based approach to managing greenhouse gas emissions, focusing on the highest emitting regions in their supply chains. Businesses are encouraged to leverage relationships with suppliers to promote emission reductions and/or directly support suppliers in implementing greenhouse gas emission reduction measures.

Table 21. Some measures to reduce greenhouse gas emissions and monitor improvements at different stages of the DMDG life cycle - Source: OECD[132]

Stage	Typical solution
Yarn selection	• Consider greenhouse gas emissions along with feasibility, cost, and demand when selecting fibers for product design.
Textile Finishing	• Develop a grassroots energy management plan with enterprise-wide energy management measures. • Implement existing best practices (best practices) according to industry-specific guidance. • Implementation of energy-saving measures (e.g., energy-saving technology, optimization of steam and pressurized gas generation, waste heat recovery from wastewater and exhaust gases, process optimization, etc.)

Stage	Typical solution
	• Implement energy conservation measures (e.g., implement energy savings through process improvement and reaction conditions). • Increase efficiency and quality to reduce the need for reprocessing due to failure. Install and operate precision gauges or measurement software to benchmark performance and improve efficiency. • Install and operate meters or measurement software to compare performance and improve efficiency.
Ship	• Implement sustainable purchasing practices to minimize the need for emergency air freight. • Strategically located warehouses and distribution centers near product sources and markets to reduce transportation distances. • Require cargo carriers to track and provide data on CO2 emissions. • Monitor and track quarterly shipping-related emissions of all business units, including manufacturing, distribution, and customer centers.
Packed	• Reduced packaging size. • Use reusable or recyclable resources.
Consumption stage *(Usually has the highest amount of GHG emissions)*	• Use materials that can be reused or recycled. • Design products with durability and longer service life. • Increase customer awareness of practices that can reduce carbon emissions, such as: washing clothes less (i.e., no washing after each use); washing clothes with cool water; use concentrated detergents, limit packaging; air drying of clothes; Adjust the drying process based on different fabrics. • Consider potential GHG emissions based on factors such as feasibility, cost, and consumer demand when selecting raw materials for products.

4. Sustainable sourcing

Four key aspects businesses should consider in order to move towards sustainable sourcing:

Table 22. Four Aspects of Sustainable Sourcing Transformation

Main Fields	Describe
Sustainable materials	"Fibres or preferred materials" are defined as "fibres or materials that reduce impacts and provide benefits to the climate, nature and people compared to conventional similar materials, through a holistic approach to transforming production systems." [133] Some types of eco-friendly fibers may include (without limitation): recycled fibers, plant-based fibers, animal-based fibers (responsible), semi-synthetic fibers.
Supplier Relations	Businesses should re-evaluate their relationships with suppliers, focusing on establishing long-term strategic partnerships to enhance demand forecasting, production planning, resilience, and operational efficiency. In addition, DMDG manufacturers and suppliers should work together to adopt technology that not only enables accurate tracking of emissions data, facilitating regulatory compliance, but also helps mitigate the impact of the "bullwhip" effect in the supply chain.
Transparency and traceability	Ensuring transparency and traceability requires gathering complete information from suppliers from the very first step when sourcing.
Purchasing practices	To enhance sustainable sourcing, the key procurement methods that DMDG businesses can adopt include integrating common KPIs on sustainability and process efficiency, improving collaboration between functions and suppliers, enhancing the accuracy of plans, and improving end-to-end comprehensive efficiency.

5. Improving working conditions in the DMDG industry supply chain

Below is guidance on minimizing negative impacts on working conditions in DMDG's operations and supply chain in accordance with the OECD Due Diligence Guidelines for Supply Chain Responsibility in the Apparel and Footwear Industry.

Table 23: Top practices on working conditions in the DMDG supply chain - Source: OECD [134]

Subject	HR Policy	Human Resource Capacity	Culture and Participation	Manage stakeholders
Health and safety of workers	• Implement evacuation procedures and immediately suspend production in case of serious danger. • Develop long-term occupational health and safety programs that comply with international standards. • Coordinate with safety experts to establish a corrective action plan for serious hazard risks. • Establish a complaint mechanism for safety issues that require external expertise.	Train employees on knowledge and measures related to occupational safety at the workplace.	• Encourage worker involvement in safety committees and policy development.	• Collaborate with suppliers to raise awareness and support action plans to address labor issues. • Collaborate with production teams to share information and ongoing corrective action. • Share data and findings with organizations involved in multi-stakeholder initiatives. • Supporting providers to prevent child labor through local awareness and services.
Labor practices	**Forced labor** • Establish policies and procedures to prevent forced labor, including pre-qualification for employers. • Issue a suspension order if forced labor is detected until preventive actions are taken. • Develop a pricing model that takes into account appropriate labor costs. **Child Labor** • Follow the instructions to prevent and prevent child labor. • Eliminate child labor and work with other parties to come up with initiatives to address this problem. • Prevent child labor through pricing and purchasing activities. **Worktime:** • Monitor workers' working hours and warn of overtime risks. • Conduct salary appraisals to avoid overtime. • Improve production processes to reduce the need for overtime. **Remuneration:** • Establish a management system to ensure payroll compliance. • Production planning and financial management to ensure minimum wage.	Implementing training programs on: • National and International Standards for Forced Labor • Prevention of child labor • Efficient time management • Read and understand payslips, payroll calculations, and recognize benefits	• Promote a culture of safety and respect for the rights of employees in the enterprise. • Establish a non-discrimination policy and train workers on their rights.	

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[1] Our World in Data. (2024). Emissions by sector: where do greenhouse gases come from? Retrieved from Emissions by sector: where do greenhouse gases come from? - Our World in Data
[2] https://edgar.jrc.ec.europa.eu/report_2024
[3] United Nations Conference on Trade and Development. (2020). Sustainable manufacturing and environmental pollution programme. Retrieved from https://unctad.org/news/sustainable-manufacturing-and-environmental-pollution-programme
[4] SouthSouthNorth. (2020). Manufacturing pollution in Sub-Saharan Africa and South Asia: Implications for the environment, health, and future work. Retrieved from https://southsouthnorth.org/wp-content/uploads/2020/12/Manufacturing-Pollution-in-Sub-Saharan-Africa-and-South-Asia-Implications-for-the-environment-health-and-future-work.pdf
[5] OECD (2017). The Land-Water-Energy Nexus: Biophysical and Economic Consequences, OECD Publishing, Paris. Retrieved from https://dx.doi.org/10.1787/9789264279360-en.
[6] PwC. (n.d.). Sustainability in industrial production. Retrieved from Industrial sustainability - PwC
[7] World O Stats. (2025). Employment Statistics by Industry – Global Distribution. Retrieved from Global Employment by Industry 2025 - Worldostats
[8] The Government of the Socialist Republic of Vietnam. (2022). Nationwide Determined Contribution (NDC). Retrieved from Viet Nam_NDC_2022_Eng.pdf (unfccc.int)
[9] National Statistics Agency. (2025). Status of wastewater treatment and environmental protection in Vietnam and lessons from Denmark. Retrieved from Status of wastewater treatment and environmental protection in Vietnam and lessons from Denmark – General Statistics Office of Vietnam
[10] VnEconomy. (2023). Why do many industrial parks not have centralized wastewater treatment systems? Retrieved from https://vneconomy.vn/techconnect/vi-sao-nhieu-khu-cong-nghiep-chua-co-he-thong-xu-ly-nuoc-thai-tap-trung.htm
[11] National Statistics Agency. (2023). The situation of Vietnam's labor market in 2023. Retrieved from https://www.gso.gov.vn/du-lieu-va-so-lieu-thong-ke/2024/01/tinh-hinh-thi-truong-lao-dong-viet-nam-nam-2023/
[12] Ministry of Labor, War Invalids and Social Affairs. (2025). Notice 630/TB-BLDTBXH on the situation of occupational accidents in 2024. Retrieved from _Notice_630/TB-BLDTBXH 2025__occupational_accident__situation 2024
[13] The World Counts. (n.d.). Environmental impact of steel production. Retrieved from https://www.theworldcounts.com/challenges/planet-earth/mining/environmental-impact-of-steel-production
[14] United Nations Economic Commission for Europe (UNECE). (2022). Technology brief: Carbon neutral energy intensive industries. Retrieved from https://unece.org/sites/default/files/2022-11/Industry%20brief_EN_2.pdf – pg 14
[15] Iluțiu-Varvara, D.-A., & Aciu, C. (2022). Sustainability. Retrieved from https://www.mdpi.com/2071-1050/14/9/5488
[16] World Steel Association. (2020). Pubic policy paper: Air quality. Retrieved from https://worldsteel.org/wp-content/uploads/Air-quality.pdf
[17] European Recycling Industries' Confederation (EuRIC). (n.d.). Steel recycling news and events. Retrieved from https://euric.org/news-events/news/steel-recycling
[18] World Steel Association. (2024). World steel in figures 2024. Retrieved from https://worldsteel.org/data/world-steel-in-figures/world-steel-in-figures-2024/
[19] World Steel Association. (2024). World steel in figures 2024. Retrieved from https://worldsteel.org/data/world-steel-in-figures/world-steel-in-figures-2024/
[20] Institute for Industry and Trade Strategy and Policy (VIOIT). (2022). Vietnam's steel industry – Difficulties in the new situation. Retrieved from https://vioit.org.vn/vn/chien-luoc-chinh-sach/nganh-thep-viet-nam----kho-khan-trong-tinh-hinh-moi-5017.4050.html
[21] Industry and Trade Newspaper. (2023). The steel industry actively reduces greenhouse gas emissions. Retrieved from https://congthuong.vn/nganh-thep-chu-dong-giam-phat-thai-khi-nha-kinh-273340-273340.html
[22] Industry and Trade Newspaper. (2023). The steel industry reduces greenhouse gas emissions through energy transition. Retrieved from https://congthuong.vn/nganh-thep-giam-phat-thai-khi-nha-kinh-qua-chuyen-doi-nang-luong-279172.html
[23] WTO Center. (2023). Vietnam's steel industry and sustainable green growth goals. Retrieved from https://trungtamwto.vn/tin-tuc/24462-nganh-thep-viet-va-muc-tieu-tang-truong-xanh-ben-vung
[24] Ministry of Labor, Invalids and Social Affairs (MOLISA). (2025). Announcement of the situation of occupational accidents in 2024. Retrieved from _Notice_630/TB-BLDTBXH 2025__occupational_accident__situation 2024
[25] European Parliamentary Research Service. (2020). Artificial intelligence: How does it work, why does it matter, and what can we do about it?. Retrieved from https://www.europarl.europa.eu/RegData/etudes/ATAG/2020/656296/EPRS_ATA(2020)656296_EN.pdf
[26] Dominish, E. (n.d.). Measuring carbon emissions in the garment sector in Asia. International Labour Organization. Retrieved from https://webapps.ilo.org/legacy/english/intserv/working-papers/wp053/index.html
[27] Textile Exchange & KPMG. (2018). Threading the needle: Weaving the Sustainable Development Goals into the textile, retail, and apparel industry. Retrieved from https://textileexchange.org/app/uploads/2022/03/Textile-Exchange-kpmg-threading-needle-report.pdf
[28] United Nations Environment Programme (UNEP). (2023). Sustainability and circularity in the textile value chain: A global roadmap. Retrieved from https://circulareconomy.europa.eu/platform/sites/default/files/2023-12/Full%20Report%20-%20UNEP%20Sustainability%20and%20Circularity%20in%20the%20Textile%20Value%20Chain%20A%20Global%20Roadmap_0.pdf
[29] Apparel Impact Institute. (2021). Roadmap to net zero: Delivering science – Based targets in the apparel sector. Retrieved from 21_WorkingPaper_RoadmapNetZero_.pdf (apparelimpact.org) – pg 7
[30] Quantis (2018). Measuring Fashion: Environmental Impact of the Global Apparel and Footwear Industries Study. Retrieved from https://library.unccd.int/Details/books/1359
[31] European Environment Agency. (2022). Microplastics from textiles: Towards a circular economy for textiles in Europe. Retrieved from Microplastics from textiles: towards a circular economy for textiles in Europe — European Environment Agency
[32] European Parliament Research Service (EPRS). (2020). What if fashion were good for the planet? Retrieved from https://www.europarl.europa.eu/RegData/etudes/ATAG/2020/656296/EPRS_
[33] Canopy. (n.d.). CanopyStyle: Style shouldn't cost the Earth. Retrieved from https://canopyplanet.org/change-together/canopystyle
[34] United Nations Environment Programme (UNEP). (2023). Sustainability and circularity in the textile value chain: A global roadmap. Retrieved from https://circulareconomy.europa.eu/platform/sites/default/files/2023-12/Full%20Report%20-%20UNEP%20Sustainability%20and%20Circularity%20in%20the%20Textile%20Value%20Chain%20A%20Global%20Roadmap_0.pdf

[35] SCP Vietnam. (2023). The race to reduce carbon emissions in the footwear and garment industry in Vietnam. Retrieved from http://scp.gov.vn/tin-tuc/t13153/cuoc-dua-giam-luong-khi-thai-cacbon-trong-nganh-giay-dep-va-may-mac-tai-viet-nam.html
[36] Natural Resources & Environment Newspaper. (2023). The textile and garment industry emits about 5 million tons of CO_2 per year. Retrieved from https://baotainguyenmoitruong.vn/nganh-det-may-phat-thai-khoang-5-trieu-tan-co2-moi-nam-365529.html
[37] Ministry of Industry and Trade of Vietnam. (2023). Textile and footwear industry: Environmental challenges. Retrieved from https://moit.gov.vn/bao-ve-moi-truong/nganh-det-may-va-da-giay-nhung-thach-thuc-ve-moi-truong.html
[38] Financial Magazine. (2023). From the perspective of the textile and footwear industry. Retrieved from https://tapchitaichinh.vn/tu-goc-nhin-cua-nganh-det-may-da-giay.html
[39] Labor in the capital. (2022). The leather and footwear industry needs labor resources. Retrieved from https://laodongthudo.vn/nganh-da-giay-can-nguon-lao-dong-144425.html
[40] Communist Magazine. (2023). The role of the state economy in building an independent and self-reliant economy associated with international integration – From the perspective of the textile, garment, leather and footwear industry. Retrieved from https://www.tapchicongsan.org.vn/web/guest/kinh-te/-/2018/827127/vai-tro-cua-kinh-te-nha-nuoc-trong-xay-dung-nen-kinh-te-doc-lap%2C-tu-chu-gan-voi-hoi-nhap-quoc-te---tu-goc-nhin-cua-nganh-det-may%2C-da-giay.aspx
[41] Human Trafficking Search. (2018). Sitting on pins and needles: Labour conditions in Vietnam's garment sector. Retrieved from https://humantraffickingsearch.org/resource/sitting-on-pins-and-needles-labour-conditions-in-vietnams-garment-sector/
[42] CDP. (2023). Supply chain. Retrieved from https://www.cdp.net/en/supply-chain
[43] National Institute of Standards and Technology. (2020). Sustainable manufacturing: Smart manufacturing. Retrieved from https://www.nist.gov/blogs/taking-measure/sustainable-manufacturing-smart-manufacturing
[44] VnEconomy. (2023). Navigating new rules in exports. Retrieved from https://vneconomy.vn/navigating-new-rules-in-exports.htm
[45] WTO Center. (2023). Economic impact assessment and implications. Retrieved from Carbon pricing in Vietnam: Options for adoption (wtocenter.vn)
[46] Regulation - 2023/956 - EN - cbam regulation - EUR-Lex (europa.eu)
[47] https://www.ifrs.org/content/dam/ifrs/supporting-implementation/issb-standards/progress-climate-related-disclosures-2024.pdf
[48] EY. (2021). The future of sustainability reporting standards. Retrieved from: ey-the-future-of-sustainability-reporting-standards-june-2021.pdf
[49] https://www.globalreporting.org/media/mqznr5mz/gri-sector-program-list-of-prioritized-sectors.pdf
[50] IFRS-S2-IBG – Issued IFRS Standards
[51] Recommendations_of_the_Taskforce_on_Nature-related_Financial_Disclosures_September_2023.pdf (tnfd.global)
[52] IFRS - ISSB and TCFD
[53] https://www.ifrs.org/groups/international-sustainability-standards-board/issb-frequently-asked-questions/
[54] https://www.ifrs.org/content/dam/ifrs/knowledge-hub/resources/tpt/sector-summary-apr-2024.pdf
[55] 08 Draft ESRS E1 Climate Change 2022.pdf November (efrag.org)
[56] https://sciencebasedtargets.org/sectors/steel#2200843
[57] https://sciencebasedtargets.org/sectors/apparel-and-footwear#21507
[58] The Bank Times. (2024). Creating a breakthrough for the processing and manufacturing industry. Retrieved from https://thoibaonganhang.vn/tao-dot-pha-cho-cong-nghiep-che-bien-che-tao-148090.html
[59] Ministry of Industry and Trade of Vietnam. (2022). Promoting the development of circular economy models and sustainable production in industries. Retrieved from Promoting the development of circular economy models, sustainable production in industries (moit.gov.vn)
[60] REPORT ON ASSESSMENT OF SUSTAINABLE BUSINESS PRACTICES OF VIETNAMESE ENTERPRISES ACCORDING TO THE ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) FRAMEWORK IN 2024 - Department of Enterprise Development (AED), Ministry of Planning and Investment (MPI),
[61] International Financial Reporting Standards (IFRS). (2023). IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information. Retrieved from IFRS - IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information – pg 17
[62] POSCO HOLDINGS. (2023). Materials for Tomorrow, Innovation for Excellence. Retrieved from: https://posco-inc.com:4453/resource/v3/file/esg/2023%20POSCO%20Holdings%20Report_ENG.pdf

[63] Esquel. (2023). Sustainability Report 2023. Retrieved from:

https://www.esquel.com/sites/default/files/Esquel%20Sustainability%20Report%202023.pdf
[64] BaoSteel. (2023). Baosteel Sustainability Report 2023. Retrieved from: ade848d2eee14f83b95abc88b43d75d5.pdf
[65] INDITEX. (2024). Consolidated Statement of Non-Financial Information and Sustainability Information. Retrieved from:

https://www.inditex.com/itxcomweb/api/media/d6d06b5c-4a2f-431d-915fce8ca9e95181/Sustainabilityreport2024.pdf?t=1742203448699
[66] World Steel Association. (n.d.). Steel - the permanent material in the circular economy. Retrieved from https://worldsteel.org/wp-content/uploads/worldsteel-circular-economy.pdf - pg 6
[67] World Economic Forum (WEF). (2023). Steel industry net-zero tracker. Retrieved from https://www3.weforum.org/docs/WEF_Net_Zero_Tracker_2023_STEEL.pdf - pg 2
[68] United Nations Environment Programme (UNEP). (2023). Sustainability and circularity in the textile value chain: A global roadmap. Retrieved from Full Report - UNEP Sustainability and Circularity in the Textile Value Chain A Global Roadmap.pdf
[69] United Nations Framework Convention on Climate Change (UNFCCC). (2023). Fashion Industry Charter for Climate Action: Aggregate Report of the Transition Plans. Retrieved from FICCA_Aggregate_Rep_2023.pdf (unfccc.int) – pg 6
[70] The Fashion Pact. (n.d.). Forging a nature positive and net zero future for fashion. Retrieved from The Fashion Pact
[71] https://thesustainableagency.com/blog/sustainability-certifications-and-ecolabels-guide/
[72] Textile Exchange. (n.d.). Our story. Retrieved from Our Story - Textile Exchange
[73] Textile Exchange. (n.d.). Standards. Retrieved from Standards - Textile Exchange

[74] Textile Exchange. (2023). Draft unified standard V2.1. Retrieved from https://textileexchange.org/app/uploads/2023/09/Draft-unified-standard-V2-1.pdf - pg 2
[75] An Giang Department of Industry and Trade. (n.d.). Export information to the EU textile and garment market. Retrieved from DET MAY (angiang.gov.vn) – pg 15
[76] WWF, Guidelines for Greening the Textile Sector in Viet Nam, greening_textile_sector_in_vn___eng.pdf (panda.org)
[77] UNEP, Sustainability and Circularity in the Textile Value Chain, unep_sustainability_and_circularity_in_the_textile_value_chain.pdf (oneplanetnetwork.org)
[78] GIZ, Circular Economy in the Textile Sector, giz_report_circular_economy_textile_sector_2019_final.pdf (europa.eu)
[79] BaoSteel. (2023). Baosteel Sustainability Report 2023. Retrieved from: https://res.baowugroup.com/attach/2025/03/05/ade848d2eee14f83b95abc88b43d75d5.pdf
[80] INDITEX. (2024). Consolidated statement of non-financial information and sustainability information 2024. Retrieved from: ENGL - CCAA e IG Grupo 2024
[81] GRI, The global standards for sustainability impacts, GRI - Standards (globalreporting.org)
[82] SASB (n.d.). SASB Standards. Retrieved from SASB Standards overview - SASB
[83] Global Reporting Initiative, GRI 301: Materials 2016, https://www.globalreporting.org/pdf.ashx?id=12456&page=1 – pg 8
[84] Global Reporting Initiative, GRI 301: Materials 2016, https://www.globalreporting.org/pdf.ashx?id=12456&page=1 – pg 9
[85] Global Reporting Initiative, GRI 301: Materials 2016, https://www.globalreporting.org/pdf.ashx?id=12456&page=1 – pg 10
[86] Global Reporting Initiative, GRI 413: Local Communities 2016, https://www.globalreporting.org/pdf.ashx?id=12666 – pg 8
[87] Global Reporting Initiative, GRI 411: Rights of Indigenous Peoples 2016, https://www.globalreporting.org/pdf.ashx?id=12655 – pg 8
[88] Global Reporting Initiative, GRI 2: Genral Disclosures 2021, https://www.globalreporting.org/pdf.ashx?id=12358&page=5 – pg 5
[89] Global Reporting Initiative, GRI 404: Training and Education 2016, https://www.globalreporting.org/pdf.ashx?id=12576&page=7 -pg 8
[90] Global Reporting Initiative, GRI 406: Non-discrimination 2016, https://www.globalreporting.org/pdf.ashx?id=12598&page=1 – pg 8
[91] Global Reporting Initiative, GRI 405: Diversity and Equal Opportunity 2016, https://www.globalreporting.org/pdf.ashx?id=12587&page=9 – pg 8
[92] Global Reporting Initiative, GRI 405: Diversity and Equal Opportunity 2016, https://www.globalreporting.org/pdf.ashx?id=12587&page=9 – pg 8
[93] Global Reporting Initiative, GRI 405: Diversity and Equal Opportunity 2016, https://www.globalreporting.org/pdf.ashx?id=12587&page=9 – pg 9
[94] Global Reporting Initiative (GRI). (n.d.). Sector standard project for textiles and apparel. Retrieved from GRI - Sector Standard Project for Textiles and Apparel (globalreporting.org)
[95] Science Based Targets initiative (SBTi). (2019). SBT application guide. Retrieved from SBT_App_Guide_final_0718.pdf (sciencebasedtargets.org)
[96] International Financial Reporting Standards (IFRS). (2023). IFRS S2 Implementation Guidance. Retrieved from IFRS-S2-IBG – Issued IFRS Standards
[97] EMSTEEL. (2024). Sustainability Report 2024. Retrieved from: https://emsteel.com/pdf/2024/sr/Sustainability-Report.pdf
[98] https://docs.wbcsd.org/2020/04/WBCSD-TCFD-Food-Agriculture-and-Forest-Products%C2%AC-Preparer-Fourm-report.pdf
[99] JFE GROUP. (2024). Sustainablility report 2024. Retrieved from: https://www.jfe-holdings.co.jp/en/common/pdf/sustainability/data/2024/sustainability2024e_A3.pdf
[100] GRASIM. (2023). Task Force on Climate-related Financial Disclosures (TCFD): Grasim Industries Limited Grasim's Approach to Climate Change and Net Zero. Retrieved from: tcfd-report-year-2022-23.pdf
[101] https://www.unepfi.org/wordpress/wp-content/uploads/2023/04/Climate-Risks-in-the-Industrials-Sector.pdf
[102] https://www.ngfs.net/sites/default/files/medias/documents/case_studies_of_environmental_risk_analysis_methodologies.pdf
[103] https://www.iea.org/reports/the-future-of-cooling
[104] https://www.aquatechtrade.com/news/industrial-water/industrial-water-essential-guide
[105] https://assets.website-files.com/5df9172583d7eec04960799a/618872a58d35f2643cbcaef2_BX9770_ESG_Critical%20industries%20have%20substantial%20exposure_7Nov2021.pdf
[106] https://assets.website-files.com/5df9172583d7eec04960799a/618872a58d35f2643cbcaef2_BX9770_ESG_Critical%20industries%20have%20substantial%20exposure_7Nov2021.pdf
[107] https://assets.website-files.com/5df9172583d7eec04960799a/618872a58d35f2643cbcaef2_BX9770_ESG_Critical%20industries%20have%20substantial%20exposure_7Nov2021.pdf
[108] https://www.unepfi.org/wordpress/wp-content/uploads/2023/04/Climate-Risks-in-the-Industrials-Sector.pdf
[109] https://www.unepfi.org/wordpress/wp-content/uploads/2023/04/Climate-Risks-in-the-Industrials-Sector.pdf
[110] https://www.unepfi.org/wordpress/wp-content/uploads/2023/04/Climate-Risks-in-the-Industrials-Sector.pdf
[111] https://tcfd-consortium.jp/pdf/en/news/22100501/TCFD_Guidance_3.0_ssrd_e.pdf
[112] https://www.ifrs.org/content/dam/ifrs/knowledge-hub/resources/tpt/sector-summary-apr-2024.pdf
[113] https://unfccc.int/sites/default/files/resource/20_REP_UN%20FIC%20Playbook_V7.pdf
[114] https://www.ifrs.org/content/dam/ifrs/knowledge-hub/resources/tpt/sector-summary-apr-2024.pdf
[115] BORCELIK. (2021). Task Force on Climate-Related Financial Disclosures Report. Retrieved from: https://www.borcelik.com/dokuman/Bor%C3%A7elik%20TCFD_v19_100423.pdf
[116] https://www.ifrs.org/content/dam/ifrs/knowledge-hub/resources/tpt/sector-summary-apr-2024.pdf
[117] https://www.ifrs.org/content/dam/ifrs/knowledge-hub/resources/tpt/sector-summary-apr-2024.pdf
[118] https://www.ifrs.org/content/dam/ifrs/knowledge-hub/resources/tpt/sector-summary-apr-2024.pdf
[119] https://www.ifrs.org/content/dam/ifrs/knowledge-hub/resources/tpt/sector-summary-apr-2024.pdf

[120] TUNG HO STEEL. (2023). Task Force on Climate-Related Financial Disclosures Report. Retrieved from:

https://www.tunghosteel.com/Files/papp/300/Tung%20Ho%20Steel%20TCFD%20Report%202023.pdf
[121] BORCELIK. Task Force on Climate-Related Financial Disclosures Report. Retrieved from: https://www.borcelik.com/dokuman/Bor%C3%A7elik%20TCFD_v19_100423.pdf
[122] Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. Retrieved from https://doi.org/10.1016/j.resconrec.2017.09.005
[123] Bocken, N. M. P., de Pauw, I., Bakker, C., & van der Grinten, B. (2016). Product design and business model strategies for a circular economy. Retrieved from https://doi.org/10.1080/21681015.2016.1172124
[124] Building Circularity. (n.d.). Building Circularity: Advancing Circular Economy Practices. Retrieved from https://buildingcircularity.org/
[125] EY. (n.d.). Circular economy: Advancing sustainability through innovation. Retrieved from https://www.ey.com/en_ch/services/sustainability/circular-economy
[126] World Steel Association. (n.d.). Steel - the permanent material in the circular economy. Retrieved from https://worldsteel.org/wp-content/uploads/worldsteel-circular-economy.pdf - pg 2
[127] International Energy Agency (IEA). (n.d.). Carbon capture, utilisation, and storage. Retrieved from https://www.iea.org/energy-system/carbon-capture-utilisation-and-storage
[128] World Steel Association. (n.d.). Occupational health fundamentals in the steel industry. Retrieved from https://worldsteel.org/steel-topics/safety-and-health/occupational-health-fundamentals/
[129] World Steel Association. (n.d.). Occupational health fundamentals in the steel industry. Retrieved from https://worldsteel.org/steel-topics/safety-and-health/occupational-health-fundamentals/
[130] European Commission. (2023). ERA industrial technology roadmap for circular technologies and business models in the textile, construction and energy-intensive industries. Retrieved from https://op.europa.eu/en/publication-detail/-/publication/32f12c4b-9d89-11ed-b508-01aa75ed71a1/language-en
[131] OECD. (2018). OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector. Retrieved from OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector | OECD
[132] OECD. (2018). OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector. Retrieved from OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector | OECD – pg 171-175
[133] Textile Exchange. (2023). Preferred Fibers and Materials: Definitions. Retrieved from Preferred Fibers and Materials Definitions Guidance - Jan 2023.docx (textileexchange.org) – pg 7
[134] OECD. (2018). OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector. Retrieved from OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector | OECD – pg 105-152