

CO₂ Reduction Strategy of the Freudenberg Group



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Contact: [Freudenberg Group: Press & Media](#)

PREFACE

About the Freudenberg Group

The Freudenberg Group is a global technology company whose goal is to create value for customers and society. Freudenberg's Business Groups strive to be their leading partner by delivering advanced materials, innovative products and solutions that enhance everyday life in some 40 market segments and thousands of applications: seals, vibration control components, technical textiles, filters, cleaning technologies and products, specialty chemicals, medical products, and E-Mobility solutions. In 2025, the Freudenberg Group employed approximately 51,000 people in some 60 countries worldwide and generated sales of more than €11.7 billion. Freudenberg is a family company owned by 440 heirs (as of January 2026) of Carl Johann Freudenberg, who founded the company in 1849.

Purpose of this document

This document describes how the Freudenberg Group plans to implement CO₂ reduction actions to reach its CO₂ reduction targets and the CO₂ neutrality target and addresses some reporting obligations under the EU DIRECTIVE 2022/2464 of 14 December 2022 only – and has no other or further purpose or intention. The reduction targets are set in relation to sales; therefore, this document also describes the overall strategy of Freudenberg Business Groups concerning the Freudenberg Group targets. The document should enable a reasonably well-informed reader to understand how the targets shall be achieved and in which time frame, that they are realistic, and how they are supported by specific action plans and progress tracking. Once Freudenberg is subject to reporting under the EU's Corporate Sustainability Reporting Directive (CSRD), which is expected to be published for the first time in 2028 for the 2027 fiscal year, the reporting will then be regularly checked by external auditors. The present document is intended to be integrated in the future CSRD report (ESRS E1, transition plan policy targets). Upon publication of the first CSRD report, it will replace this document.

This document cites parts of ISO IWA 42 2022 to refer to established definitions. However, this does not mean that Freudenberg claims to be fully aligned or compliant with ISO IWA 42 2022.

Any CO₂ reduction ambitions and actions mentioned in this document concern only Scope 1 and 2 of the Freudenberg Group legal entities which are consolidated in the financial group reporting.

An internal analysis in 2024 found at group level no significant Scope 1 GHG emissions other than CO₂. Therefore, the ambitions and actions mentioned in this document only concern CO₂.

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1. Strategic Framework

1.1 Origin and Scope of the Strategy

The CO₂ reduction strategy has its origin in the Freudenberg Guiding Principles. It is an element of the Freudenberg responsibility framework which contains (1) Compliance, (2) Employees and Diversity, (3) Health, Safety and Environmental Protection, (4) Sustainability, and (5) Corporate Citizenship¹. Freudenberg defines success as achieving financial success while taking its responsibility for society and the environment seriously. The two goals are inseparably linked and firmly anchored in the company's Guiding Principles.

Climate change is one of the greatest challenges of our time. That is why Freudenberg's environmental Sustainability strategy is currently focused on the path to CO₂ neutrality.

The Freudenberg Group contributes to mitigating climate change by increasing energy efficiency and reducing CO₂ emissions in its operations², i.e. Scope 1³ and 2 as defined by the GHG Protocol. Freudenberg focuses today's initiative on its operations; since there, a tangible, clearly measurable influence is realistic at Group level. The organizational scope for CO₂ reporting and target setting is defined by the financial reporting scope of the Freudenberg Group.

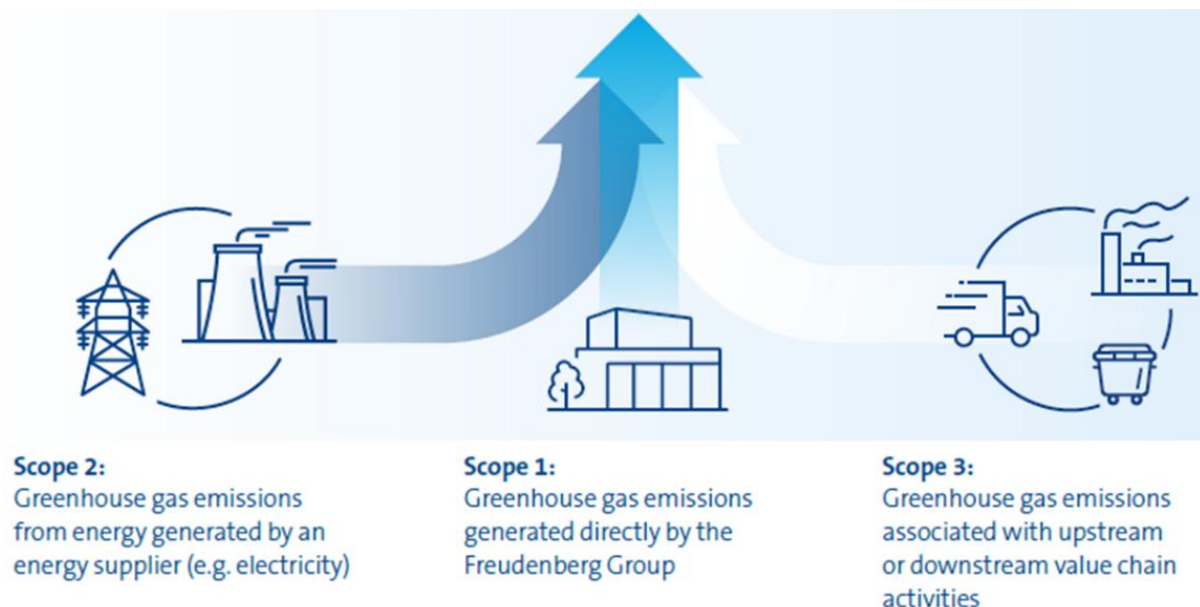


Figure 1. Definition of Scope 1,2 and 3 CO₂ Emissions. Freudenberg follows the GHG Protocol guidance. Please refer to the GHG Protocol for details and standards for calculating Scope 1,2,3.

Freudenberg defines the overarching strategy towards climate neutrality and key goals at Group level: The CO₂ reduction strategy of Freudenberg sets objectives and KPIs

¹ [FREUDENBERG WEBPAGE](#)

² Scope 3 is NOT included in the Freudenberg Group CO₂ Reduction Strategy as of 2026.

³ An internal analysis in 2024 indicated no at Group level significant non-CO₂ GHG emissions. Therefore, Scope 1 only includes the CO₂ equivalent emitted by the combustion of purchased fossil fuels.

to provide focus and direction. Freudenberg's Business Groups⁴ are diverse regarding production technology, product segments and regional presence. This is why defining and executing the detailed strategic path on how to reach any target set at the Group level is best managed by the Business Groups themselves. The Business Groups have thus the flexibility to implement the strategy and goals in line with their specific business models and customer needs.

1.2 Governance and Responsibility

The CO₂ reduction strategy is integrated into the organizational structure under responsibility of the CTO. Major strategic changes or decisions such as target setting are approved by the Board of Management ([Freudenberg about us](#)).

The Freudenberg Innovation Council and the Sustainability Advisory Group are sounding boards at management level. The function Head of Corporate Sustainability is the "sustainability strategic guide", integrated in Corporate HSE and develops overall strategy and targets, leads Group-wide initiatives and tracks group progress in CO₂ reduction.

The Group CO₂ reduction strategy provides implementation guidance and is systematically connected to Freudenberg's operations in the different Business Groups through the strategic planning process. The strategic planning process takes place every 3 years and includes a wide range of mostly financial topics, aligned across management levels up to the Supervisory Board. It includes a CO₂ Reduction Roadmap that shows each BG's key CO₂ reduction actions over the next 9 years: the planned CO₂ reduction initiatives, the expected effects and the necessary investments for the next 3 years are indicated with generally high confidence. Estimates of expected CO₂ reduction effects through key initiatives in the following 2 three-year periods are also provided. The confidence level generally decreases, the further in the future an initiative is envisioned. The expected effects across all 9 years are categorized by the main CO₂ reduction levers. In this way, resources are assigned to strategic initiatives in alignment with management and in line with Freudenberg Group targets.

Progress in CO₂ reduction and implementation of key CO₂ reduction and energy efficiency actions is included in internal review and controlling processes: in the annual HSE review process and strategic controlling process in the middle of each strategic period. Within these 2 processes, steering measures are implemented in case progress significantly deviates. Progress in CO₂ reduction on the Group level, as well as major changes in strategy or target setting, is reported publicly in the annual report of the Freudenberg Group. Freudenberg aims to comply with its legal reporting obligations.

⁴ [OVERVIEW OF BGS](#)

1.3 Strategic Guidance within the Freudenberg Group

To implement the key strategic direction, Freudenberg has internal guidelines and action maxims that describe the target picture. These documents contain action maxims, principles and standards on how to act on environmental matters. The standards are the framework for internal reporting and auditing of environmental matters.

Document	Description
Sustainability Strategy of the Freudenberg Group	<i>The Sustainability Strategy constitutes principles and Group-wide targets in a consistent and systematic framework <u>as strategic guidance for the Freudenberg Group</u> and describes the actions the Group has implemented or plans to implement to reach the Group sustainability targets.</i>
HSE Guideline	<i>The Freudenberg Group HSE Guideline defines the Group-wide framework for Health, Safety and Environment at Freudenberg. It outlines how occupational health and safety, environmental protection, product and process safety are to be systematically integrated into business decisions and operations. The guideline aims to ensure legal compliance, minimize risks, continuously reduce environmental impacts, and provide clear orientation for employees and management, while promoting a proactive HSE culture and dialogue with internal and external stakeholders.</i> <u>HSE Guideline</u>
Guiding Principles	<i>The Freudenberg Guiding Principles describe the core values and behavioral standards that guide all employees worldwide in their daily work. They are derived from the company's long-standing Business Principles and focus on value for customers, innovation, leadership, responsibility, people, and long-term orientation. Together, they serve as a common compass for decision-making, ethical conduct, and cooperation with customers, partners, and other stakeholders across the Freudenberg Group.</i> <u>Guiding Principles, Business Principles</u>
Code of Conduct	<i>The Freudenberg Group Code of Conduct defines the binding standards for ethical behavior, legal compliance, and responsible business conduct for all employees worldwide. It is based on the company's Guiding Principles and Business Principles and sets clear expectations on topics such as integrity, human rights, health and safety, environmental protection, fair competition, and anti-corruption. The Code of Conduct serves as a practical guide to support employees in handling ethical and legal questions in their daily work and in interactions with business partners and other stakeholders.</i> <u>Code of Conduct</u>

Freudenberg Environmental Standards

Freudenberg Environmental Standards set out internal environmental requirements that translate the Group's general environmental commitments into practical, operational expectations. They are used to ensure a consistent level of environmental protection and compliance across Freudenberg sites and Business Groups and to support effective implementation of environmental management in daily operations.

2. Freudenberg Targets

2.1 Targets

Freudenberg's climate-related targets concern the CO₂ emissions in its own operations and purchased energy: The **sum of Scope 1 and 2 emissions**⁵. The strategic KPI for target setting is the CO₂ emission intensity, as in the CO₂ emissions per turnover [t CO₂/mil.€]. Absolute reduction targets would not provide strategic guidance for the Freudenberg Group in accordance with our sustainability principles. By choosing a relative target KPI (the intensity), the target value remains relevant in cases of future organic growth, acquisitions or divestitures.

The base year for Freudenberg's target setting is 2020. Even though it was an exceptional year due to the Covid pandemic, the CO₂ emission intensity decreased linearly from 2019 to 2020 to 2021, making it a valid base year. In 2020 the Freudenberg Group emitted 87.1 t/mil.€, respectively 770 kt, CO₂ in Scope 1+2.

Target year	CO ₂ Intensity Target	Actual Reduction
2025	25% reduction	51% reduction
2030	65% reduction	
2045	CO ₂ neutrality	

ISO IWA 42 2022 "Net Zero Guideline" defines "net zero" as a "*condition in which human-caused residual GHG emissions are balanced by human-led removals over a specified period and within specified boundaries*".

By setting intermediate reduction targets at 5-year intervals, Freudenberg plans to significantly reduce its emissions before taking the step aiming for NET zero emissions in 2045, moving at a pace in line with the [Guiding Principles](#) of the Freudenberg Group: Value for Customer, Responsibility, Innovation, Leadership, People and Long-Term Orientation.

The target year for CO₂ neutrality is aligned with the EU's and Germany's target years, 2050 and 2045, which were set in alignment with the Paris Agreement to limit global

⁵ Since electrification is part of the CO₂ reduction plan (next chapter), Scope 1 and Scope 2 targets are combined.

warming to 1.5°C. Our targets for Scope 1+2 are aligned with reference emission reduction pathways, which are in line with the Paris Agreement, as published by the Science Based Targets initiative (SBTi) and the European Investment Bank (EIB).

2.2 Performance Tracking

The targets are set at Freudenberg **Group** level. The Business Groups are responsible for defining, planning and executing the specific path for CO₂ reduction, depending on their production technology, regional presence and customer needs.

Progress towards the targets at the Group level is tracked annually. This process is integrated into established internal review processes. Since 2023, the Sustainability KPIs and main actions have been part of the strategic planning and controlling process. The governance and responsibility structures were described in Chapter 1.2.

From 2020 to 2025, from the base year to the first intermediate reduction target, the CO₂ intensity of Freudenberg Group was reduced by 51% to 43.1 t/mil.€. This corresponds to a reduction in total CO₂ emissions (Scope 1+2) of 34%, i.e. by 264 kt to 506 kt, while business grew.

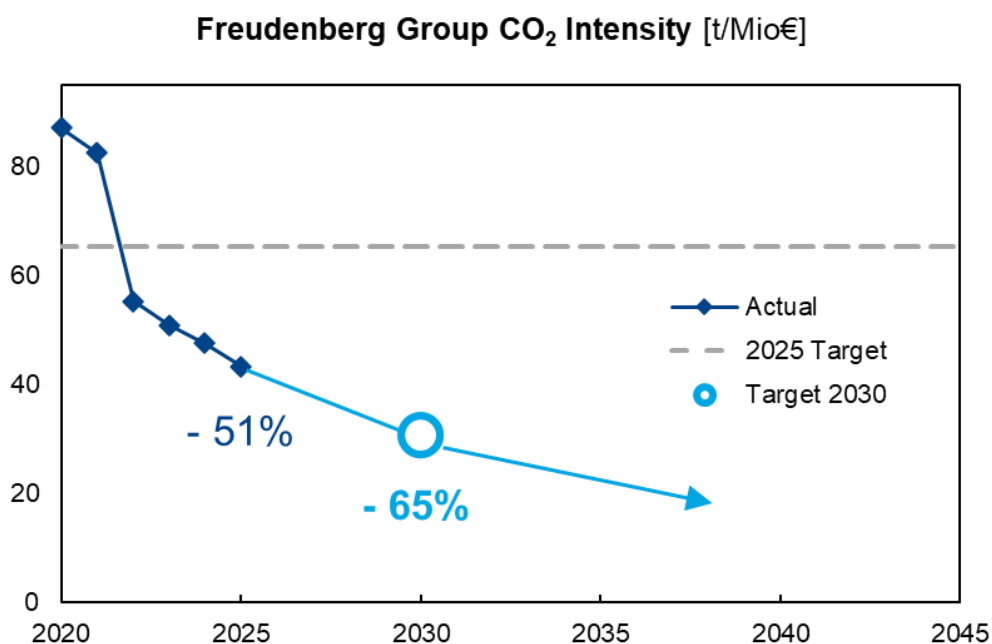


Figure 2. Progress in CO₂ reduction (Scope 1+2) of the Freudenberg Group 2020-2025. The light blue arrow implies the estimated trajectory, to be specified with further intermediate targets every 5 years. The latest progress update can be found in the most recent annual report of the Freudenberg Group.

3. Path to CO₂ neutrality

The Freudenberg path is a sum of business group paths: in alignment with the Freudenberg Group's strategic guidance, Business Groups develop their individual and industry-specific paths, resulting in the Freudenberg path. This approach allows the harmonization of Freudenberg group Sustainability strategy by involving Business Groups' industry specific targets and needs.

The overall path to CO₂ neutrality across the Freudenberg Group is defined as 1. Reduction, 2. Electrification, 3. Green Energy, and 4. Carbon Gap Closure. The order does not reflect a time axis, but logical steps as strategic guidance for reducing CO₂ emissions at the level of a machine or a process, for example, as elaborated below. This path describes the key actions to reduce Scope 1 and 2 emissions. Across these 3 steps, Freudenberg defines 7 main CO₂ reduction categories at Group level, which are described in the following.

Examples of specific energy and CO₂ reduction actions are listed on the Freudenberg sustainability webpage ([Freudenberg Sustainability](#)).

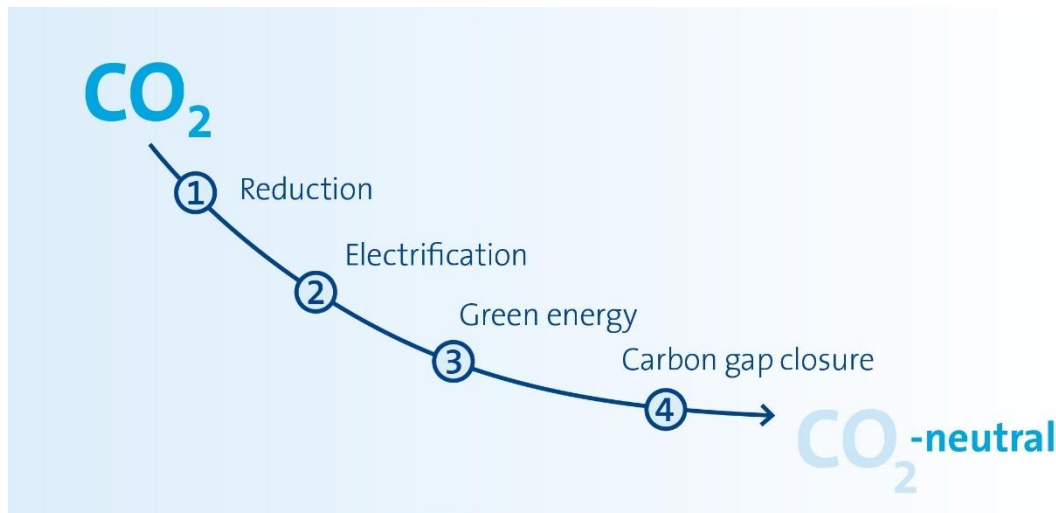


Figure 3. Freudenberg Path to CO₂ Neutrality

3.1 Reduction

Reducing energy consumption is of high importance in the Freudenberg group. It reduces costs, reduces the risk in the increasingly volatile energy market and contributes to global resource efficiency. If the energy used is not CO₂ neutral, reducing energy consumption also reduces CO₂ emissions. If the used energy is already green, reducing energy consumption in Freudenberg operations reduces the strain on this resource and leaves more green energy to replace fossil energy sources outside of Freudenberg. Therefore, reducing the energy consumption of utilities, processes and buildings is the first step to reducing CO₂ emissions. The strategic emphasis is on improving energy efficiency, rather than reducing the total consumption.

Energy Efficiency (Utilities)

Energy consumption through utilities is reduced without affecting core production processes. Efficiency gains are realized in compressed air systems, production HVAC, shutdown management and process heat.

Core Production Processes

There are a multitude of ways to reduce energy consumption and CO₂ emissions through process modifications: lowering process temperatures, different production technology, different process chemistries, and more.

Buildings

Measures are applied to the building shell, building heating, ventilation and air conditioning (HVAC), lighting or building management systems to reduce the energy consumption and CO₂ emissions from buildings.

3.2 Electrification

Electrifying processes means changing technology so that it uses electricity instead of fossil fuels as the source of energy. The regional situation plays an important role in the cost-benefit analysis for electrification. Energy prices, the available energy mix and countries' pathway to mitigate climate change greatly varies globally. Thereby the correct timing for electrification and the meaningfulness of the measure needs to be analyzed at site level and is subject to each Business Group's own strategy.

3.3 Green Energy

Purchasing Green Energy

Green energy is synonymous with renewable energy, which is "energy collected from resources that are naturally replenished at a rate equal to or faster than extracted or used" (ISO IWA 42 2022).

Purchasing green electricity reduces the CO₂ emissions in electrified processes. Different availabilities of green electricity need to be considered locally and globally. As part of strategy development, the evaluation of green energy certificates (globally), power purchase agreement possibilities (locally), and the countries' speed towards greener energy, is necessary.

Options to purchase green fuel to replace fossil fuels are already available in some regions and may grow in the future. Examples of green fuels are biogas, wood chips or green H₂. The availability and cost of green fuels vary regionally, and the future developments are uncertain. Generally, they are scarce, and therefore only applicable where electrification is not a viable option. In some cases, it is necessary to change the technology to use green fuel (see Fuel Switch).

Fuel Switch

Much like electrification, the technology is changed to allow the use of green instead of fossil fuels. In some cases, it is only a matter of purchasing green energy (see above), not requiring a technology change. In other cases, such as switching from natural gas to green H₂, which will be a promising option in the future, or from heating oil to a woodchip, a technological change is needed. For example, the burner or the fuel distribution system needs to be modified to use H₂ instead of natural gas.

Harvesting Green Energy

Energy harvesting systems, e.g. photovoltaic systems, are installed on Freudenberg premises for self-generated renewable electricity. Whether harvesting, with or without local energy storage, is a beneficial way to provide green electricity to a site depends on many country- and site-specific factors. Depending on the local situation and the availability of external developers, there are essentially two business models for realizing these systems: They are either self-financed or financed by third-party investments. While harvesting might not be the ideal option on all sites, it can have major benefits for individual sites, where purchasing green electricity is not possible, not financially attractive or where supply security is an issue. Often, a high share of self-consumption of the harvested energy is beneficial, as it avoids grid fees.

3.4 Carbon Gap Closure 2045

Freudenberg plans to significantly reduce CO₂ emissions – and therewith the gap to “zero” – by 2045, with three steps – reduction, electrification, green energy – as much as technologically and economically possible.

What does “Carbon Gap Closure” stand for? It stands for the gap between the remaining CO₂ emissions in 2045 and absolute zero. This is the gap that needs to be set to NET zero. Because different countries have different net zero targets (e.g. China 2060, India 2070), it is not expected that all Freudenberg sites worldwide can be operated with a 100% decarbonized energy supply in 2045. To make this challenge transparent, this gap is addressed in the Freudenberg Group path to CO₂ neutrality.

How could the gap be closed today? Today and in the near future, the option to reach net zero emissions is carbon offsetting through the voluntary carbon market. Freudenberg decided in 2023 not to engage in this market due to quality and credibility issues.

What does Freudenberg do? New markets and new technologies will emerge in the next 20 years. Freudenberg’s innovations contribute to new technologies and solutions.

4. Reporting

4.1 Reporting Scope

At Freudenberg, energy consumption and GHG emissions for Scope 1 and 2 are reported internally at the site level aligned with the GHG Protocol Corporate Standard (financial control approach). The reporting scope includes:

- Production sites, warehouses, converting service centers owned or leased
- Office/Admin/Sales offices are in scope to report if:
 - They are owned and if energy consumption > 1% of total Business Group energy consumption
 - They are leased from third parties with their own contract with energy providers and if energy consumption >1% of total BG energy consumption.
- Owned vehicles

4.2 Annual Report of the Freudenberg Group

Freudenberg reports on sustainability matters as part of the annual report. The respective chapters are available on

<https://www.freudenberg.com/en/company/sustainability>.

The annual report includes the following CO₂ and Energy KPIs:

- Total energy consumption [GWh]
- Direct energy consumption [GWh]
- Indirect energy consumption [GWh]
- Energy intensity [kWh/€ sales]
- Total CO₂ emissions [kt]
- CO₂ intensity [t/mil.€ sales]
- Green electricity share [%]

4.3 UN Global Compact

The UN Global Compact is the world's largest and most important initiative promoting responsible corporate governance. Since signing the Global Compact in 2014, Freudenberg has annually reported via the UN Global Compact Communication on Progress (CoP), available from the UN Global Compact website at [UN Global Compact](#).

Glossary & Acronyms

(C)HSE	(Corporate) Health Safety and Environment
BG	Business Group of the Freudenberg Group
CSRD	Corporate Sustainability Reporting Directive by the EU. Under CSRD, Sustainability is defined as ESG.
ESG	Environmental, Social, Governance.
GHG	Greenhouse gases. Please refer to the GHG Protocol for details.
HVAC	Heating, ventilation and air conditioning
IEA	International Energy Agency
KPI	Key Performance Indicator
Net zero	Condition in which human-caused <i>residual GHG emissions</i> are balanced by human-led <i>removals</i> over a specified period and within specified boundaries. (ISO IWA 42 2022 Net zero guideline).
PPA	Power purchase agreement
PV	Photovoltaics / photovoltaic power
Scope 1	Greenhouse gas emissions which are generated directly by the company. Please refer to GHG Protocol for details.
Scope 2	Greenhouse gas emissions from energy generated by an energy supplier (e.g. electricity). Please refer to GHG Protocol for details.
Scope 3	Greenhouse gas emissions associated with upstream and downstream value chain activities. Please refer to GHG Protocol for details.
SDCA	Sustainability Drives Climate Action, the strategic project by F&Co 2020-2025
SDGs	The UN's Sustainable Development Goals.
UNGC	United Nations Global Compact