Guidance No. 13 of Shanghai Stock Exchange for Self-Regulation of STAR Market Companies—Preparation of Sustainability Report

Article 1 This *Guidance* is made in accordance with the *Rules Governing the Listing of Stocks on the Science and Technology Innovation Board of Shanghai Stock Exchange* and the *Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies—Sustainability Report (Trial)* ("***Guidelines 14***") for the purposes of helping companies listed on the STAR market ("**listed companies**") accurately understand and apply the rules of *Guidelines 14* and regulating their preparation of sustainability reports.

Article 2 This *Guidance* applies to the format, topics, and other matters relating to the preparation of sustainability reports by STAR market companies traded at the Shanghai Stock Exchange ("**SSE**" or the "**Exchange**").

The term "listed companies" as used in the preceding paragraph includes listed companies that are required to disclose sustainability reports under *Guidelines 14* as well as those that do so on a voluntary basis.

Article 3 The Exchange encourages listed companies to prepare sustainability reports in line with the Annexes of this *Guidance* to reflect the key points of disclosure specified in the Annexes, and listed companies may, based on their specific circumstances, make disclosures in reference to the sample templates provided therein.

Article 4 In preparing sustainability reports, listed companies shall comply with all applicable laws, administrative regulations, ministry-level rules, normative documents, and *Guidelines 14* and other relevant rules of the Exchange; disclose information in a timely and impartial manner; and ensure that the disclosures are truthful, accurate, and complete.

Any listed company and any other relevant person with disclosure obligations that, by failing to perform those obligations as required, makes misrepresentations, misleading statements, or material omissions in its disclosures shall assume the corresponding legal liabilities.

Article 5 The Exchange reserves the right to interpret this *Guidance*.

Article 6 This *Guidance* takes effect as of its release.

Annexes

Guidance No. 13 of Shanghai Stock Exchange for Self-Regulation of STAR Market Companies—Preparation of Sustainability Report

Annex 1: General Requirements and Disclosure Framework

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The Shanghai Stock Exchange ("**SSE**" or the "**Exchange**") has created this Annex 1: General Requirements and Disclosure Framework ("**Guidance**") to *Guidance No. 13 of Shanghai Stock Exchange for Self-Regulation of STAR Market Companies—Preparation of Sustainability Report* to help companies listed on the Science and Technology Innovation Board of the Shanghai Stock Exchange ("**listed companies**") accurately understand and apply *Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies—Sustainability Report (Trial)* ("***Guidelines 14***") and standardize the preparation of Sustainability Reports.

Chapter I General Requirements

I. Disclosing Entities

Disclosing entities include mandatory disclosing entities and voluntary disclosing entities.

"Mandatory disclosing entity" refers to any constituent of the SSE 180 Index or the STAR 50 Index or any company listed simultaneously in Chinese Mainland and overseas markets that is required to publish Sustainability Reports per *Guidelines 14*. "Voluntary disclosing entity" refers to any listed company that discloses Sustainability Reports on a voluntary basis.

"Constituent" as referred to in the preceding paragraph means a company that is included in the relevant index throughout the entirety of the reporting period. "Company listed simultaneously in Chinese Mainland and overseas markets" means a listed company that has issued A-shares or B-shares in the Mainland market as well as H-shares, D-shares, or other overseas capital stock or Global Depository Receipts in an overseas market.

II. Reporting Scope

The reporting scope of Sustainability Reports is the same as the scope of consolidation for corporate annual financial reports.

III. Reporting Period

Sustainability Report has the same reporting period as annual reports and should cover one complete fiscal year.

IV. Publication Date

A disclosing entity should prepare a Sustainability Report in accordance with *Guidelines 14* and publish it within four months of the end of each fiscal year, but no earlier than when the annual report is published.

V. Report Name and Publication Method

The Sustainability Report should be titled "[Company Name] Sustainability Report" or "[Company Name] ESG Report" (collectively, "**Sustainability Report**"), or contains the wording "Sustainability Report" or "ESG Report."

Any disclosing entity that has already disclosed a Sustainability Report in accordance with *Guidelines 14* does not need to disclose the social responsibility report for the current year.

A Sustainability Report should be published as an independent report.

VI. Deliberation Procedures

A Sustainability Report may be published only after it is approved by the board of directors or, if the listed company has prescribed more stringent rules of procedure in its articles of association, in accordance with those rules.

VII. Topics

Guidelines 14 has identified 21 topics, specifically 8 environmental topics, 9 social topics, and 4 sustainability-related governance topics as tabulated below.

Table 1: Topic List

Environmental	Social	Sustainability-Related Governance
Climate change tackling	Rural revitalization	Due diligence
Pollutant discharge	Contributions to the society	Communications with stakeholders
Waste disposal	Innovation-driven	Anti-commercial bribery and anti-corruption
Ecosystem and biodiversity protection	Ethics of science and technology	

Environmental compliance management Energy usage Usage of water resources Circular economy	Supply chain security Equal treatment to small and medium-sized enterprises (SMEs) Safety and quality of products and services Data security and customer privacy protection Employees	Anti-unfair competition

Aside from the topics identified by *Guidelines 14*, a disclosing entity may also identify and disclose information on other topics that have financial materiality or impact materiality based on such considerations as the characteristics of the industry it operates in, the level of maturity of that industry, and its own business model and its position in the value chain.

VIII. Disclosure Requirements for Topics

A disclosing entity should determine the materiality of a topic on account of its financial materiality and impact materiality and, based on this determination, adopt a corresponding disclosure framework as specified by *Guidelines 14*.

Table 2: Topic Disclosure Requirements

Type	Financial Materiality	Impact Materiality	Disclosure Requirements
The 21 topics specified in *Guidelines 14*	Yes	Yes/No	Information on "Governance," "Strategy," Impacts, Risks, and Opportunities Management," and "Indicators and Targets," plus information required by *Guidelines 14* for the specific topics.
	No	Yes	As required by *Guidelines 14* for the specific topics.
	No	No	Disclosure is optional but an adequate reason for non-disclosure should be provided in accordance with Article 7 of *Guidelines 14*.
Other self-identified topics	Yes	Yes/No	Information on "Governance," "Strategy," Impacts, Risks, and Opportunities Management," and "Indicators and Targets," plus information specified in paragraph 3,

			Article 14 of *Guidelines 14*.
	No	Yes	Information specified in paragraph 3, Article 14 of *Guidelines 14*.
	No	No	No disclosure needed.

For any of the 21 topics specified in *Guidelines 14* that the disclosing entity believes to be having neither financial materiality nor impact materiality and for any provisions therefor that it believes to be inapplicable, the disclosing entity should offer explanations in accordance with Article 7 of *Guidelines 14*.

IX. Other Requirements

1. If a disclosing entity is unable to perform its information disclosure obligations in compliance with certain provisions of *Guidelines 14* or such disclosure may seriously harm its interests, or if certain provisions are inapplicable or without financial materiality or impact materiality, in each case because the information involves state secret or commercial secret or because of some other special circumstances, the disclosing entity may adjust what it discloses or take alternative actions based on its circumstances on condition that it adequately explains the reasons for its choice. Such adjustment or alternative actions may be the use of pseudonyms or the bundling, aggregation, or redaction of key information to mask that specific portion of information from disclosure. If laws and regulations provide otherwise in regard to the disclosure of information pertaining to state secrets or the mandatory disclosure of sustainability information, those provisions take precedence.

2. A disclosing entity should take note of the requests and concerns of stakeholders. The Exchange encourages each disclosing entity to obtain and collect feedbacks from stakeholders, and to facilitate effective communications with them through such means as interviews, roundtable discussions, and surveys, to improve the quality of sustainability disclosures.

3. A disclosing entity should not incur undue cost and should employ methods in line with its capabilities, the results of its previous works, and its available resources to collect information that is obtainable in a reasonable manner.

Chapter II Identification and Analysis of Material Topics

A disclosing entity should identify whether each topic in *Guidelines 14* is expected to have a major impact on such aspects as its business model, operations, growth strategy, financial position, operating results, cash flows, and financing methods and costs over the short, medium, and long term ("**financial materiality**") and whether its performance in that topical area has a material impact on the economy, society, and environment ("**impact materiality**"), and explain how that materiality analysis is conducted, in each case taking into consideration of the industry it operates in and the characteristics of its businesses.

Aside from the topics identified by *Guidelines 14*, a disclosing entity may also identify and disclose information on other topics that have financial materiality or impact materiality based on such considerations as the characteristics of the industry it operates in, the level of maturity of that industry, and its own business model and its position in the value chain. This identification and analysis of material topics is not required every year if no change has occurred to the disclosing entity's business models or the policy or natural environment it operates in. A disclosing entity may also take lessons from the practices of top performers in its industry to produce more consistent and reliable results from the identification process.

I. Material Topics under *Guidelines 14*: Definition and Requirements

A disclosing entity should determine whether a topic is material on account of its financial materiality and impact materiality. A topic is deemed a "material topic" if it has financial materiality, impact materiality, or both.

The results of this materiality analysis directly affect the disclosure framework of the Sustainability Report and are the foundation of a listed company's sustainability governance and management. This analysis helps companies rationally allocate resources to a sustainability topic over the short, medium, and long term and will highlight the priorities of sustainability management. For any topic specified in *Guidelines 14* that has financial materiality to a company, disclosures must be made in relation to the four specified aspects (i.e., Governance; Strategy; Impacts, Risks, and Opportunities Management; and Indicators and Targets) and as required by *Guidelines 14* for that specific topic, regardless of whether the topic also carries impact materiality.

Table 3: Basis for Determining Topical Materiality under Guidelines 14

Dimension	What Constitutes "Material Impact"
Financial materiality	Whether the topic is expected to have a major impact on such aspects as the company's business model, operations, growth strategy, financial position, operating results, cash flows, and financing methods and costs over the short, medium, and long term.
Impact materiality	Whether the company's performance in the topical area has or may have a major impact on the economy, society, and environment.

II. Steps for Analyzing Materiality

A disclosing entity should identify and analyze the materiality of a topic based on its impact materiality and financial materiality, and explain the process and conclusions of this analysis. It may adopt the following workflow for this materiality analysis. It should properly retain the documentations and findings from this analysis process to facilitate internal traceability and third-party assurance and verification, thereby ensuring the truthfulness of the information contained in the Sustainability Report.

Example 1: Process for Analyzing Topical Materiality

Understand company activities and business relationships	Draw up a topic list	Assess and determine topical materiality	Complete report
1. Understand company activities and business relationships 2. Understand the context 3. Identify the key affected stakeholders	1. Start with the 21 topics specified in *Guidelines 14* and identify other potentially material topics 2. Identify the impacts, risks, and opportunities of each topic and then compile a topic list	1. Assess the impact materiality 2. Assess the financial materiality 3. Consolidate the findings	1. Compile the procedures, methods, and conclusions from impact and financial materiality analyses 2. Disclose the relevant information as required by Guidelines 14

Step A: Understand company activities and business relationships

A disclosing entity may start by developing a full understanding of its company activities and business relationships, including evaluating the external environment and identifying the key affected stakeholders.

Table 4: Consideration Factors for Understanding Company Activities and Business Relationships

Understand company activities and business relationships	1. Analyze the company's business plan, strategy, and financial statements and, when applicable, other information provided to investors. 2. Examine the company's activities, products, and services, as well as the geographic locations of those activities. 3. Map the company's business relationships and upstream and downstream value chains, including the type and nature of business relationships.
Understand the context	1. Analyze the company's relevant legal and regulatory landscape. 2. Analyze published documentation, such as media reports, peer analysis, sector-specific benchmarks, research reports, and professional publications.
Identify the key affected stakeholders	1. Analyze existing stakeholder engagement initiatives, such as direct conversation, solicitation of comments, and provision of information. 2. Map the affected stakeholders across the company's activities and business relationships. This may be done by identifying separate groups of affected stakeholders based on activity, product, or service and prioritizing them for each particular topic.

Step B: Draw up a topic list

The 21 topics identified by *Guidelines 14* form the basis of the topic list. A disclosing entity should also identify other topics that have financial materiality or impact materiality based on such considerations as the characteristics of the industry it operates in, the level of maturity of that industry, and its own business model and its position in the value chain. It may identify the material topics and create a complete topic list by undertaking internal processes such as due diligence surveys and risk management protocols as well as compiling regulatory policies, rules, industry standards, and industry trends and performing peer analysis.

Table 5: Reference Method for Creating the Topic List

Policy analysis	1. Analyze the overall impact of macro policies (such as overarching national laws and regulations) on company activities in the locations of company's operations. 2. Identify critical industry-specific topics by evaluating the particular impacts of industry- and business-specific policies and regulations (such as industry standards and national industry codes).
Rules and standards benchmarking	Identify topics for disclosure and materiality analysis, starting with the 21 topics outlined in *Guidelines* 14 and possibly supplemented by consulting other domestic and international sustainability standards and rating agency frameworks.
Peer analysis	1. Identify relevant material topics by examining how material topics are determined and ordered by peers or companies at the upstream or downstream of the value chain that demonstrate strong long-term sustainability performance. Because backgrounds, business structures, and current sustainability management practices vary among peers, companies are recommended to look at two or more peers for the material topics they choose to ensure consistent and reliable results from the identification process. 2. Companies with many peers or a complex mix of business lines may review and distill a list of material topics that receive high attention from the industry as a supplementary basis for identifying topics to be disclosed. 3. New activities and business relationships and significant changes in the operating environment may all alter the industry landscape and its impact. Companies should therefore assess the industry landscape on an ongoing basis and update their materiality findings in a timely manner.

Step C: Assess and determine topical materiality

A disclosing entity may assess whether the entries on the topic list from Step B have financial materiality or impact materiality based on such factors as the industry it operates in and the characteristics of its business. This materiality assessment is conducted through quantitative analysis and qualitative analysis. For this purpose, the company can engage its stakeholders and consult with internal and external experts.

1. Assessment of impact materiality

Impact materiality information is primarily intended to meet the information needs of affected stakeholders, aiming to provide sustainability-related information that helps assess the externalities of a company's operations. The specific process for assessing impact materiality can be carried out by referring to the following four steps.

Example 2: Process for Assessing Impact Materiality

Determine the assessment criteria and scoring scale	Engage stakeholders	Set thresholds	Form conclusions
1. Determine the criteria for assessing impact materiality, including likelihood, scale, scope, etc. 2. Establish the scoring scale for impact materiality	1. Consult stakeholders or organize scoring by experts to assess how likely the impacts of each topic will occur and their scale and scope 2. Obtain the impact materiality score of each topic	Set the thresholds for determining whether a topic has impact materiality	1. Compare the impact materiality score of each topic with the threshold 2. Form conclusions on impact materiality assessment

(1) Criteria for assessing impact materiality

The materiality of actual negative impacts is determined by the criteria of the scale, scope, and irremediability of the impacts. For potential negative impacts, the criteria are scale, scope, irremediability, and likelihood of occurrence.

For actual positive impacts, the criteria are scale and scope, and for potential positive impacts, the criteria are scale, scope, and likelihood of occurrence.

Table 6: Criteria for Assessing Impact Materiality: Definition and Explanation

Criteria	Definition and Explanation
Scale	The magnitude of impacts. For negative impacts, scale may hinge on whether the impacts would constitute a violation of applicable laws and regulations or on the contexts in which they occur. For positive impacts, scale refers to the magnitude of benefits or potential benefits.
Scope	The extent of impacts. Scope can be determined by the number of people affected or the area of environmental damage for negative impacts, and by the number of people or the area of environment benefited or potentially benefited.
Irremediability	For negative impacts, irremediable character refers to the difficulty of offsetting or remediating the damage caused.
Likelihood	The “likelihood” of potential negative impacts or positive impacts refers to the probability that such negative impacts or positive impacts will occur. Likelihood may be measured qualitatively (e.g., expressions such as “very likely,” “highly likely,” “likely,” “impossible,” or frequencies such as “once every year,” “once every three years,” and “once every five years”) or quantitatively (e.g., 0-100%).

Table 7: Scoring Example for Assessment Criteria for Negative Impact Materiality

Scale	Quantitative scoring	Scope	Quantitative scoring	Remediability	Quantitative scoring	Likelihood	Quantitative scoring
None	0	None	0	Very easy	0	None	0
Minimal	1	Limited	1	Relatively easy over short term	1	Little	1
Minor	2	Concentrated	2	Remediable with effort (time and expenses needed)	2	Average	2
Moderate	3	Medium	3	Difficult to remedy or remediable only over medium term	3	Highly	3
Major	4	Widespread	4	Difficult to remedy or remediable only over long term	4	Very	4
Severe	5	Global / Total	5	Irreversible	5	Almost certain	5

Note: Wording and values in the table are for illustrative purposes only. A disclosing entity should design a scheme appropriate for its circumstances.

(2) Engage key stakeholders and experts

A disclosing entity may engage the key affected stakeholders (such as workers' representatives) to better understand how they may be impacted and assess the scale, scope, and likelihood of impacts. Stakeholder engagement is a crucial method for determining impact materiality. This process entails identifying the key affected stakeholders, soliciting their feedbacks, determining the relative weights of the stakeholders, and compiling findings. The company can engage stakeholders through a questionnaire and then improve the accuracy and balance of its findings with face-to-face meetings. As an alternative plan, it may organize scoring by experts of different background.

(3) Set thresholds for determining impact materiality

A disclosing entity may take the opinions of stakeholders and experts into full consideration to set appropriate thresholds for determining whether an actual or potential impact is material. The impacts may then be ranked by materiality to determine the final order of prioritization.

(4) Form conclusions about impact materiality

By methods such as stakeholder engagement or expert scoring, the disclosing entity can compare the impact materiality scores of each topic against the threshold to obtain the assessment results for impact materiality.

When the impact materiality of a specific topic has become an industry consensus, the disclosing entity may consider such impact to be material without conducting in-depth analysis of its scale, scope, and irremediability. However, analysis is still required for the other potential topics based on the disclosing entity's own specific impacts.

2. Assessment of financial materiality

Financial materiality information chiefly meets the information needs of the primary users of general-purpose financial reports. The assessment of financial materiality first requires the identification of impacts or risks and opportunities that have an actual or potential effect on a company's business operations, financial position, operating results, and cash flows, followed by an evaluation of whether these produce a material financial effect.

(1) Criteria for assessing financial materiality

The assessment of financial materiality should be conducted by combining the likelihood of the financial effect with its magnitude. The magnitude of financial effect can be analyzed from the perspective of dependence on, and influence over, resources and relationships, such as natural resources like water and minerals; human resources like employees; and social relationships with investors, upstream suppliers, and downstream customers.

For example, when assessing the "Usage of Water Resources" topic, one could consider the extent to which the future availability and price of water resources will affect the company's product pricing and profit margins. When assessing "Safety and Quality of Products and Services," one could consider how, in its relationship with customers, safety and quality issues might affect brand reputation, sales volume, and revenue. Companies can scrutinize and identify the further positive or negative effects that a topic may have on their financial statements (e.g., revenues, costs, total assets, net assets, profit, and cash flows).

Table 8: Example for Analyzing Magnitude of Financial Effects

Reliance and effect on resources	**Method 1: Qualitative assessment**	**Method 2: Quantitative assessment based on monetary value (¥mn) or percentage (%)**	**Reliance and effect on relationships**	**Method 1: Qualitative assessment**	**Method 2: Quantitative assessment based on monetary value (¥mn) or percentage (%)**
E.g., Energy Usage; Usage of Water Resources	No impact over either the short, medium, or long term (minimal)	< 1mn or < 1% of net profit	E.g., Employees; Safety and Quality of Products and Services; Innovation-Driven; Supply Chain Security; Anti-Unfair Competition	Neutral at present and some impact possible in the future (minimal)	< 1mn or < 1% of net profit
	Possible impact over the short, medium, or long term (minor)	1–5mn or 1–5% of net profit		Negative impact at present or in the future (minor)	1–5mn or 1–5% of net profit
	Possible impact in the short term, high usage cost in the medium term, very high usage cost in the long term (moderate)	5–10mn or 5–10% of net profit		Negative impact at present and negative impact possible in the future (moderate)	5–10mn or 5–10% of net profit
	Usage possible but costly in the short term, resource shortage or very costly in the medium term, usage impossible in the long term (major)	10–50mn or 10–15% of net profit		Negative impact at present and major negative impact possible in the future (major)	10–50mn or 10–15% of net profit
	Usage impossible or is very costly, or inaccessible in the short term (severe)	> 50mn or > 15% of net profit		Severe negative impact at present or possible in the future (severe)	> 50mn or > 15% of net profit

Note: Wording and values in the table are for illustrative purposes only. A disclosing entity should design a scheme appropriate for its circumstances.

Furthermore, the disclosing entity should be aware that the time horizon of financial statements is different from that for financial materiality assessment in sustainability reporting, as the former typically reflects historical information but the latter also needs to consider future events. This may result in the need to consider the cumulative effect of a sustainability topic on revenues, costs, etc., over a lengthy period of time.

Similarly, a threshold for likelihood needs to consider the cumulative probability over a period of time to cover the long-term horizon as well.

(2) Engage stakeholders and experts

Engaging internal departments and management as well as stakeholders such as shareholders, investors, and creditors on topics with financial materiality can help company determine which ones are financially material. As an alternative plan, the company may organize scoring by experts of different background.

(3) Set thresholds for determining financial materiality

Both qualitative and quantitative criteria can serve as thresholds for determining financial materiality. If the financial effect of a specific sustainability topic cannot be quantified at present, its threshold can be assessed based on qualitative factors and the scope of the potential impact (high/medium/low). For example, depending on the industry, business model, or operational status, a company may face specific reputational risks. Although their effect on cash flow may be difficult to quantify, such risks could affect access to capital or the cost of financing, and therefore may be financially material.

Table 9: Example for Qualitative Threshold-Based Determination

Financial Effect	Financially Material (assuming threshold is “Moderate”)
Minimal	No
Minor	No
Moderate	Yes
Major	Yes
Severe	Yes

Note: Wording and values in the table are for illustrative purposes only. A disclosing entity should design a scheme appropriate for its circumstances.

With quantitative criteria, the company may consider setting absolute monetary thresholds or relative thresholds—for example a percentage of the amount corresponding to a line item of its primary financial statements such as revenues, costs, total assets, net assets, or profit—to determine materiality. An example is provided below.

Table 10: Example 1 for Quantitative Threshold-Based Determination

Item	Monetary Value (¥mn)	Financially Material (assuming threshold is "500")
Expected potential effect of sustainability-related risks and opportunities on revenues, costs, net profit, total assets, net assets, etc.	< 1	No
	1–5	No
	5–10	Yes
	10–50	Yes
	> 50	Yes

Note: Wording and values in the table are for illustrative purposes only. A disclosing entity should design a scheme appropriate for its circumstances.

Table 11: Example 2 for Quantitative Threshold-Based Determination

Item	Percentage	Financially Material (assuming threshold is "5% of net profit")
Expected potential effect of sustainability-related risks and opportunities on net profit	< 1% of net profit	No
	1–5% of net profit	No
	5–10% of net profit	Yes
	10–15% of net profit	Yes
	> 15% of net profit	Yes

Note: Wording and values in the table are for illustrative purposes only. A disclosing entity should design a scheme appropriate for its circumstances.

Information concerning a sustainability-related risk or opportunity is considered material for primary users of general-purpose financial reports if omitting, misstating, or obscuring that information could reasonably be expected to influence decisions that they make. Hence, when defining the thresholds for financial materiality in practice, inspiration could be drawn from the methods for determining materiality in the preparation of the financial statements.

A company can also engage stakeholders such as shareholders, investors, and creditors to determine whether the chosen thresholds are reasonable.

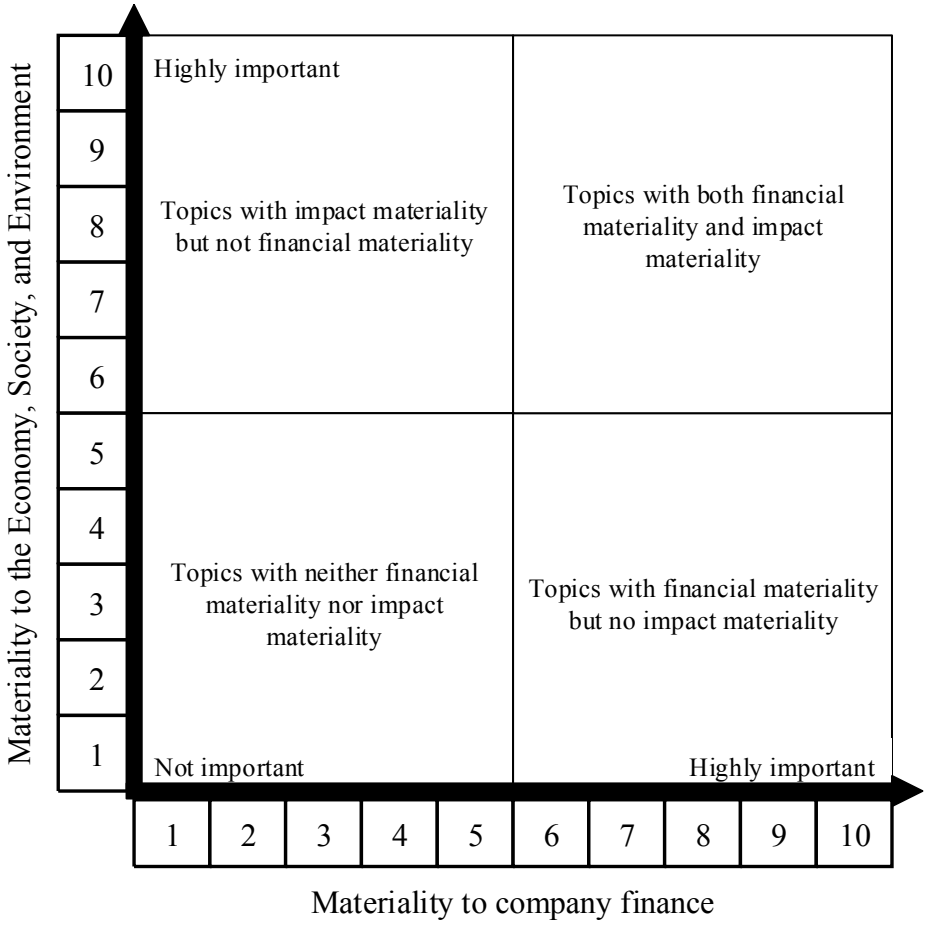
(4) Form conclusions about financial materiality

By methods such as stakeholder engagement or expert scoring, the disclosing entity will obtain quantitative assessment outcomes on financial materiality. It can then

compare the financial materiality outcomes of each topic against the threshold to determine whether that topic is financially material.

3. Consolidation of impact and financial materiality outcomes

Once the company has assessed the individual impacts, risks, and opportunities of each topic, it should aggregate the results for analysis. The company may use a graph similar to the one shown below to illustrate whether a topic is material and its particular financial materiality or impact materiality score.



Step D: Publish materiality information

Following the materiality assessment process, the disclosing entity is to report on the assessment process and its outcome.

Chapter III Governance

I. Establish a Sustainability/ESG Governance Framework

(I) Common Governance Frameworks

A disclosing entity should establish a sound governance framework for its sustainable development, which should specify the bodies—such as board of directors and its specialized committees—for managing and supervising sustainability-related impacts, risks, and opportunities, as well as the setup of the management team. It should enhance the integration and supervision of ESG strategies at the board level, the functions and authorities of ESG committees, and the execution and the allocation of resources at both the management and executive levels.

A sustainability governance framework is generally structured into three levels: Decision, Management, and Execution. In common sustainability/ESG governance designs, the board of directors plays a central role at the Decision level and directly engages in ESG governance. The Decision level is broadly classified into three types, based on whether ESG matters are decided by the board itself, by existing committees under the authority of the board, or by a dedicated ESG committee established specifically under and by the board.

(1) The board can directly oversee sustainability/ESG governance and maintain the structural and functional setup of the existing committees.

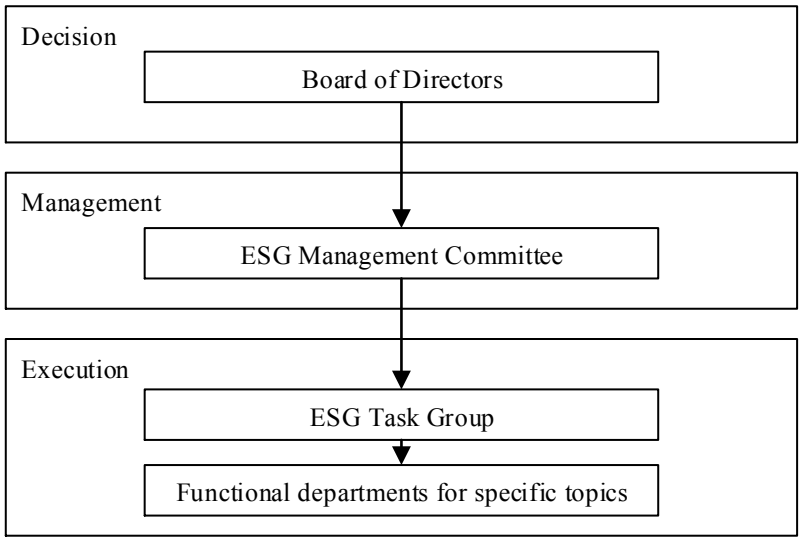
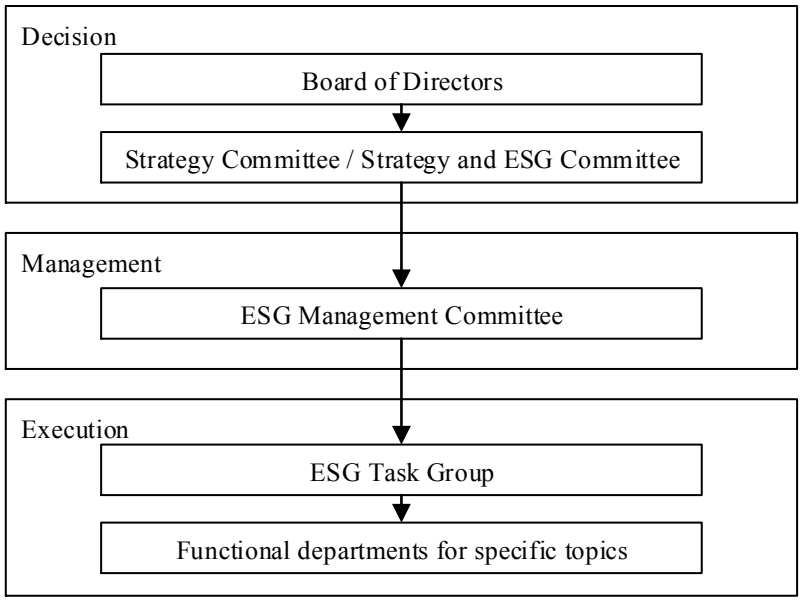
(2) The board can delegate the oversight of sustainability programs to one or more existing committees. An example is to adjust the “Strategy Committee” to “Strategy and Sustainability Committee” or “Strategy and ESG Committee,” with members’ backgrounds and Committee’s roles reflecting this integration. Alternatively, the board can ask the Audit Committee to assess ESG-related risks and audit ESG policies and procedures, and the ESG Committee or Strategy Committee to develop ESG strategies and review ESG-related proposals.

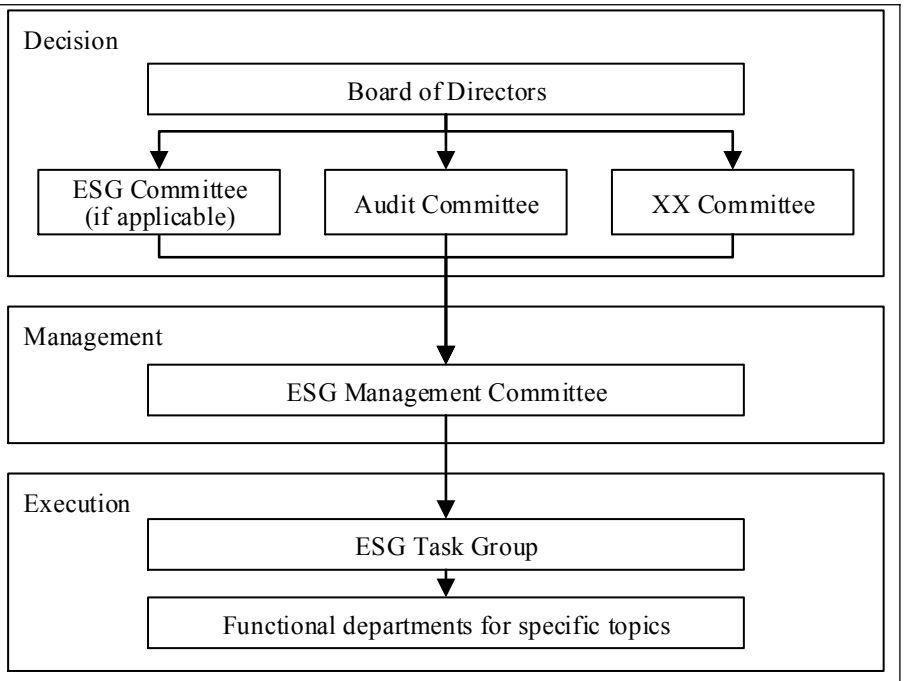
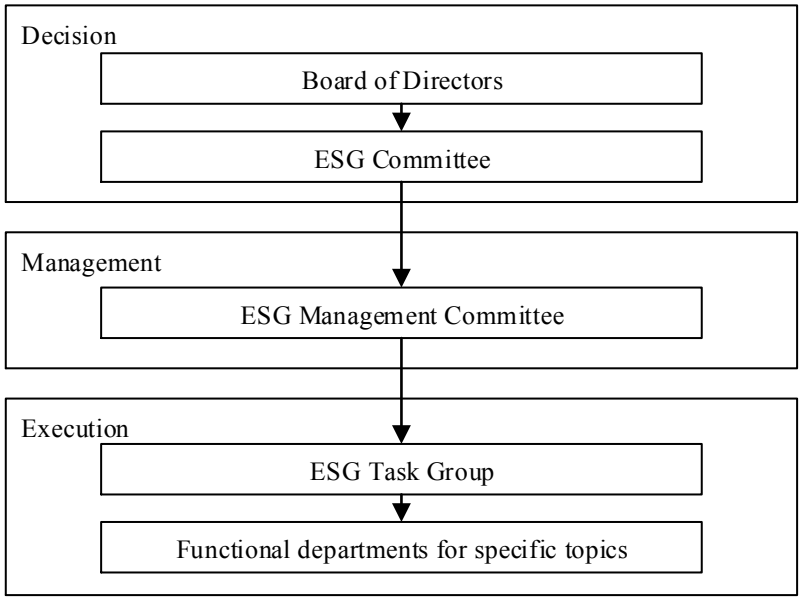
(3) The board can establish a new “ESG Committee” whose composition places a greater priority on members’ ESG backgrounds and diversity. The Committee is to assist the board in ESG governance either by itself or in

conjunction with other board committees to improve decision-making efficiency.

Management and Execution have a more flexible setup. An example is to establish an ESG Management Committee at the Management level and an ESG Task Group, dedicated department, or dedicated positions at the Execution level. Companies can design their sustainability governance framework around their specific internal management conditions.

Table 12: Common Sustainability/ESG Governance Framework

Type	Structure (Example)
Type 1: Direct headed by the board	
Type 2: Headed by one or more existing board committees	 Or

	
Type 3: Headed by a newly established board committee	

Note: Names shown above are for illustrative purposes only. A disclosing entity should name and design the responsibilities of the governance bodies based on its specific circumstances.

(II) Specific Governance Arrangements

A disclosing entity should specify the personnel composition, scope of responsibilities, tasks, and objectives for each level of the sustainability governance framework, and ensure that the various bodies and personnel possess the professional skills and capabilities required to execute and oversee the strategies and protocols pertaining to sustainability-related impacts, risks, and opportunities.

1. Personnel composition and scope of authority

For a common three-tier governance structure consisting of Decision, Management, and Execution, an example of the personnel composition and scope of responsibilities for each level are as follows.

Table 13: Composition and Responsibilities in a Common Sustainability/ESG Governance Framework

Level	Personnel Composition	Scope of Responsibilities
Decision	All members of the board of directors	Responsibilities can include: Understand, analyze, and be well-informed about the domestic and international industry landscape and sustainability-related policies; understand and obtain a holistic view of the company's operational management Supervise the company's assessment of sustainability-related impacts, risks, and opportunities Direct and review the company's sustainability policies, strategies, and targets Conduct periodic reviews of the progress and completion of sustainability-related targets Approve the company's Sustainability Reports Exercise oversight over the execution of sustainability initiatives and provide recommendations when and as needed
Management	Officers and the relevant heads of various functional departments and subsidiaries who are knowledgeable about sustainability-related matters	Responsibilities can include: Manage the material topics to provide analysis and advice for consideration by the Decision level, thereby ensuring board oversight Determine and manage the costs and resources (e.g., people and technologies) to be allocated for identifying, mitigating, managing, and overseeing sustainability-related impacts, risks, and opportunities Draft sustainability action plans and sustainability-linked incentives and performance evaluation systems Oversee other sustainability-related matters
Execution	An ESG Task Group comprising people who carry out the specific work and those who have a deep knowledge of ESG and company operations. Members may serve in a full-time or part-time capacity	Responsibilities can include: Develop stakeholder engagement plans and organized stakeholder engagement activities Coordinate the preparation of Sustainability Reports Drive capacity building in such areas as sustainability management, data compilation and analysis, and investor and research institutes engagement Refine company's sustainability management systems

		and implement sustainability action plans Deliver periodic progress reports to Management Carry out other sustainability-related tasks

2. Tasks and targets

Tasks may be assigned across various levels of the company based on scope of authority and the company's strategic plans. For example, during a reporting period, the board should regularly review the company's sustainability performance and provide recommendations based on its findings.

Targets normally consist of both qualitative and quantitative ones. The company can set sustainability-related targets based on the relevant laws and regulations, the requirements of *Guidelines 14*, and its own needs. These targets can be further informed by China's rural revitalization initiative and carbon peaking and carbon neutrality goals, the United Nations Sustainable Development Goals (SDGs), and the Paris Agreement. See Chapter 6 "Metrics and Targets" of this Guidance for the specific requirements on target setting.

3. Professional skills and competencies

To ensure the relevant personnel possess sufficient professional skills and competencies, the following suggestions may be helpful:

Recruiting professionals with the relevant backgrounds. For instance, the company may appoint independent directors with expertise in the environmental or social domain to support and advise the research of material topics such as climate change.

Developing training plans and courses to boost skills development in the field of sustainability. For example, the company can invite senior experts in the industry to speak on the background of the latest ESG policies as well as industry trends and best practices. This helps the board and management stay informed of the latest developments and specialized knowledge about ESG.

II. Establish Sustainability Reporting Process and Oversight

(I) Reporting Process

A disclosing entity should establish an internal reporting process for sustainability-related information. The process should indicate how and how frequently the information is to be reported to ensure it is available to the personnel at all governance levels in a timely manner.

Reporting can take the form of thematic reports, progress reports, and progress meetings. Frequency—quarterly, semiannually, or annually, for example—can be determined by the company's specific circumstances.

(II) Oversight

A disclosing entity should establish oversight over its sustainability programs, covering the related internal controls, oversight procedures, oversight measures, and performance evaluation. It should also publish the performance of the relevant bodies and personnel in overseeing sustainability-related target-setting, strategy execution, and target completion.

For example, the board can monitor the sustainability-related impacts, risks, and opportunities of the company by reviewing and approving strategies, evaluating risks, setting targets, overseeing execution, reviewing performance, and ensuring transparent communication.

Table 14: Reference Steps to Establish Board Oversight

Step 1	Establish the sustainability-related governance framework: Ensure a robust governance framework for sustainability/ESG-related matters are in place.
Step 2	Assess materiality: Review the list of material topics and the related impacts, risks, and opportunities.
Step 3	Discuss how the identified sustainability-related impacts, risks, and opportunities will affect the company's overall growth strategy.
Step 4	Incorporate material risk factors into business strategies and risk management processes.
Step 5	Establish internal protocols to monitor and oversee the management of sustainability/ESG-

	related matters, such as by specifying the board's oversight responsibilities in the articles of association.
Step 6	Ensure appropriate disclosure of the sustainability-related impacts, risks, and opportunities faced by the company, the actions taken in response, and the progress on the relevant targets; review the company's Sustainability Reports and release them to stakeholders.
Step 7	Update and improve the process as needed.

The company can decide whether and how sustainability-related targets are incorporated into performance benchmarks and specify who—such as officers only or a broader range of employees—are evaluated by those benchmarks. To encourage management to more effectively allocate resources and achieve the stated sustainability targets, the company can consider adding performance on sustainability topics to the evaluation of the management personnel.

Table 15: Sustainability/ESG Governance Protocol

Aspect	Action	Example
Information reporting	The board examines sustainability-related impacts, risks, and opportunities every six months during its meeting days and ensure they are incorporated into the company strategies.	Example: Management reports progress on sustainability-related targets to the board on a quarter basis.
Oversight process and measures	The oversight team meets regularly to identify, assess, review, and report various topics' impacts, risks, and opportunities.	Example: The company's Sustainability Committee will hold a certain number of meetings each year to specifically discuss the relative priority of sustainability-related impacts, risks, and opportunities, and to review and decide on the medium-term targets and performance indicators in the company's sustainability strategy.
Evaluation	The company incorporates the sustainability/ESG-related targets of various departments into performance evaluation.	Example: Adding GHG emissions reduction in the reporting period as a performance indicator of the relevant manager.

Chapter IV Strategy

I. Identify the Impacts of Sustainability-Related Risks and Opportunities

1. A disclosing entity should identify sustainability-related risks and opportunities and the time horizon over which they will have a significant impact on the company. It should also define its short-term, medium-term, and long-term time horizons, and explain how well these definitions align with its strategic growth and resource allocation plans.

   The company may define the time horizons for “short-term,” “medium-term,” and “long-term” based on industry’s and its own realities, and align these definitions with the time horizons used in its strategic plans.

Table 16: Definitions of Short-, Medium-, and Long-Term

Short-term	In general, up to 1 year (inclusive) from the end of the reporting period of its Sustainability Report.
Medium-term	In general, from 1 to 5 years (inclusive) from the end of the reporting period of its Sustainability Report.
Long-term	In general, more than 5 years from the end of the reporting period of its Sustainability Report.

The time horizons for short-, medium-, and long-term may vary by company and depend on many factors, including industry characteristics, investment cycles, and capital allocation, jurisdiction of relevant policies, nature of risks or opportunities, and useful life of assets.

Table 17: Factors for Assessing the Time Horizon of Impacts

Type	Description	Example
Industry characteristics	A company may determine the time horizon based on the cash flow characteristics, investments, and business cycles of its industry.	E.g., a company in the real estate industry may adopt a longer time horizon due to the extended planning and lifecycles of its property and infrastructure projects, while a company in the consumer industry may have a shorter time horizon.

Investment cycles and capital allocation	A company may consider its typical investment holding periods and adjust the time horizon accordingly.	E.g., an equity investment company with a typical holding period of 3 to 5 years (a medium investment horizon) may align its time horizon with this investment horizon.
Jurisdiction of relevant policies	A company operates primarily in the Chinese mainland may align its time horizon with the timeline for China's carbon peaking and carbon neutrality goals.	E.g., a company may design a time horizon that helps it achieve carbon peaking by 2030 and carbon neutrality by 2060.
Nature of risks or opportunities	A company may determine the time horizon based on the types of risks or opportunities identified.	E.g., the impacts of climate-related long-term physical risks, such as rising sea levels or water scarcity in river basins, may require a longer time horizon.
Useful life of assets	A company holding assets may consider setting a time horizon that matches the useful life of those assets.	The minimum depreciation periods for assets can inform this determination. For example, electronic equipment typically has a minimum depreciation period of 3 years, while buildings and structures have a minimum depreciation period of 20 years.

2. A disclosing entity may, based on its realities, disclose the impacts of sustainability-related risks and opportunities on its business model, key suppliers, and other stakeholders during the current reporting period. This disclosure should also specify the geographic areas, facilities, and asset types where such risks and opportunities are concentrated, and assess and disclose their future impacts. Moreover, the disclosing entity should fully identify and assess whether its activities—including procurement, production, sales, services, internal management, external investments, and social initiatives—have material impacts on the economy, society, and the environment.

   For details on the identification and assessment of sustainability-related impacts, risks, and opportunities, refer to Chapter II "Identification and Analysis of Material Topics."

II. Develop Strategies, Approaches, and Plans to Manage Impacts, Risks, and Opportunities

A disclosing entity should analyze how sustainability-related impacts, risks, and opportunities affect its strategy and decision-making. This should include, but is not limited to:

1. The approaches the company has adopted within its strategy-making and major decision-making processes to respond to sustainability-related impacts, risks, and opportunities, such as its strategic decision-making process and management policies.

2. The plans the company has formulated to achieve the relevant strategic objectives, and the qualitative and quantitative information used to measure progress toward these plans.

Responses to sustainability-related impacts, risks, and opportunities may include: the company has integrated or plans to integrate sustainability-related impacts, risks, and opportunities into its strategic decision-making; the company's plans for achieving its sustainability targets; adjustments made by the company to its business model (including resource allocation) to address these impacts, risks, and opportunities; and any adaptation or mitigation measures already undertaken or anticipated by the company.

The company can integrate its sustainability targets into corporate strategy. These targets are reviewed and approved by the board and then translated into implementation plans that receive the corresponding resources. Through periodic oversight and evaluation, management should ensure these plans are effectively implemented and adjust them based on feedbacks to address future challenges and promote sustainable development.

For details on a company's assessment and determination of sustainability-related impacts, risks, and opportunities, refer to Chapter II "Identification and Analysis of Material Topics." For the qualitative and quantitative information used to measure progress toward relevant plans, see Chapter VI "Metrics and Targets."

III. Assess Current and Anticipated Financial Effects

1. A disclosing entity should analyze how sustainability-related risks and opportunities affect its current financial position, operating results, and cash flows, and assess whether they are likely to have a material impact on its financial position, operating results, and cash flows in the subsequent fiscal year.

   For current financial effects, the company can make a specific analysis on its financial position that covers such items as total assets, net assets, and total liabilities; and on its operating results that covers such items as revenue, costs, and net profit. Examples include:

(1) Costs and asset impairments arising from physical damage to assets caused by climate-related events;

(2) Revenue growth from products or services during the transition to a low-carbon economy;

(3) Changes in operating expenses resulting from improved water or energy efficiency in response to the risks of water or energy scarcity;

(4) Increased revenue from technological and product innovations driven by effective human capital management that fosters creativity;

(5) Potential suspension of operations, substantial fines, and legal costs due to investigations or litigations that arise from bribery or corruption.

2. A disclosing entity is encouraged to forecast the changes to its financial position, operating results, and cash flows over the short, medium, and long term in the context of the strategies it uses to manage the relevant risks and opportunities.

When analyzing the anticipated financial effects of strategies, such strategies may include capital expenditure (CapEx) plans, major acquisitions and divestments, business transformation, expansion into new lines of business, and asset retirement. Examples include:

(1) Anticipated changes in expenditure from purchasing machinery and equipment for the production of new, sustainable packaging over the next year;

(2) Anticipated changes in the cost of capital related to sustainable financing arrangements for the construction of green buildings over the next three years;

(3) Anticipated changes in revenue from the launch of new products aligned with net-zero targets over the next three years;

(4) Anticipated changes in expenditure related to climate adaptation and mitigation, such as the expenditure for purchasing energy-efficient equipment (e.g., LED lighting) over the next three years;

(5) Anticipated changes in revenues and expenditures resulting from the replacement of fossil fuel vehicles with purely electric vehicles over the next five years;

(6) Potential impacts from forthcoming laws, regulations, or tax policies, which could lead to increased taxes and fees, mismatch of products with market demand, or a decline in profitability.

The current and anticipated financial effects of a company's sustainability-related risks and opportunities are often connected to the information in its financial statements. The company may use cross-references or other approaches to connect such risks and opportunities with it current financial statements.

IV. Assess the Adaptability of Strategies and Business Models to Sustainability-Related Risks

The Exchange encourages disclosing entities to assess how well their strategies and business models can adapt to sustainability-related risks.

Where feasible, companies may employ tools such as scenario analysis to assess the uncertainties of sustainability-related risks. A company should also make timely adjustments to its strategies and business models to help information users understand and evaluate its adaptability in responding to and deflecting sustainability-related risks under different scenarios. For details on the disclosure framework for company strategies, see Chapter VII "Disclosure of Reports."

Chapter V Management of Impacts, Risks, and Opportunities

I. Processes for Identifying and Assessing Impacts, Risks, and Opportunities

A disclosing entity should disclose its methods for identifying and assessing sustainability-related impacts, risks, and opportunities, including its approaches to evaluating their likelihood, magnitude, and effect. A disclosing entity should also specify how it prioritizes these sustainability-related impacts, risks, and opportunities and the criteria used for assigning these priorities.

These processes may include those for identifying and assessing actual and potential impacts, as well as those for identifying and assessing risks and opportunities that have or may have financial effects. They should specify, for example, the methodologies and key assumptions used; the data inputs and parameters used and their sources; the approaches for assessing the nature, likelihood, and magnitude; the approach for determining priorities; and whether these processes have changed from the previous period.

For details on the process, methods, and assignment of priorities for identifying and assessing sustainability-related impacts, risks, and opportunities, refer to Chapter II “Identification and Analysis of Material Topics.”

II. Monitor and Manage Impacts, Risks, and Opportunities

A disclosing entity should monitor sustainability-related impacts, risks, and opportunities, for instance, by establishing dedicated governance mechanisms and processes. Additionally, it should integrate the management processes for sustainability-related impacts, risks, and opportunities into its overall internal management procedures.

For any disclosing entity that manages sustainability-related risks and opportunities under a unified framework, it may provide a consolidated disclosure on risk management, without detailing the information for each individual topic.

A company can monitor and manage sustainability-related impacts, risks, and opportunities through the following steps: establishing management policies, clarifying monitoring processes, and implementing management measures.

Step A: Establish Management Policies

The management policies established by a company to prevent, mitigate, and remediate actual and potential impacts, manage risks, and seek opportunities should clarify:

1. The general goals (if any) of such management policies and the material impacts, risks, or opportunities they are designed to address;

2. The scope or exclusion of such management policies, covering business activities, upstream and downstream value chains, geographic locations, and affected stakeholders;

3. The highest level of management within the company with responsibility for implementing such management policies;

4. How key stakeholders were considered in the formulation of such management policies; and

5. How the potentially affected stakeholders were informed of such management policies, as well as the stakeholders whose assistance will be needed to implement them.

Step B: Establish Processes for Monitoring Impacts, Risks, and Opportunities

These processes should specify:

1. The processes by which the company monitors sustainability-related impacts, risks, and opportunities;

2. Whether the management processes for impacts, risks, and opportunities are integrated into the company’s overall internal management procedures;

3. The risk monitoring tools available to the company, including information technologies deployed to optimize management processes and record and retain relevant data, as well as big data and other tools used to monitor and analyze impacts, risks, and opportunities; and

4. The frequency at which the company monitors impacts, risks, and opportunities, with findings from such monitoring disclosed in the Sustainability Report for the relevant reporting period.

Step C: Implement Management Measures

These measures should include:

1. Creating a list of measures taken and measures planned for the future, which should specify the expected outcomes, how these measures contribute to achieving the goals, and the schedule for implementing each measure;

2. Specifying the scope of key measures (e.g., the business activities, geographic locations, and affected stakeholders covered);

3. Describing the remedies provided to address the actual material impacts that the company has caused and to support the affected groups;

4. Conducting qualitative and quantitative analysis on the progress of implementing such management measures, including completion status of the monitoring targets and the human and financial resources already allocated to these measures.

Chapter VI Metrics and Targets

"Metrics and targets" refer to the indicators and targets that a company uses to measure, manage, monitor, and evaluate its responses to sustainability-related impacts, risks, and opportunities. Publishing information on sustainability metrics and targets helps users of the report understand the disclosing entity's management outcomes and progresses in addressing sustainability-related impacts, risks, and opportunities.

A disclosing entity should set sustainability targets and related metrics in accordance with applicable laws and regulations, the requirements of *Guidelines 14*, and its particular needs, and track the achievement of these targets at the end of, and the progress made toward them during, a reporting period. A company can refer to the relevant sections of this Guidance for setting and managing sustainability targets and related metrics.

A company can start by establishing sustainability targets and, from how those targets are defined and other relevant information, derive sustainability metrics to monitor and review progress toward those targets. If a company has not yet set sustainability targets, it may also establish metrics under relevant sustainability topics to monitor and manage its sustainability performance, thereby providing foundational information for subsequent target-setting efforts.

I. Set and Manage Targets

(I) Setting Targets

A company may set sustainability targets in accordance with applicable laws and regulations, the requirements of *Guidelines 14*, and its particular needs. The sources, descriptions, and examples of these targets are listed in the table below.

Table 18: Sources, Descriptions, and Examples of Targets

Source	Description	Example
Targets required by laws, regulations, and national standards	Targets set by a company with respect to certain sustainability topics in accordance with the requirements of laws, regulations, and national standards. These targets are typically related to particular topics or industry.	E.g., the *Work Plan for Accelerating the Building of a Dual Control System for Carbon Emissions*, issued by the General Office the State Council of China, calls for "establishing an evaluation and assessment system for local carbon emissions targets. Each province may break the carbon emissions 'dual control' metrics into

		smaller ones and should ensure various localities and key enterprises complete their emission reduction targets.” Under this policy, some companies can establish and disclose carbon emissions targets as required by relevant laws and regulations.
Targets required by *Guidelines 14*	Targets required by *Guidelines 14* include: emission reduction, major pollutants reduction, waste reduction, energy conservation, water conservation, circular economy, technological innovation, and supply chain risk management, among others. Refer to the guidance for specific topics for detailed information on the targets required by *Guidelines 14*.	E.g., a company may set a percentage reduction target based on the approved pollutant discharge quota of its subsidiaries in their place of operations.
Targets set by a company to address its particular needs	Targets used by a company to monitor the effectiveness of its sustainability actions. These targets may be set based on the targets specified by international organizations and initiatives, external stakeholder requirements (e.g., from customers), the company’s own strategic goals, and the targets of peer companies.	E.g., a company may integrate the UN Sustainable Development Goals (SDGs) into its corporate strategy and sets targets accordingly.

If a company is unable to disclose the information required by this Guidance because no sustainability target has been set, it may disclose this fact, explain the reasons for not having set the targets, indicate the intended timeframe for setting such targets, and specify whether relevant metrics have been established to monitor and manage its sustainability performance.

(II) Managing Targets

A company should monitor and periodically review its progress toward targets. If a target has been achieved, the company is recommended to assess the reasons for its achievement and, in the context of its personnel and business development strategy, consider whether to set a new target immediately. If a target has not been achieved as expected, the company is recommended to analyze the reasons and implement improvements to achieve the target.

For disclosures on the setting of targets and progress toward them, see Chapter VII “Disclosure of Reports.”

II. Set and Manage Metrics

(I) Setting Metrics

A company can disclose sustainability metrics set in accordance with applicable laws and regulations, *Guidelines 14*, and its particular needs. A company may also disclose industry-specific metrics based on the characteristics of the industry in which it operates. The sources, descriptions, and examples of these metrics are listed in the table below.

Table 19: Sources, Descriptions, and Examples of Metrics

Source	Description	Example
Metrics required by laws, regulations, and national standards	Metrics set by a company with respect to certain sustainability topics in accordance with the requirements of laws, regulations, and national standards. These metrics are typically related to particular topics or industry.	E.g., Article 7 of the Ministry of Ecology and Environment's *Measures for the Administration of Corporate Environmental Information Disclosure in Accordance with the Law* states that "the following enterprises shall disclose environmental information in accordance with these *Measures*: (1) key polluting enterprises; (2) enterprises subject to mandatory clean production reviews; (3) listed companies and their consolidated subsidiaries meeting the requirements of Article 8 of these *Measures*; (4) enterprises that meet the criteria of Article 8 of these *Measures* for issuing corporate bonds, enterprise bonds, and non-financial enterprise debt financing instruments; and (5) other enterprises required by laws or regulations to disclose environmental information." Therefore, metrics that may be set by a company based on relevant requirements include: types and names of pollutants, total discharge quantity, approved discharge limits, cases of excess discharges, and environmental performance ratings, among others.
Metrics required by *Guidelines 14*	Metrics required by *Guidelines 14* include: greenhouse gas emissions, pollutants discharge, hazardous and non-hazardous wastes, energy consumption, water usage, rural revitalization investments, accounts receivable-related metrics, and employee-related metrics, among	E.g., if a disclosing entity's accounts payable (including notes payable) balance at the end of the reporting period exceeds RMB 30 billion or 50% of its total assets, it should disclose the amount of its overdue payments at the end of the reporting period and proposed solutions.

	others. Refer to the guidance for specific topics for detailed information on the metrics required by *Guidelines 14*.	Accordingly, a company may set metrics such as balance of overdue payments and the ratio of accounts payable to total assets.
Metrics set by a company to address its particular needs	Metrics used by a company to measure and monitor sustainability-related impacts, risks, and opportunities, as well as to evaluate the performance and effectiveness of managing such impacts, risks, and opportunities. These may include metrics related to specific business models or activities or other characteristics common to a particular industry.	E.g., a company in the automotive industry may focus on and set industry-specific metrics, including the percentage of its supply chain (including itself and its suppliers) certified under the IATF 16949 Automotive Quality Management System, among others.

For the setting and disclosure of metrics, refer to Chapter VII “Disclosure of Reports.”

(II) Managing Metrics

A company can establish an internal management system for ESG metrics to facilitate systematic, standardized management practices. This system should define the management structure and responsibilities, the designated reporters of metrics, and the reporting process, review process, and frequencies. These requirements should be compiled into a standard operating manual. A sample template for this *Manual for Managing ESG Metrics* is as follows.

Table 20: Sample Template for the *Manual for Managing ESG Metrics*

I.	**About This Manual**
	Background
	Basis
	Revisions Summary (if applicable)
II.	**ESG Metrics Management System**
	Management Structure and Responsibilities
	Designated Reporters of Metrics

Chapter VII Disclosure of Reports

When preparing a sustainability or ESG report, a company may design the reporting framework based on its characteristics, sustainability philosophy, and key concerns of stakeholders.

A sustainability or ESG report should be prepared in accordance with *Guidelines 14*, in particular in relation to its requirements. It is recommended that the material topics form the main chapters of the report. Topics that have financial materiality should be disclosed in four dimensions of "Governance," "Strategy," "Impacts, Risks, and Opportunities Management," and "Metrics and Targets." A company that has established a holistic governance structure and internal policies may present relevant information on a consolidated basis in accordance with *Guidelines 14*.

Table 21: Example of Disclosure Framework for Sustainability Reports

I. About This Report
II. Company Profile
III. Materiality Assessment of Topics
(I) Double Materiality Assessment
(II) Due Diligence and Stakeholder Engagement
(III) Conclusions of Materiality Assessment
IV. ESG Governance
Description of the sustainability governance structure and the reporting, oversight, and performance evaluation processes for sustainability-related information.
V. Environmental Topics
Disclosure on the governance, strategies, management of impact, risks, and opportunities, and metrics and targets with respect to environmental topics, including Climate Change Tackling, Pollutant Discharge, Waste Disposal, Ecosystem and Biodiversity Protection, Environmental Compliance Management, Energy Usage, Usage of Water Resources, and Circular Economy.
VI. Social Topics
Disclosure on the governance, strategies, management of impact, risks, and opportunities, and metrics and targets with respect to social topics, including Employees, Safety and Quality of Products and

Services, Data Security and Customer Privacy Protection, Innovation-Driven, Ethics of Science and Technology, Supply Chain Security, Equal Treatment to SMEs, Rural Revitalization, and Contributions to the Society.

VII. Sustainability-Related Governance Topics

Disclosure on the governance, strategies, management of impact, risks, and opportunities, and metrics and targets with respect to sustainability-related governance topics, including Anti-Commercial Bribery and Anti-Corruption and Anti-Unfair Competition, among others.

VIII. ESG Data Chart and Notes

IX. Benchmark Index

X. Third-Party Assurance/Audit Report (Optional)

Under this framework, material topics across the environmental, social, and sustainability-related governance dimensions should be addressed individually on a topic-by-topic basis, as illustrated in the table below.

Table 22: Example of Disclosure Framework for Specific Topics (For Energy Utilization)

Item	Key Points
Topic Overview	Major aspects of the company's operation that relates to energy utilization and the types of energy used Laws, regulations, and internal policies the company complies with regarding energy utilization …
Governance	Governance structure overseeing the company's energy utilization Reporting and oversight processes for energy utilization … (See Chapter III "Governance" for details. This topic may be disclosed on a consolidated basis with other topics.)
Strategy	Identification of risks and opportunities related to energy utilization and their impact on the company Strategies, approaches, and plans developed to address the impacts, risks, and opportunities of energy utilization Assessment of current and anticipated financial effects related to energy utilization Assessment of the adaptability of the company's strategy and business model to risks

	… (See Chapter IV “Strategy” for details.)
Management of Impacts, Risks, and Opportunities	Processes for identifying and assessing energy utilization-related impacts, risks, and opportunities Monitoring and management of these impacts, risks, and opportunities … (See Chapter V “Management of Impacts, Risks, and Opportunities” for details.)
Metrics and Targets	Targets and related metrics set for energy utilization based on applicable laws, regulations, *Guidelines 14*, and the company’s particular needs Overall achievement of targets at the end of the reporting period and progress during the reporting period … (See Chapter VI “Metrics and Targets” for details)
Other Items Required by *Guidelines 14*	Basic information on use of energy, such as direct and indirect total energy consumption (in standard coal equivalent) by type (e.g., coal, electricity, gas, oil), energy structure, and total energy intensity (e.g., per unit of production) Use of clean energy, including types, total amount, and proportion of renewable sources (e.g., wind, solar, hydro, geothermal, biomass, marine, natural gas) Energy-saving targets and specific measures, such as procurement of energy-efficient production equipment, lighting equipment, and climate control systems, and adoption of waste heat/pressure recovery or cascade energy utilization … (This item may be consolidated with “Management of Impacts, Risks, and Opportunities” or “Metrics and Targets”.)

Table 23: Example of Disclosure Framework for Strategies

I. Impact of “Sustainability-Related Risks and Opportunities” on the Company 1. Sustainability-related risks and opportunities identified by the company, and the timeframes in which they may significantly impact the company. Industry context and characteristics may be discussed under this section. 2. Definitions of short-, medium-, and long-term, and their alignment with the strategic growth and resource allocation plans of the company.
II. Strategies, Approaches, and Plans to Address “Impacts, Risks, and Opportunities” 1. Methods used in strategic decision-making to address sustainability-related impacts, risks, and opportunities. 2. Plans formulated to achieve the relevant strategic objectives, and the qualitative and quantitative information used to measure progress toward these plans (i.e., the company’s sustainability/ESG strategies).
III. Assessment of Current and Anticipated Financial Effects

1. How sustainability-related risks and opportunities affect the company's current financial position, operating results, and cash flows, and whether they are likely to have a material impact on its financial position, operating results, and cash flows in the subsequent fiscal year. 2. Analysis of short-, medium-, and long-term trends of the company's financial position, operating results, and cash flows in the context of the relevant strategies (recommended).
IV. Assessment of the Adaptability of Strategies and Business Models to Sustainability-Related Risks
V. Other Disclosures

Table 24: Example of Disclosure Framework for Target Setting

Definition of the target;
To what extent the target will be achieved, including information on whether the target is measured on an absolute, relative, or qualitative basis and the unit of measurement;
Scope of the target, including information on which parts of the company's own operations and of the upstream and downstream value chain are covered;
Timeframe of the target, including statement on whether the target is a milestone target or a short-, medium-, or long-term target;
Baseline value and base year for measuring progress toward the target;
Methods and key assumptions used to set the target; limitations of these methods; input data or parameters, etc.;
Analysis on the progress toward the target and future trends or changes;
Target adjustments and reasons (If applicable).

Table 25: Example of Disclosure Framework for Progress Toward Target

Topic	Metric	Short-Term Target	Mid- to Long-Term Target	Progress in the Reporting Period	Progress Toward Target
Innovation-Driven	Ratio of R&D Investment in Carbon Reduction to Revenue	Reach X_1% by 2025	Reach X_2% by 2030	X_3%	Short-term target in progress X_4% increase over the previous year
	Percentage of R&D Personnel	Reach Y_1% by 2025	Reach Y_2% by 2028	Y_3%	Short-term target achieved

Table 26: Example of Disclosure Framework for Metrics

Definition of the metric;
Type of the metric, including information on whether the metric measured on an absolute, relative, or qualitative basis and the unit of measurement;
Calculation methods and key assumptions for the metric; limitations of these methods; input data or parameters, etc.;
Whether and how the calculation methods and results are independently verified by a third party;
Metric adjustments and reasons (If applicable).

A qualitative subject of disclosure should contain key information about the subject; a quantitative subject of disclosure should contain definition, calculation formula, parameters, and basis for the subject.

Table 27: Example of Key Disclosures for Qualitative Items

Qualitative Item	Key Disclosures
Key aspects of operation involving Energy Utilization and types of energy involved	Aspects of operation involving energy utilization include, but are not limited to, production and office. This item should specify the types of energy used in each aspect, such as conventional energy sources like coal, oil, and electricity, as well as clean energy sources like natural gas, wind, solar, and hydropower.
Governance structure and internal processes for Energy Utilization	The governance framework should cover, but is not limited to: the company's energy management system; the composition, expertise, scope of responsibilities, and reporting rules of relevant personnel; as well as oversight procedures and measures and performance assessments.
Energy Utilization plans (strategies and approaches)	Impacts, risks, and opportunities identified by the company that relate to energy utilization (including their category, time horizon, and magnitude), as well as the strategic plans, management strategies, or business model adjustments made by the company to address such impacts, risks, and opportunities.
Management processes and measures for Energy Utilization	Management processes should include those for identifying, assessing, prioritizing, monitoring, and managing impacts, risks, and opportunities related to energy utilization. Management measures should include, but are not limited to, procurement of energy-efficient production equipment, lighting equipment, and climate control systems, and adoption of waste heat/pressure recovery or cascade energy utilization.
…	…

Table 28: Example of Key Disclosures for Quantitative Items

Quantitative Item	Unit	Definition	Calculation Formula	Parameters	Source/Basis for Parameters
Total Energy Consumption	Tons of standard coal equivalent (TCE)	The total amount of energies (regardless of type) consumed by the company during the reporting period, expressed in TCE.	(Raw coal consumption × TCE conversion coefficient) + (Natural gas consumption × TCE conversion coefficient) + (Gasoline consumption × TCE conversion coefficient) + (Diesel consumption × TCE conversion coefficient) + (Electricity consumption × TCE conversion coefficient) + (Thermal energy [e.g., steam] consumption × TCE conversion coefficient) + (Consumption of other types of energy in TCE)	TCE conversion coefficient for different energy types, e.g., 1.4714 kgce/kg for gasoline	*General Rules for Calculation of the Comprehensive Energy Consumption* (GB/T 2589-2020); *China Energy Statistical Yearbook* (2023).
Breakdown by Energy Type					
Raw coal consumption	Metric tons	Total consumption of raw coal at facilities owned or controlled by the company during the reporting period. Raw coal includes anthracite, bituminous coal, peat, lignite, etc.	Absolute value during the reporting period	–	–
Natural gas consumption	Cubic meters	Total consumption of natural gas at facilities owned or controlled by the company	Absolute value during the reporting period	–	–

		during the reporting period.			
Gasoline consumption	Liters	Total consumption of gasoline at facilities owned or controlled by the company during the reporting period.	Absolute value during the reporting period	–	–
…					

Table 29: Example of Benchmark Index of Sustainability Report to *Guidelines 14*

Requirement	**Chapter in This Report** (A full explanation should be provided in accordance with Article 7 of *Guidelines 14* for any topic not covered by the disclosures made in the report)
Climate Change Tackling	
Pollutant Discharge	
Waste Disposal	
Ecosystem and Biodiversity Protection	
Environmental Compliance Management	
Energy Usage	
Usage of Water Resources	
Circular Economy	
Rural Revitalization	
Contribution to the Society	
Innovation-Driven	
Ethics of Science and Technology	
Supply Chain Security	
Equal Treatment to Small and Medium-Sized Enterprises (SMEs)	

Safety and Quality of Products and Services	
Data Security and Customer Privacy Protection	
Employees	
Due Diligence	
Communications with Stakeholders	
Anti-Commercial Bribery and Anti-Corruption	
Anti-Unfair Competition	
Voluntary Disclosures	

Guidance No. 13 of Shanghai Stock Exchange for Self-Regulation of STAR Market Companies—Preparation of Sustainability Report

Annex 2: Response to Climate Change

Contents

The Shanghai Stock Exchange ("**SSE**" or the "**Exchange**") has created this Annex 2: Climate Response ("**Guidance**") to *Guidance No. 13 of Shanghai Stock Exchange for Self-Regulation of STAR Market Companies—Preparation of Sustainability Report* to help companies listed on the Science and Technology Innovation Board of the Shanghai Stock Exchange ("**listed companies**") accurately understand and apply *Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies—Sustainability Report (Trial)* ("***Guidelines 14***") and standardize the contents of Sustainability Reports on climate change-related topics.

Chapter I Assessment of Climate-Related Impact Materiality

The materiality assessment process outlined in this Guidance is intended to serve as a reference framework for disclosing entities that helps them better understand climate-related impacts, risks, and opportunities.

I. Climate-Related Impacts

A disclosing entity's performance on the climate change topic can have an impact on the economy, the society, and the environment (collectively, "**climate-related impacts**"). Climate-related impacts may arise from the company's business model, operations, growth strategy, financing methods, and value chain. These impacts can be actual or potential, positive or negative.

Climate-related impacts can manifest as effects on societal factors, economic trends, technology, and the policy and legal environment, which in turn affect stakeholders.

II. Process for Assessing Climate-Related Impact Materiality

Disclosing entities may follow the four steps below to assess the economic, environmental, and societal impacts stemming from their climate-related performance and to evaluate the materiality of these climate-related impacts.

Step A: Understand the Context of Climate-Related Activities and Business Relationships

The company can begin by developing a comprehensive understanding of the relevant context by examining its climate-related internal activities and business relationships, the external environment, and its key affected stakeholders.

Table 1: Factors to Consider in Understanding the Context of Climate-Related Activities and Business Relationships

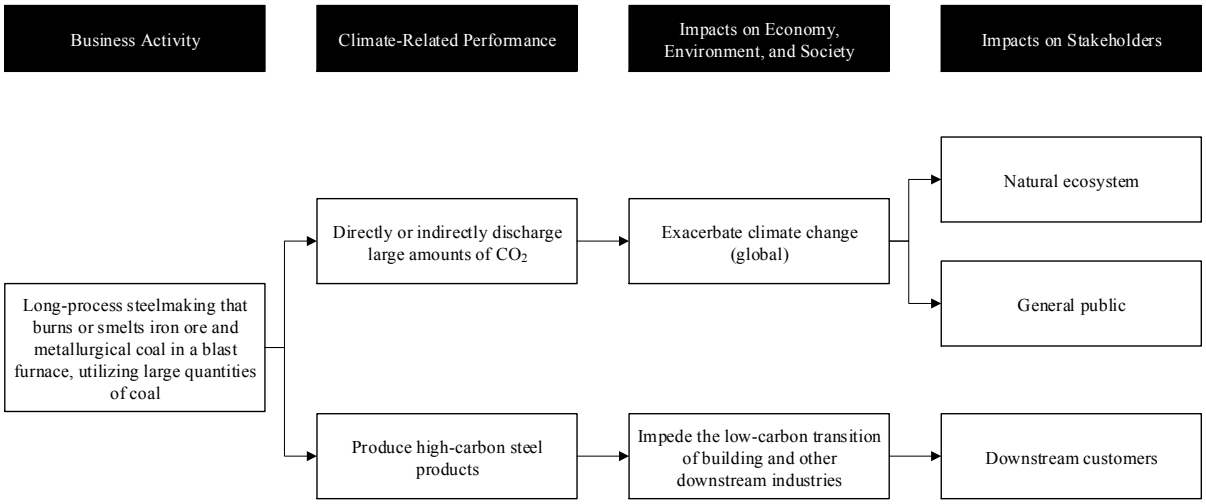
Factor to Consider	Example
Understand the company's activities and business relationships	E.g., corporate emission reduction plans, carbon neutrality strategies, and climate-related R&D and investment plans; the company's climate-related activities, low-carbon products and services, and geographic locations of operations; the upstream and/or downstream value chain, and the type and nature of business relationships
Understand the external environment	E.g., climate-related policies, laws, and regulations in the regions where the company operates; existing climate-related standards, their key contents, and their application in the market; external research reports and publications; peer analysis, existing industry benchmarks, and findings from literature and publications.
Understand affected stakeholders	Identify which stakeholders are or could be affected by the company's climate-related performance, such as suppliers, contractors, customers, employees, and local communities

Step B: Analyze the Pathways of Climate-Related Impacts

The disclosing entity can identify the economic, environmental, and societal impacts of its climate-related activities and business relationships, and then analyze their effects on its stakeholders.

Analysis of these impact pathways should cover the following elements: business activities (encompassing business models, operations, growth strategies, financing methods, and the value chain); climate-related performance; impacts on the economy, environment, and society; and impacts on stakeholders.

Figure 1: Example of Analysis of Climate-Related Impact Pathways



When analyzing impacts on the economy, environment, and society, the disclosing entity can introduce a system of specific elements—such as societal factors, economic trends, technological factors, policies and regulations, and the natural ecosystem—to further analyze and detail the impacts on its stakeholders.

The disclosing entity should gather the extensive internal data and external information required to conduct the aforementioned analysis. A broader range of data allows for a more comprehensive analysis of its climate-related performance, which in turn supports the analysis of its economic, environmental, and societal impacts.

Step C: Assess and Determine Climate-Related Impacts

The disclosing entity should, taking into account the characteristics of its industry and business operations, determine whether its performance in addressing climate change topics results in material impacts on the economy, environment, and society.

Methods for assessing impact materiality include quantitative and qualitative analysis, and require communication with stakeholders or consultation with relevant experts. The key components of the impact materiality assessment include: analyzing the factors for determining materiality, engaging stakeholders and experts, and setting materiality thresholds. (See Annex 1: General Requirements and Disclosure Framework for the key elements of this materiality assessment.)

Step D: Report Climate-Related Impacts

After assessing the climate-related impact materiality, the disclosing entity should report on the assessment process and its outcomes. This report should be based on the results of the comprehensive materiality assessment on sustainability-related topics.

(See Annex 1: General Requirements and Disclosure Framework for the specific requirements.)

Chapter II Assessment of Climate-Related Financial Materiality

I. Climate-Related Risks and Opportunities

Climate change can have positive or negative impacts on a disclosing entity's business model, operations, growth strategy, financial position, operating results, cash flows, and financing methods and costs. Potential negative impacts consist of climate-related physical risks and climate-related transition risks.

(I) Climate-Related Physical Risks

Climate-related physical risks are risks to economic and social systems resulting from climate change-induced changes in the physical environment, primarily encompassing the risk of property damage. Climate-related physical risks can be classified as either acute or chronic. Acute physical risks arise from weather phenomena such as storms, floods, droughts, or heatwaves. Chronic physical risks stem from longer-term shifts in climate patterns, including changes in precipitation and temperature, and from rising sea levels, decreased water availability, loss of biodiversity, and altered soil productivity.

Climate-related physical risks can have financial effects on a disclosing entity, such as direct loss of or damage to assets and indirect impacts from supply chain disruptions. Furthermore, the disclosing entity's financial performance can be adversely affected by changes in the availability and quality of water resources, and by the effects of extreme temperature variations on its premises, operations, supply chains, transportation requirements, and employee health and safety.

(II) Climate-Related Transition Risks

Climate-related transition risks are the risks to which a disclosing entity is exposed during the transition toward a lower-carbon economy. These encompass policy, legal, technological, market, and reputational risks.

The transition to a low-carbon economy can bring extensive policy, legal, technological, and market changes, such as rising cost of carbon emissions, more stringent energy efficiency standards for equipment, and shifts in consumer preferences. Depending on the nature, pace, and focal point of these changes,

transition risks can expose the disclosing entity to varying levels of financial, market, and reputational risks.

(III) Climate-Related Opportunities

Climate-related opportunities refer to the potential positive effects of climate change on the disclosing entity, or those opportunities that arise from its efforts in climate change mitigation and adaptation. For instance, many opportunities can be created for the disclosing entity by reducing costs through greater resource efficiency, switching to low-emission energy sources, developing new products and services, accessing new markets, and building a more resilient supply chain.

Climate-related opportunities will vary depending on the specific regions, markets, and industries in which the disclosing entity operates. Typically, these opportunities relate to areas such as resource efficiency, energy sources, products and services, and market access.

II. Impact of Climate-Related Risks and Opportunities on the Disclosing Entity's Operations

(I) Impact on Business Model and Value Chain

The effects of climate change, such as extreme weather events and natural disasters, may exacerbate the operational risks faced by a disclosing entity, including supply chain disruptions, asset losses, and production interruptions. A disclosing entity may need to adjust its business model and strategy to cope with climate-related uncertainties.

Additionally, climate-related risks and opportunities may affect a disclosing entity's value chain activities. Such activities encompass the activities, resources, and relationships it uses or relies on, directly or indirectly, throughout the lifecycle of its products and services—from conception to delivery and consumption, and finally to end-of-life. For example, activities, resources, and relationships relating to the operations of the disclosing entity include activities, resources, and workforce relationships within its supply chain and sales and distribution channels (e.g., procurement of materials and services, and sale and delivery of products and services), as well as the financing, geographic, and regulatory environments in which it operates.

The disclosing entity is not required to reassess climate-related risks and opportunities across its entire value chain every reporting year. Instead, it may conduct periodic or ad hoc assessments based on its actual response to climate change. Notwithstanding the foregoing, a reassessment should be considered after a significant event or material change has occurred.

Table 2: Circumstances Triggering Reassessment of Climate-Related Risks and Opportunities in the Value Chain

Material Change	Example
Material changes to the disclosing entity's value chain	E.g., a change made by a key supplier that significantly alters the supplier's GHG emissions
Material changes to the disclosing entity's business model or corporate structure	E.g., a merger or acquisition that extends the entity's value chain
Material changes in the climate-related risks and opportunities faced by the disclosing entity	E.g., a key supplier being affected by unforeseen GHG emissions regulations

(II) Impact on Strategy and Decision-Making

When addressing climate-related risks and opportunities, a disclosing entity may need to adjust its strategies, such as those concerning financial planning and resource allocation. Changes in a disclosing entity's strategy and decision-making to address climate-related risks and opportunities may include: plans to manage or phase out carbon-, energy-, or water-intensive operations; resource allocation due to shifts in demand or supply chains; resource allocation for business development through capital expenditures or additional R&D spending; and business acquisitions or divestments.

Strategies and decisions that directly address climate-related risks include altering production processes or equipment, relocating facilities, making workforce adjustments, and modifying product specifications, among others. Indirect measures include collaborating with customers and the supply chain.

III. Financial Effects of Climate-Related Risks and Opportunities

The financial effects of climate-related risks and opportunities on a disclosing entity stem not only from the climate-related physical risks and opportunities it faces, but also from its strategies and decisions for managing these risks and opportunities. Climate-related risks and opportunities may affect a disclosing entity's financial position, operating results, and cash flows, including actual financial effects that have occurred in the current and/or prior periods and anticipated financial effects.

The financial effects of climate-related risks and opportunities are primarily reflected in revenues and expenses (in the income statement), assets and liabilities (in the balance sheet), and cash inflows and outflows (in the cash flow statement).

Table 3: Primary Categories of Climate-Related Financial Effects

Financial Category	Description
Revenue	E.g., changes in consumer preferences may alter the demand for products and services; supply chain disruptions could lead to production halts, thereby affecting revenue. Companies should consider the potential effects of climate change on revenue, while also exploring opportunities that grow existing revenue streams or create new ones. Particularly with the implementation and increasing stringency of carbon pricing policies, the potential effects on revenue should be a consideration for companies in affected sectors.
Expenses	E.g., increased expenditure on the research and development of new technologies; rising energy and water costs; higher insurance premiums for assets in regions with high climate vulnerability; and additional expenses to upgrade protective equipment and facilities for employees working outdoors in extreme heat.
Assets and Liabilities	E.g., climate change, the implementation of related policies, or the establishment of emission reduction targets may necessitate the early retirement of certain fixed assets, leading to impairment losses or a shortening of their depreciable useful lives; changes in estimated liabilities arising from change in expenditure required to decommission fixed assets, or in the expected timing of such decommissioning, due to technological progress, legal requirements, or changes in the market environment, in relation to provisions already recognized by the company for obligations such as environmental protection and ecological restoration.
Cash Flows	E.g., operating cash flows can be affected by factors such as climate-driven natural disasters, market volatility, and fluctuations in the costs of raw materials and transportation; cash flows from investing and financing activities can be impacted by increased capital expenditures, higher levels of debt, or an impairment of refinancing capacity due to reputational damage.

Climate-related financial effects encompass both effects within the current reporting period and anticipated effects over the short, medium, and long term.

Table 4: Examples of Climate-Related Risks and Financial Effects

Type	Climate-Related Risks	Financial Effects
Transition Risks	**Policy and Legal**	
	Rising prices of GHG emission allowances Enhanced emission reporting obligations Mandatory requirements and regulations on existing products and services Litigation risks	Increased operational costs (e.g., higher compliance costs, increased insurance premiums) Impairment and early retirement of existing assets due to policy changes Increased costs and/or reduced demand for products and services resulting from fines and judicial rulings
	Technology	
	Substitution of existing products and services with lower-emission alternatives Unsuccessful investments in new technologies Costs of transitioning to lower-emission technologies	Write-offs and early retirement of existing assets Reduced demand for existing products and services R&D expenditures on innovation and alternative technologies Capital expenditure on technology development Costs of adopting/deploying new methods and processes
	Market	
	Shifts in consumer behavior Uncertainty in market signals Increased cost of raw materials	Reduced demand for goods and services due to shifts in consumer preferences Increased production costs due to volatility in input prices (e.g., energy, water) and output requirements (e.g., waste management) Sudden and unexpected changes in energy prices and availability Reduced revenue from changes in revenue composition and sources Re-pricing of assets (e.g., revaluation of fossil fuel reserves, land, and securities)
	Reputation	
	Shifts in consumer preferences Heightened reputational	Reduced revenue due to decreased demand for goods and services Reduced revenue from decreased production

	risk for certain sectors Growing stakeholder concern or negative sentiment	capacity (e.g., delays in plan approval and supply chain disruptions) Reduced revenue due to negative impacts of workforce management and planning (e.g., activities relating to attracting and retaining talent) Reduced available capital
Physical Risks	Short-term Increased severity of extreme weather events (e.g., typhoons and floods). Long-term Changes in forms of precipitation and extreme volatility in climate patterns Rising average temperature Rising sea levels	Reduced revenue from lower production capacity (e.g., transportation challenges and supply chain disruptions) Reduced revenue and increased costs due to adverse impacts on the workforce (e.g., health and safety issues and increased absenteeism) Write-offs and early retirement of assets (e.g., due to damage to properties or assets in areas prone to extreme weather) Increased operating costs (e.g., due to reduced water availability for hydropower generation or for cooling in thermal and nuclear power plants) Increased cost of capital (e.g., due to equipment damage) Reduced revenue due to decreased sales or output Increased insurance premiums, or reduced availability of insurance for assets in areas prone to extreme weather

Table 5: Examples of Climate-Related Opportunities and Financial Effects

Type	Climate-Related Opportunities	Financial Effects
Resource Efficiency	Adoption of more efficient transportation modes Implementation of more efficient production and distribution processes Use of recycled materials Relocation to more energy-efficient facilities Reduction in water use and consumption	Reduced operating costs (e.g., through greater efficiency and cost savings) Increased revenue from enhanced production capacity Appreciation of fixed assets (e.g., buildings with superior energy efficiency ratings) Cost savings resulting from improved workforce management and planning (e.g., through enhanced health and safety conditions and increased employee satisfaction)
Energy Efficiency	Use of low-emission energy sources Capitalizing on policy supports and incentives	Reduced operating costs (e.g., by employing the most cost-effective emission abatement methods) Reduced exposure to future increases

	Adoption of new technologies Participation in carbon markets Diversifying energy sources (e.g., by increasing the share of clean energy)	in fossil fuel price Reduced GHG emissions, to lower sensitivity to carbon pricing Returns on investments in low-emission technologies Increased access to capital (e.g., as more investors favor low-emission manufacturers) Increased demand for products and services driven by enhanced corporate reputation
Products and Services	Development and/or expansion of low-emission products and services Alignment with climate adaptation needs (e.g., risk transfer products and services in the insurance sector) Development of new products or services through R&D and innovation Business diversification capacity Shifts in consumer preferences	Increased revenue from rising demand for low-emission products and services Increased revenue from providing new solutions that address climate adaptation needs (e.g., risk transfer products and services in the insurance sector) Increased revenue from a sharper competitive edge achieved by aligning with shifting consumer preferences
Market	Entry into new markets Obtainment of public-sector incentives and awards Expansion into new asset classes and geographic regions requiring insurance coverage	Revenue growth by entering new markets (e.g., via partnerships with governments and development banks) Wider range of financial assets (e.g., green bonds and infrastructure-backed securities)
Adaptation	Participation in renewable energy projects and implementation of energy conservation measures Resource substitution and/or diversification	Increased market valuation of assets (e.g., infrastructure, land, buildings) resulting from enhanced climate resilience Improved supply chain reliability and operational resilience under varying conditions Increased revenue from greater operational robustness enabled by new products and services

IV. Process for Assessing Climate-Related Financial Effects

Before analyzing climate-related financial effects, a disclosing entity should understand and comply with all applicable sustainability and climate standards, regulations, and regulatory policies. Climate-related financial effects can be analyzed through the following four steps.

Step A: Understand the Context of Climate-Related Activities and Business Relationships

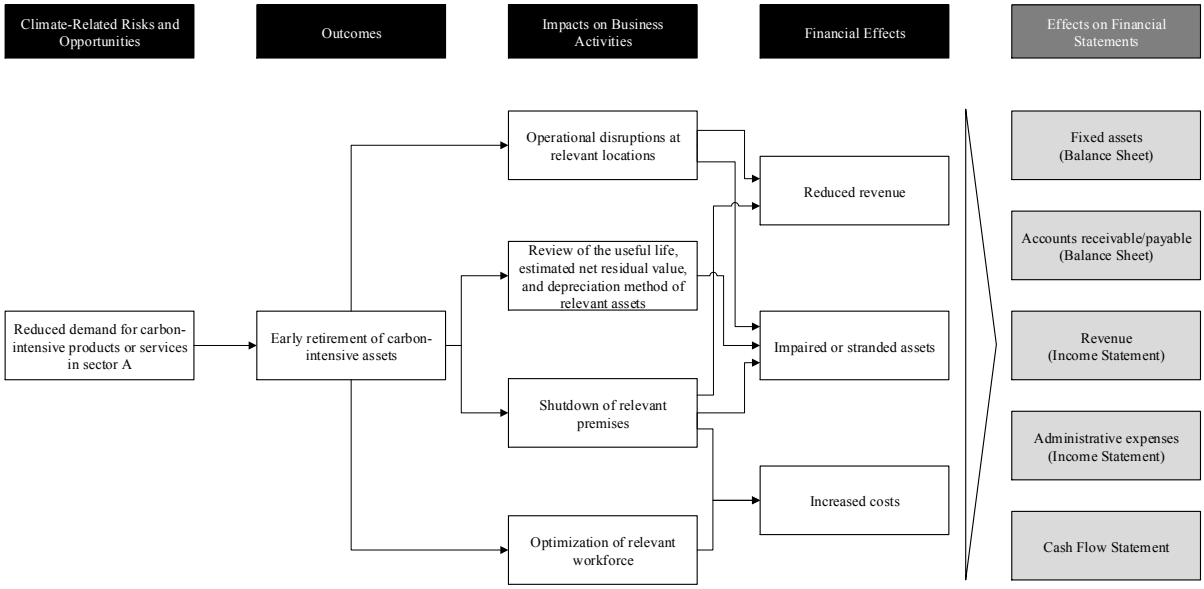
For details on this step, refer to Step A in the section of this Guidance on impact materiality assessment.

Step B: Analyze the Pathways of Climate-Related Financial Effects

From the material climate-related risks and opportunities it has identified, the disclosing entity can analyze the impacts on its business activities and the resulting financial effects.

This analysis should cover the following elements: climate-related risks and opportunities; direct and indirect consequences arising from these risks and opportunities; impacts on business activities such as on business models, operations, growth strategies, and financing methods; and financial effects.

Figure 2: Example of Analysis of Climate-Related Financial Effect Pathways



Step C: Assess and Determine Climate-Related Financial Effects

The disclosing entity should, taking into account the characteristics of its industry and business operations, identify the impacts of climate-related economic, environmental, and societal factors on its business model, operations, growth strategy, financial position, operating results, cash flows, and financing methods.

The assessment of climate-related financial materiality must be based on a combination of the likelihood that the risks and opportunities would occur and the magnitude of their financial effects. This assessment has the following steps: analyzing the factors relevant to the financial materiality assessment; engaging stakeholders and experts; establishing thresholds for determining financial materiality; and forming conclusions on financial materiality. The results of the financial materiality assessment for a climate-related topic should be compared against the established materiality thresholds to determine if the topic is financially material. (See Annex 1: General Requirements and Disclosure Framework for the key elements of this assessment.)

Furthermore, when assessing climate-related financial effects, the disclosing entity can keep stakeholders such as investors and creditors informed and updated. (See Annex 1: General Requirements and Disclosure Framework for details.)

Step D: Report Climate-Related Impacts

Upon completing the assessment of climate-related financial materiality, the disclosing entity should report on the assessment process and its outcomes. (See

Annex 1: General Requirements and Disclosure Framework for the specific requirements.)

Chapter III Climate Adaptation and Climate Scenario Analysis

I. Climate Adaptation

Climate adaptation refers to a disclosing entity's ability to manage climate-related risks and capitalize on climate-related opportunities. This includes its strategic adaptability, as well as its operational adaptability to climate-related changes and uncertainties.

Scenario analysis, a common tool for evaluating climate adaptation, is a method for identifying and assessing the potential scope of impacts of future events under uncertain conditions. In the context of climate change, disclosing entities may use climate scenario analysis to assess how physical and transition risks could affect their business, strategy, and financial position in the future.

II. Climate Scenario Analysis

When identifying, analyzing, and managing climate-related risks and opportunities, a disclosing entity may use climate scenarios to understand how physical and transition risks and opportunities could reasonably be expected to affect its business over time.

Overall, climate scenario analysis illustrates, through simulations, potential pathways for how the world might evolve under different assumptions about economic development and energy use, along with the corresponding consequences for the climate.

Using climate scenario analysis can help disclosing entities identify and assess the potential scope of impacts of climate change on their business, strategy, and finance. It also helps them identify potential actions that may need to be incorporated into their strategic and financial planning.

Analyzing climate scenarios in the context of corporate strategies allows a disclosing entity to test the risk tolerance of its business strategies and direction and identify potential risks and opportunities, thereby enabling proactive preparation.

When specific, reliable data on relationships and trends is unavailable, climate scenario analysis can be qualitative, relying on descriptive, non-numerical

information. Conversely, it can be quantitative, utilizing numerical data, models, and other analytical techniques to evaluate measurable trends and relationships.

III. General Process for Climate Scenario Analysis

A disclosing entity may conduct climate scenario analysis by following the five steps outlined below.

Step A: Define the Scope of the Climate Scenario Analysis

When undertaking scenario analysis, a disclosing entity can begin by defining the scope of the analysis. As the company gains experience, it can consider gradually expanding this scope to cover a broader range of businesses, risks, and other elements.

Table 6: Reference Dimensions for the Scope of Climate Scenario Analysis

Scope	Description
Business	Whether the analysis covers all business segments of the company
Value Chain	Whether the analysis extends beyond core operations to include the upstream and downstream value chain
Geographic Regions	Whether the analysis covers business segments across all regions around the globe
Risks	Which risk types (e.g., transition and physical risks) require climate scenario analysis, determined based on the material risks identified by the company
Time Horizon	The time horizon for the analysis should be set in accordance with the company's strategies, capital planning cycles, investment horizons, and the useful life of its major assets

Step B: Select Climate Scenarios

There are currently many publicly available sources of climate scenarios. When selecting a source, a disclosing entity needs to first understand the characteristics of the source, its underlying assumptions, and how well its built-in parameters align with the company. It should then select the most appropriate source based on practical considerations such as the industry it operates in, the type of risks to be assessed, the geographic coverage, and the relevant time horizon.

Table 7: Key Considerations When Selecting Scenario Sources

Factor	Description
Industry	Each industry has a distinct set of characteristics and needs; therefore, certain scenario sources are more suitable for some industries than others. For example, companies in the energy sector may refer to sources of energy scenarios used by energy organizations or focused on transition risks
Type of Risks to Be Assessed	Different scenario sources focus on different climate-related risks. A company can select sources based on the type of risks being assessed. For example, companies analyzing climate-related physical risks may choose scenario sources focused on physical science impacts
Location of Business Operations	A company can select sources of global or regional climate scenarios that provide the most comprehensive coverage of its operating locations
Determined Time Horizon	A company can, based on factors such as its capital planning, investment horizon, asset lifespan, and local policies (e.g., China's goals of carbon peaking by 2030 and carbon neutrality by 2060), select scenario sources aligned with the relevant time horizon

Typical climate scenarios are based on targeted temperature changes and assumptions about energy, policies, and technology, among others. Therefore, after selecting a scenario source, a disclosing entity should determine the magnitude of temperature increase. A company may opt for high-contrast scenarios, such as a 1.5 °C temperature rise scenario and a 3 °C or higher scenario, to illustrate the different pathways and outcomes and analyze the potential impacts of climate-related risks and opportunities under different scenarios. For example, the 1.5 °C scenario aligns with the Paris Agreement's goal of limiting global average temperature rise to below 1.5 °C by the end of the century.

Step C: Identify Variables for Scenario Analysis

A disclosing entity needs to understand the nature of its industry and the climate-related risks and opportunities to prioritize those variables that have the greatest impact on its scenario analysis. Different companies, even when facing the same type of risk, may identify different variables as most impactful.

For example, construction companies and data center operators can both see rising average temperatures as a significant climate-related risk, but the variables they use to assess its impact may differ. Construction companies, anticipating reduced outdoor work hours due to higher temperatures and the resulting financial effects, might select variables related to employee productivity. Data center operators, facing greater cooling demand, might choose electricity prices as a key variable.

Table 8: Variables for Common Climate-Related Risks

Type of Risk	Implications	Example of Variables
Climate-Related Physical Risks		
Increased severity of flooding	Increased flood frequency and severity could lead to equipment damage, resulting in increased asset impairment or repair expenditures	1. Frequency of flooding 2. Expected financial losses from flooding 3. Expected operational losses from business interruption
Rising average temperatures	1. Rising average temperatures can reduce outdoor productivity 2. Increased expenses due to increased use of air conditioning	1. Change in the number of days requiring air conditioning (e.g., number of days above 25 °C) 2. Impact of heat stress on employee productivity
Climate-Related Transition Risks		
Rising carbon prices	Rising price of emission allowances	1. Carbon price 2. Amount of GHG emissions
Transition to low-carbon energy	1. The transition to low-carbon energy necessitates upgrades to existing equipment 2. Cost implications of switching to low-carbon energy	1. Energy prices 2. Energy mix

Step D: Determine the Scenario Analysis Method

Scenario analyses can be divided into qualitative and quantitative methods. When selecting a method, a disclosing entity should choose one that is relevant to the climate-related risks and opportunities it faces, commensurate with its capabilities and resources, and without undue cost.

If a disclosing entity currently lacks the skills, capabilities, or resources for quantitative climate scenario analysis but faces high climate-related risks, it may begin by using simpler methods, such as qualitative scenario narratives. Over time, as it builds experience and develops the necessary competencies, it can adopt more sophisticated quantitative methods. A disclosing entity that faces high climate-related risks and opportunities and possesses the requisite skills, capabilities, and resources should consider using quantitative analysis.

Qualitative analysis can express impacts using risk ratings. For example, the impact of rising electricity prices on energy expenses could be rated as “High,” while the impact of extreme weather events on asset values could be rated as “Low.”

Quantitative analysis, in contrast, can assess the monetary range or proportion of assets affected by climate-related physical risks and transition risks. For example, if electricity consumption remains unchanged by 2030, anticipated changes in electricity prices may affect the company’s power costs by 2–5%; by 2060, severe cold, droughts, or other extreme weather events may affect the company’s hydropower revenue by approximately 10%.

Step E: Conduct Climate Scenario Analysis

A disclosing entity can conduct scenario analysis based on the scenario sources and analytical methods determined in the preceding steps.

A disclosing entity that plans to perform scenario analysis is not required to update its climate scenario models annually, but rather make the analysis in accordance with its strategic planning cycle (e.g., every three to five years). If scenario analysis is planned, it should be updated, at a minimum, in line with the strategic planning cycle. Furthermore, a new analysis should be conducted when there are material changes to the business model (such as asset acquisitions or business transformations), when previous estimates are no longer aligned with current conditions, or when previous assumptions are no longer valid, so as to evaluate the company’s climate exposure after such changes.

If scenario analysis is not conducted annually, the disclosures relating to climate scenario analysis may remain unchanged from the previous reporting period.

Chapter IV Processes and Methods for Accounting for GHG Emissions

I. Setting Organizational Boundaries

Organizational boundaries determine the greenhouse gas (GHG) emissions that a disclosing entity owns or controls. Before accounting for and reporting its GHG emissions, a disclosing entity should set organizational boundaries, mostly commonly through the equity share approach or the control approach. The chosen approach should be applied consistently across all operations, i.e., the disclosing entity should not apply different approaches to different operations.

Under the equity share approach, a disclosing entity accounts for GHG emissions from operations according to its share of equity in the operation. The economic substance of the relationship the disclosing entity has with the operation overrides the legal form (i.e., ownership structure) to ensure that equity share reflects the percentage of economic interest.

Under the control approach, a disclosing entity accounts for 100% of the GHG emissions from operations over which it has control. It does not account for GHG emissions from operations in which it owns an interest but has no control. When using the control approach to consolidate GHG emissions, disclosing entities should choose between either the operational control or financial control criteria.

Table 9: How to Set Organizational Boundaries

Approach	Description
Equity Share	A company accounts for GHG emissions according to its share of equity in the various operations. For example, if a company holds a 70% equity interest in a subsidiary, it consolidates 70% of that subsidiary's total GHG emissions.
Control	1. Financial Control: A company accounts for 100% of the GHG emissions over which it has financial control. For example, if the company holds a 55% equity share in a subsidiary and has financial control over it, it consolidates 100% of that subsidiary's GHG emissions. 2. Operational Control: A company accounts for 100% of the GHG emissions over which it has operational control.

II. Setting Operational Boundaries

Once the organizational boundaries have been set, a disclosing entity should then determine its operational boundaries to identify all emissions associated with its consolidated operations and categorize them as either direct or indirect GHG emissions. Direct GHG emissions are emissions from sources that are owned or controlled by the disclosing entity. Indirect GHG emissions are emissions that are a consequence of the activities of the disclosing entity but occur at sources owned or controlled by another company.

GHG emissions are also classified into Scope 1, Scope 2, and Scope 3 emissions.

Table 10: GHG Emissions Scopes

Scope	Description
Scope 1	Direct GHG emissions from sources that are owned or controlled by the company
Scope 2	GHG emissions from the generation of purchased electricity, steam, heat, or cooling consumed by the company
Scope 3	All other indirect emissions that occur in the company's value chain (excluding Scope 2), including those from upstream and downstream activities

III. Setting Time Horizon

The time horizon for GHG emissions accounting and reporting should be consistent with the reporting period of the Sustainability Report.

IV. Identifying GHG Emissions Sources

After defining its organizational and operational boundaries, a disclosing entity should identify all relevant emission sources within these boundaries, based on its operational and production processes and associated equipment.

Table 11: GHG Emissions Sources

Scope	GHG Emissions Sources
Scope 1 Emission	1. Stationary Combustion: Boilers, furnaces, burners, turbines, heaters,

Sources	incinerators, engines, flare stacks, etc. 2. Mobile Combustion: Automobiles, trucks, buses, trains, airplanes, ships, vessels, etc. 3. Processes Emissions: CO_2 from the calcination step in cement manufacturing, CO_2 from catalytic cracking in petrochemical processing, PFC emissions from aluminum smelting, etc. 4. Fugitive Emissions: Intentional and unintentional releases such as equipment leaks from joints, seals, packing, gaskets, as well as fugitive emissions from coal piles, wastewater treatment, pits, cooling towers, etc.
Scope 2 Emission Sources	Purchased electricity, heat, cooling, or steam
Scope 3 Emission Sources	Activities in the value chain that generate GHG emissions

V. Calculation of GHG Emissions

(I) Calculation of Scope 1 Emissions

Scope 1 GHG emissions are generally calculated based on the emission factor method or material balance method. An emission factor is a coefficient that quantifies GHG emissions per unit of activity data (e.g., emissions per metric ton of coal consumed). Specific calculation methods should be determined in line with the accounting and reporting guidelines issued by competent national authorities for the relevant industry as well as national standards. Emission factors can be found in the GHG emission factors database released by competent national authorities.

When accounting for and disclosing the total GHG emissions in a reporting period, the disclosing entity should convert the emissions of different GHGs into metric tons of CO_2 equivalent (tCO_2e). GHGs vary in their properties and their impact on global warming. The Global Warming Potential (GWP) is the most popular metric for converting emissions of various GHGs into a common unit of CO_2 equivalent. GWP measures the relative contribution of a given GHG to global warming over a specified time horizon compared to that of CO_2. GWP values are defined and periodically updated by the Intergovernmental Panel on Climate Change (IPCC). For instance, the Sixth Assessment Report of IPCC states that methane has a 100-year GWP of 28. This means that one metric ton of methane has the equivalent global warming impact of 28 metric tons of CO_2 over a 100-year period.

Table 12: Examples of Calculating Scope 1 GHG Emissions

Scope 1 Emission Sources	GHG Emissions Calculation Methods
Stationary Combustion / Mobile Combustion	***Example: Emission Factor Method*** Under the emission factor method, GHG emissions are the product of activity data and the emission factor: $$E_{GHG} = AD \times EF \times GWP$$ Where: E_{GHG}: GHG emissions, in metric tons of CO_2 equivalent (tCO_2e); AD: GHG activity data (e.g., fossil fuel consumption by boilers and vehicles). The unit of measure depends on the specific emission source; EF: Emission factor (e.g., tCO_2e per metric ton of fossil fuel). The unit of measure should be consistent with that of AD; GWP: Global Warming Potential. The value should be taken from the most recent assessment report published by the IPCC.
Process Emissions	***Example: Material Balance Method*** The material balance method determines CO_2 emissions based on the principle of mass conservation. It is a balance calculation where the total carbon content in material outputs is subtracted from the total carbon content in material inputs: $$E_{GHG} = \left[\sum (M_1 \times CC_1) - \sum (M_0 \times CC_0)\right] \times \frac{44}{12} \times GWP$$ Where: E_{GHG}: GHG emissions, in metric tons of CO_2 equivalent (tCO_2e); M_1: Quantity of each input material. The unit of measure depends on the specific emission source; M_0: Quantity of each output material. The unit of measure depends on the specific emission source; CC_1: Carbon content of each input material, in the same unit as M_1; CC_0: Carbon content of each output material, in the same unit as M_0; $\frac{44}{12}$: The conversion factor to convert the mass of carbon to the mass of CO_2, representing the ratio of the relative molecular mass of CO_2 to the relative atomic mass of carbon.

(II) Calculation of Scope 2 Emissions

A company's Scope 2 emissions typically arise from the generation of purchased electricity and heat. These emissions are most commonly calculated based on the emission factor method.

1. CO_2 emissions from the generation of purchased electricity are calculated as:

$$E_{purchased\ electricity} = AD_{electricity} \times EF_{electricity}$$

Where:

$E_{purchased\ electricity}$: CO_2 emissions from the generation of purchased electricity, in metric tons of CO_2 (tCO_2);

$AD_{electricity}$: The amount of electricity purchased during the accounting and reporting period, in megawatt-hours (MWh);

$EF_{electricity}$: The grid emission factor, in metric tons of CO_2 per megawatt-hour (tCO_2/MWh).

The grid emission factor should be selected based on the average CO_2 emission factors for national, regional, or provincial grids updated and published from time to time by the Ministry of Ecology and Environment of China.

2. CO_2 emissions from the generation of purchased heat are calculated as:

$$E_{purchased\ heat} = AD_{heat} \times EF_{heat}$$

Where:

$E_{purchased\ heat}$: CO_2 emissions from the generation of purchased heat, in metric tons of CO_2 (tCO_2);

AD_{heat}: The amount of heat purchased during the accounting and reporting period, in gigajoules (GJ);

EF_{heat}: The emission factor for purchased heat, in metric tons of CO_2 per gigajoule (tCO_2/GJ).

If the purchased heat can be traced to a specific source and its amount can be directly measured, the disclosing entity may use the CO_2 emission factor provided by the heat supplier. Otherwise, a recommended value of 0.11 tCO_2/GJ may be used, provided it is updated in a timely manner in accordance with the latest data released by the competent authorities.

(III) Calculation of Scope 3 Emissions

Scope 3 emissions are divided into 15 categories that are broadly classified as either upstream or downstream emissions. Upstream Scope 3 emissions are indirect GHG emissions related to the goods and services purchased or acquired; downstream Scope 3 emissions are indirect GHG emissions related to the goods and services sold.

Where feasible, a disclosing entity may account for its Scope 3 GHG emissions and indicate the specific emission categories it accounts for. If accounting for all Scope 3 categories proves challenging, the company may initially account for a selection of material categories based on its circumstances, and progressively expand the scope over time. For instance, a company with no leased assets would find Category 8 (upstream leased assets) and Category 13 (downstream leased assets) inapplicable. Furthermore, categories may be provisionally excluded from the accounting if they are anticipated to be negligible in size compared to the other emission sources or impracticable due to missing data, limited data collection capabilities, or other obstacles.

Table 13: Scope 3 GHG Emissions Categories

Upstream Scope 3 Emissions	Downstream Scope 3 Emissions
1. Purchased goods and services 2. Capital goods 3. Fuel- and energy-related activities (those not included in Scope 1 or Scope 2) 4. Upstream transportation and distribution 5. Waste from operations 6. Business travel 7. Employee commute 8. Upstream leased assets	9. Downstream transportation and distribution 10. Processing of sold products 11. Use of sold products 12. End-of-life treatment of sold products 13. Downstream leased assets 14. Franchises 15. Investments

Table 14: Criteria for Identifying Scope 3 GHG Emissions Categories for Inclusion

Criteria	Description
Size	The category contributes significantly to the company's total Scope 3 emissions, e.g., being of a significant size relative to the company's Scope 1 and Scope 2 emissions
Impact	The company can influence potential efforts to reduce GHG emissions
Industry Standards	The category is deemed a critical emission category by industry-specific

	standards
Risk	The category contributes to the company's risk exposure (e.g., litigation and reputational risks in climate-related transition risks)
Outsourcing	It is an outsourced activity previously performed in-house, or an outsourced activity that is typically performed in-house by other companies in the company's sector
Stakeholders	The category is deemed critical by key stakeholders such as customers, suppliers, and investors

To calculate Scope 3 GHG emissions, a company should generally use two types of data: activity data and emission factor. The formula is as follows:

Carbon Dioxide Equivalent (CO_2e) = $A \times EF \times GWP$

Where:

A: Activity data;

EF: Emission factor;

GWP: Global Warming Potential.

"Activity data" is a quantitative measure of the level of activity that results in GHG emissions. "Emission factor" is a factor that converts activity data into GHG emissions data. GWP values convert GHG emissions data for non-CO_2 gases into units of carbon dioxide equivalents (CO_2e).

Table 15: Examples of Activity Data and Emission Factors

Activity Data	Emission Factor
Fuel consumed (liters)	CO_2 emitted per liter of fuel consumed (kg CO_2/liter)
Transportation distance (kilometers)	CO_2 emitted per kilometer of transportation (kg CO_2/km)
Materials purchased (kilograms)	Hydrocarbons (HC) emitted per kilogram of materials purchased (kg HC/kg)
Operating hours (hours)	Sulfur hexafluoride (SF_6) emitted per operating hour (kg SF_6/hour)

Expenditure (RMB)	CO_2 emitted per unit of currency spent (kg CO_2/RMB)
Waste generated (kilograms)	Methane (CH_4) emitted per kilogram of waste generated (kg CH_4/kg)
Electricity consumed (kWh)	CO_2 emitted per kilowatt-hour of electricity consumed (kg CO_2/kWh)

Activity data may come from either primary or secondary data, with priority given to primary data when other conditions are equal. Primary data are data sourced directly from suppliers and other partners within the value chain. Secondary data include industry-average data (e.g., from public databases, government statistics, academic literature, and industry associations), financial data, alternative data, and other generic data.

If the value chain activity data obtained for the current reporting period covers overlapping timeframes (e.g., they include data from a previous reporting period) or mismatched timeframes (e.g., they cover only part of the current period or certain months from the previous and current periods), it is permissible to account for and disclose them with clear indication of the timeframe covered. As the availability and timeliness of activity data improve, the disclosing entity should make every effort to use the most recent primary data available.

Table 16: Examples of Primary and Secondary Data for Scope 3 GHG Emissions

Category	Examples of Primary Data	Examples of Secondary Data
1. Purchased goods and services	Energy consumption or emissions data from a supplier's designated premises	Industry-average emission factors per unit of consumable from the lifecycle inventory database
2. Capital goods	Energy consumption or emissions data from a supplier's designated premises	Industry-average emission factors
3. Fuel- and energy-related activities (those not included in Scope 1 or Scope 2)	Electricity purchase data and the emission rate of specific generators of purchased electricity of a specific company	National average data for upstream emissions
4. Upstream transportation and distribution	Energy consumption or emissions data from a third-party logistics provider for specific activities	Estimated distance of a certain transportation mode based on industry-average data
5. Waste from operations	Emissions data from a waste management company's designated premises	Estimated waste tonnage based on industry-average data
6. Business travel	Specific activity data from a	Estimated travel distance based on

	transportation provider (e.g., an airline)	industry average data
7. Employee commute	Specific commuting distances and transportation modes collected from employees	Estimated commuting distance based on industry average data
8. Upstream leased assets	Energy consumption data of certain premises collected from utility bills or meters	Estimated emissions based on industry average data, e.g., estimated energy consumption per floor area by building type

Chapter V Climate Transition Plan

A climate transition plan describes a disclosing entity's targets, actions, and resources for transitioning to a low-carbon economy, including actions to reduce GHG emissions. For some, the plan may be an integral part of their overall business strategy, driving adjustments to their business model to address climate-related risks and opportunities. For others, it may be more narrowly focused on specific product lines, business units, or a range of corporate activities, running in parallel with their overall business strategy.

Table 17: Examples of the Characteristics of an Effective Climate Transition Plan

Trait	Description
Alignment with Strategy	The transition plan is integrated into and aligned with a company's broader activities in response to climate-related risks and opportunities, and these activities in turn are part of and aligned with the company's overall business strategy
Quantitative Basis	The plan is designed to consider and help the company achieve specific low-carbon transition targets, and should be based on quantitative metrics
Effective Management Process	The company establishes approval processes, oversights, and internal accountability procedures for the plan, including clearly defined roles for the board of directors and officers in its oversight
Actionability	The plan sets out the specific initiatives and actions required for its effective implementation
Credibility	The plan includes information that enables users to assess the company's credibility, including its current capabilities, technologies, transition pathways, and financial plans
Periodic Review and Updates	The plan is reviewed at least every five years and updated as necessary to ensure its relevance and effectiveness for the company's overall strategic planning

When developing its transition plan, a disclosing entity should also adjust its strategy by setting low-carbon transition targets and priorities. These may include reducing GHG emissions across its operations or value chain, enhancing climate adaptation, and establishing climate-related targets over the short, medium, and long term.

Actions under the plan span across dimensions such as policies, business operations, and products and services.

Table 18: Examples of Actions in a Climate Transition Plan

Action	Description
Policies and Conditions	Any policies or conditions in use or planned for use, such as those related to energy consumption; the phasing out of GHG-intensive assets; climate-related considerations in procurement and supplier activities; and climate-related considerations (e.g., thresholds, targets, or limits) in lending or investment activities, along with their expected primary contributions
Business Operations	Production processes or equipment, adjustments to workforce, supply chain, and procurement; changes to office and business locations; the responsible retirement or phase-out of GHG-intensive assets; and the management of long-lived assets potentially affected by the transition to a low-emission, climate-adaptive economy
Products and Services	Optimizing the portfolio of products and services offered; categorizing or defining products and services

Chapter VI Key Disclosures

I. Climate-Related Governance

According to *Guidelines 14*, a disclosing entity that has established a holistic governance structure and internal policies for managing and overseeing sustainability-related impacts, risks, and opportunities, may consolidate its disclosures of governance elements and is not required to separately disclose the following climate-related governance information.

Key Disclosure 1: Climate-Related Governance Bodies

1. Describe the governance bodies (e.g., the board of directors, specialized committees) and management roles responsible for overseeing climate-related impacts, risks, and opportunities. This can be presented through such means as a climate-related governance structure diagram. (See the relevant sections of Annex 1: General Requirements and Disclosure Framework for details.)

2. Describe the composition of the climate-related governance bodies.

3. Describe the terms of reference of the climate-related governance bodies.

4. Describe the responsibilities and objectives of the climate-related governance bodies.

Key Disclosure 2: Skills and Competencies of Climate-Related Governance Bodies and their Members

1. Describe the skills and competencies of the climate-related governance bodies and their members in executing and overseeing the strategies and policies for climate-related impacts, risks, and opportunities.

2. Describe any measures and plans to enhance the skills of the members of the climate-related governance bodies.

Key Disclosure 3: Access of Information for Climate-Related Governance Bodies and their Members

1. Describe the information reporting processes established to ensure climate-related governance bodies and their members receive timely information on climate-related impacts, risks, and opportunities.

2. Describe how and how often climate-related information is reported to these bodies and members.

Key Disclosure 4: Oversight by Climate-Related Governance Bodies and their Members

1. Describe how climate-related governance bodies and their members oversee and manage the setting of targets, execution of strategies, and tracking of progress in addressing climate-related impacts, risks, and opportunities. This includes the relevant internal controls, oversight procedures and measures, and performance evaluations.

Key Disclosure 5: Integration of Climate-Related Factors into Decision-Making by Climate-Related Governance Bodies

1. Describe the measures and methods used by the climate-related governance bodies and their members to integrate decisions and considerations for climate-related impacts, risks, and opportunities into their oversight of strategy implementation, major transaction approval, and risk management processes.

II. Climate-Related Strategy

Key Disclosure 6: Material Climate-Related Impacts

1. Describe, in qualitative or quantitative terms, the disclosing entity’s material climate-related impacts on the economy, environment, and society.

2. Describe the measures and actions the disclosing entity has taken to monitor, prevent, manage, control, and mitigate its material climate-related impacts.

Key Disclosure 7: Climate-Related Risks and Opportunities

1. Describe the climate-related risks and opportunities the disclosing entity has identified. For each risk, specify whether it is a physical or transition risk.

2. For each climate-related risk and opportunity identified, specify the time horizon over which it is reasonably expected to have a material impact, i.e., short-term, medium-term, or long-term.

3. Explain how the disclosing entity defines short, medium, and long term, and how these definitions align with its strategic growth and resource allocation plans. (See Annex 1: General Requirements and Disclosure Framework for specific considerations in defining time horizons.)

Key Disclosure 8: Impacts of Climate-Related Risks and Opportunities on Business Model and Value Chain (Encouraged)

1. Describe the current and anticipated future impacts of climate-related risks and opportunities on the disclosing entity's business model, key suppliers, and other stakeholders.

2. Describe the areas of concentration for these risks and opportunities within the disclosing entity's business model and value chain, e.g., by geographic region, facility, or asset type.

Key Disclosure 9: Impacts of Climate-Related Impacts, Risks, and Opportunities on Corporate Strategy and Decision-Making

1. Describe the approaches used in strategy formulation and major decision-making to address climate-related impacts, risks, and opportunities, e.g., strategic decision-making process and management rules.

2. Describe the plans established to achieve relevant strategic objectives, as well as the qualitative and quantitative information used to measure progress against them. (See the "Set and Manage Targets" section in Annex 1: General Requirements and Disclosure Framework for details. This information may be disclosed on a consolidated basis with the disclosures on "Climate Transition Plan.")

Key Disclosure 10: Climate Transition Plan

1. Describe the transition plan established to address climate-related risks and opportunities, and the basic assumptions underlying the plan.

2. Describe any adjustments to current and future strategies, business models, and resource allocation in response to climate-related risks and opportunities. Examples include plans to manage or phase out carbon-, energy-, or water-intensive operations; resource allocation driven by shifts in demand or supply chains; resource allocation for business development driven by capital or additional R&D expenditure; and acquisitions or divestments.

3. Describe the measures the disclosing entity has taken or plans to take to directly or indirectly address climate-related risks and opportunities. Direct measures may include process or equipment improvements, equipment upgrades, facility relocation, and changes to product specifications, among others. Indirect measures may include collaboration with customers and supply chain partners.

4. Describe the progress made in implementing the transition plan.

Key Disclosure 11: Current Climate-Related Financial Effects

1. Provide a qualitative or quantitative analysis of the impacts of climate-related risks and opportunities on the disclosing entity's financial position, operating results, and cash flows for the reporting period. (See the relevant sections of Annex 1: General Requirements and Disclosure Framework for details.) Quantitative disclosures should present specific values or a reasonable range of values that reflect the disclosing entity's specific circumstances.

2. Disclose whether relevant risks and opportunities have a material impact on the disclosing entity's financial position, operating results, and cash flows in the subsequent fiscal year.

3. If the disclosing entity is not able to provide quantitative information on financial effects, or the effects cannot be separately identified, or quantitative information

would not be meaningful due to significant measurement uncertainties, then the disclosing entity should disclose the financial effects on qualitative terms, explain the reasons for omitting quantitative disclosures and, to the extent reasonable, provide supplementary information and explanations to help investors understand the effects. Furthermore, the disclosing entity should indicate its plan, progress, and timetable for providing quantitative disclosures.

Key Disclosure 12: Anticipated Climate-Related Financial Effects (Encouraged)

1. Disclose the impacts of climate-related risks and opportunities on the disclosing entity's financial position, operating results, and cash flows over the short, medium, and long term. (See the relevant sections of Annex 1: General Requirements and Disclosure Framework for details.)

2. Describe trends in financial position over the short, medium, and long term in the context of the disclosing entity's climate-related investment, asset disposal, and financing plans.

3. Describe trends in operating results and cash flows over the short, medium, and long term in the context of the disclosing entity's strategies for managing climate-related risks and opportunities.

4. If the disclosing entity is not able to provide quantitative information on financial effects, or the effects cannot be separately identified, or quantitative information would not be meaningful due to significant measurement uncertainties, then the disclosing entity should disclose the financial effects on qualitative terms, explain the reasons for omitting quantitative disclosures and, to the extent reasonable, provide supplementary information and explanations to help investors understand the effects. Furthermore, the disclosing entity should indicate its plan, progress, and timetable for providing quantitative disclosures.

Key Disclosure 13: Climate Adaptation Assessment

1. Describe the disclosing entity's assessment of the impacts of climate change on its strategies and business model, as well as how it responds to these impacts.

2. Describe the significant uncertainties considered when assessing climate adaptation, such as the probability and intensity of extreme weather events and policy trends.

3. Describe the disclosing entity's ability to adjust its strategies and business model to adapt to climate change over the short, medium, and long term. For example, it can describe the availability and flexibility of its current financial resources in addressing climate-related risks and opportunities; its ability to reallocate, repurpose, upgrade, or decommission existing assets; and the impact of its current and planned investments in climate-related mitigation or adaptation measures, and in adaptation-related opportunities.

4. A disclosing entity is encouraged to use scenario analysis to assess climate adaptation and to disclose the inputs, key assumptions, and analytical process used. For example:

   Inputs may include: the climate scenarios used and their sources, whether they relate to transition or physical risks, and the time horizons and business scope covered by the analysis.

   Key assumptions may include: climate-related policies in the countries or regions where the disclosing entity operates; macroeconomic conditions; national or regional factors (e.g., local weather patterns, demographics, land use, infrastructure, and natural resources); the energy usage and mix; and technological advancements.

III. Management of Climate-Related Impacts, Risks, and Opportunities

Key Disclosure 14: Processes for Managing Climate-Related Impacts, Risks, and Opportunities

1. Describe the methods for assessing climate-related impacts, risks, and opportunities.

2. Describe how to assess the likelihood, magnitude, and transmission pathways of climate-related impacts, risks, and opportunities. The description should include, for example, whether the disclosing entity considers qualitative factors, quantitative thresholds, or other criteria.

3. Describe whether and how the disclosing entity prioritizes climate-related risks relative to other types of risks.

4. Describe how to monitor climate-related impacts, risks, and opportunities, such as the management protocols and specific procedures.

5. Describe how these management procedures are integrated into the disclosing entity's overall internal management processes such as its overall risk management framework. Disclose any adjustments made to these procedures.

IV. Climate-Related Metrics and Targets

Key Disclosure 15: Climate-Related Targets

1. The disclosing entity should describe the climate-related targets it has set in accordance with relevant laws and regulations, the requirements of *Guidelines 14*, and its own needs.

2. The description of climate-related targets may include:

   The target itself (qualitative or quantitative). Quantitative targets include absolute targets (e.g., total/net GHG emissions) and intensity targets;

   The organizational scope of the target, i.e., whether it is entity-wide or specific to certain business units or regions;

   The period over which the target applies. (See the relevant sections of Annex 1: General Requirements and Disclosure Framework for details.)

   If a climate-related target involves GHG emissions reduction, it may be disclosed on a consolidated basis with the "emission reduction targets" section for Key Disclosure 18.

Key Disclosure 16: Progress Toward Climate-Related Targets

1. The disclosing entity should describe its progress toward its climate-related targets, including whether these targets have been achieved, as of the end of the reporting period.

2. The description of progress toward climate-related targets may include: the baseline period for measuring progress; any milestone or medium-term targets (if applicable); and progress against targets, which can be described qualitatively (e.g., completed, in progress, not completed) or quantitatively (e.g., percentage of completion during the reporting period). (See the relevant sections of Annex 1: General Requirements and Disclosure Framework for details.)

Key Disclosure 17: GHG Emissions

1. Disclose Scope 1, Scope 2, and Scope 3 (encouraged) GHG emissions in metric tons of carbon dioxide equivalent (tCO_2e). (Refer to Chapter IV of this Guidance for detailed methodologies on GHG emissions accounting.)

2. Disclose GHG emissions broken down by business unit or facility, country or region, and type of source (e.g., combustion, processing, electricity, heating, cooling, steam) (encouraged).

3. Describe the standards, methodologies, assumptions, and calculation tools used in GHG emissions accounting. If there is any change to these standards, methodologies, or assumptions during the reporting period, explain the reasons for the change and its specific impacts.

4. Specify the consolidation approach used for accounting GHG emissions, e.g., equity share, financial control, or operational control.

5. Disclose information on any third-party verification or assurance of the disclosing entity's GHG emissions data (if applicable).

Key Disclosure 18: GHG Emissions Reduction Practices

1. Describe the disclosing entity's emission reduction targets. (See the "Set and Manage Targets" section in Annex 1: General Requirements and Disclosure Framework for details.)

2. Describe the specific emission reduction measures or projects, such as management protocols, capital investments, and technology research.

3. Describe the effects of these reduction efforts, including the amount of GHG emissions reduced for each Scope (in tCO_2e) and (if applicable) any changes in emission intensity.

4. The disclosing entity may disclose GHG emissions reductions separately for each reduction measure.

Key Disclosure 19: Source and Quantity of Carbon Credits (if applicable)

1. Describe the source of carbon credits used by the disclosing entity, such as China Certified Emission Reductions (CCERs) and credits from inclusive carbon projects within various pilot carbon markets.

2. Disclose the amount of carbon credits used by the disclosing entity, measured in tCO_2e.

Key Disclosure 20: Surrender of Carbon Allowances (if applicable)

1. Disclose whether the disclosing entity has completed the surrender of carbon allowances in the emissions trading market during the reporting period.

2. Disclose whether the disclosing entity has been subject to any rectification orders, investigations, or penalties from relevant authorities due to issues related to the surrender of carbon allowances.

Key Disclosure 21: CCER Registration and Trading under China GHG Voluntary Emission Reduction Program (if applicable)

1. Disclose details of the projects registered under the China GHG Voluntary Emission Reduction Program (also known as the CCER scheme), e.g., the number, status, type, and estimated emission reduction volume of these projects.

2. Disclose the emission reduction volume traded under the CCER scheme.

Key Disclosure 22: Emission Reductions Registration and Trading under Other Emission Reduction Programs (if applicable)

1. Describe the names of the projects undertaken by the disclosing entity under other emission reduction programs, the type of each program, as well as the status of the projects registered and the emission reduction volume traded under these programs.

2. Disclose details of the projects under these programs, such as their number, status, type, and estimated emission reduction volume.

Appendix Template for GHG Emissions Disclosure

GHG Scope (in tCO_2e)	Reporting Period 1: 20X2	Reporting Period 2: 20X1	Accounting Standards and Methods, etc.
Scope 1 Emissions			E.g., emission factor method; specify basis and reference documents
Stationary Mobile Processes Fugitive			
Scope 2 Emissions			E.g., location-based or market-based
Scope 3 Emissions			
Cat 1: Purchased goods and services Cat 2: Capital goods Cat 3: Fuel- and energy-related activities (those not included in Scope 1 or 2) Cat 4: Upstream transportation and distribution Cat 5: Waste from operations Cat 6: Business travel Cat 7: Employee commute Cat 8: Upstream leased assets Cat 9: Downstream transportation and distribution Cat 10: Processing of sold products Cat 11: Use of sold products Cat 12: End-of-life treatment of sold products Cat 13: Downstream leased assets Cat 14: Franchises Cat 15: Investments			
Total GHG Emissions			Approach for defining organizational boundary (e.g., equity share, financial control, or operational control)

Guide No.13 for Self-Regulatory Supervision on Listed Companies of the SSE STAR Market—Compilation of Sustainable Development Reports

No. 3 Pollutant Emission

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To assist listed companies on the STAR Market in accurately understanding and applying the applicable provisions of the *Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies—Sustainability Report (Trial)* (the "*Guidelines*"), and to standardize the disclosure of information related to pollutant emission in sustainability reports, the Shanghai Stock Exchange (the "Exchange" or "SSE") has formulated this *Guide No.13 for Self-Regulatory Supervision on Listed Companies of the SSE STAR Market—Compilation of Sustainable Development Reports: No. 3 Pollutant Emission*.

Chapter I Assessment of Pollutant Emission-Related Risks and Opportunities

The risks and opportunities related to pollutant emission may have negative or positive impacts on the disclosing entity's business model, operations, strategy, financial positions, etc. A disclosing entity shall, based on its own production and operation characteristics, the environmental sensitivity of its geographical location, and in light of the actual circumstances such as the requirements of ecological and environmental management, the impacts on the natural environment, and the common demands of the affected public, implement relevant environmental management systems, take effective measures to fulfil its ecological and environmental protection responsibilities, and control environmental pollution.

The risks related to pollutant emission mainly include physical risks (such as production disruptions caused by environmental emergencies or severe air pollution) and transition risks (such as policy and legal risks, market risks).

Through the identification and assessment of risks and opportunities, a disclosing entity can analyze the financial effects of pollutant emission from a qualitative or quantitative perspective by identifying how they affect its financial performance and position.

Table 1: Examples of Risks and Impacts Related to Pollutant Emission

Examples of Risks (companies may conduct analysis based on their own circumstances)	Examples of Effects

Physical risks related to pollutant emission	1. Sudden changes in the natural environment caused by pollutant emission such as environmental emergencies or severe air pollution, preventing a clean production environment or sufficient supply of production resources 2. Risks arising from the gradual changes in the natural environment caused by pollutant emission, such as the decline in product quality and the deterioration in service quality	1. Decline or suspension of production capacity due to lack of access to a clean production environment or sufficient supply of production resources 2. Business operations and sales affected by the decline in product quality and the deterioration in service quality
Transition risks related to pollutant emission	1. Capacity constraints resulted from the total pollutant emission control 2. High environmental protection taxes incurred from large-scale pollutant emission, or the need to offset this scale through green trading. 3. Administrative penalties received from ecological and environmental authorities due to pollutant emission, such as fines, orders to suspend business for rectification, and production halts 4. Reputational and image damage caused by non-compliant emission or negative public opinion 5. Technical bottlenecks in pollutant control, such as immature pollutant monitoring or treatment technologies, and untimely adoption of pollutant control equipment and technologies 6. Stricter restriction policies regarding pollutant emission	1. Decline in revenue and profit due to capacity constraints 2. Additional green trading or investment required to address over-emission 3. Expenses incurred from administrative penalties received from ecological and environmental authorities due to non-compliant pollutant emission 4. Sales and talent impacts from reputational and image damage caused by non-compliant emission or negative public opinion 5. Increased costs of pollutant emission treatment due to immature pollutant control technologies 6. Potential impairment, early retirement of existing assets, or impact on corporate financing capacity and costs due to stricter pollutant emission restriction policies

Opportunities related to pollutants mainly include market expansion, improved resource efficiency, increased demand for products and services, and expanded financing channels.

Table 2: Examples of Opportunities Related to Pollutant Emission

Examples of Opportunities (companies may conduct analysis based on their own circumstances)		Examples of Effects
Opportunities related to pollutant emission	1. Development and application of new pollution control technologies, and implementation of clean production 2. Measures for reducing, reusing and recycling pollutants 3. The increased market demand for pollutant control in a certain field due to the requirements of environmental protection policies 4. Enhanced environmental performance to meet relevant green finance standards 5. Pollutant emission rights trading	1. Decreased costs of pollutant disposal due to improved pollution control technologies 2. Reduced costs of pollutant disposal via the practice of circular economy and the collaboration with upstream and downstream players 3. Low-cost special funds for pollutant reduction obtained due to policy and other factors 4. Low-cost financing and advantages in products or services as a result of long-term outstanding environmental performance 5. Reduced operating costs of pollution control facilities as a result of pollution and carbon reduction or efficient control measures, with additional benefits obtained through emission rights trading

For analysis, the following financial effects related to revenue may be considered: revenue from pollutant control products and services, revenue from waste recycling, government subsidies, tax breaks, and green trading, etc. The following financial effects related to costs may be considered: pollutant control technology investment, costs of operating pollutant control facilities, costs of purchasing environmental protection equipment, environmental monitoring costs and other expenses, costs of soil and groundwater remediation, fines and compensation expenses, environmental protection taxes, etc.

Table 3: Main Categories of Financial Effects Related to Pollutant Emission

Category	Description

Revenue	Revenue from pollutant control products and services, gains from waste recycling, government subsidies, tax breaks
Expense	Pollutant control technology investment, costs of operating pollutant control facilities, costs of purchasing environmental protection equipment, overhead expenses for environmental monitoring, costs of soil and groundwater remediation, fines and compensation expenses, environmental protection taxes
Assets & liabilities	Due to total emission control, environmental changes and introduction of related policies, as well as mandated emission reduction targets, certain fixed assets are subject to early retirement, resulting in the impairment or shortened depreciation period; the expenses and timing for the disposal of fixed assets may change due to technological progress, legal requirements or shifts in the market environment, leading to changes in estimated liabilities
Cash flow & others	Changes in costs of pollutant control caused by pollutant control technology investment, policy requirements, among other factors, have an impact on operating cash flows

For specific assessment methods and threshold criteria, please refer to the *Guide No. 1 - General Requirements and Disclosure Framework*. An annual assessment is not required if there are no material changes to the company's business model or to the policy and natural environment it faces. The assessment should be conducted in a manner that aligns with the company's practical circumstances and takes into account the affordability of costs.

Chapter II Calculation of Pollutant Emission

I. Common Types of Pollutants

A disclosing entity shall, in light of its industry attributes, production processes and business realities, disclose in the sustainability report the types of pollutants that have a material impact on its production and operational activities, and that are specified in the pollutant emission permit, such as key pollutants, characteristic pollutants and controlled substances specified by international environmental conventions. A disclosing entity may give priority to disclosing the details of pollutants subject to national total controls in the sustainability report. The common types of pollutants are as follows:

1. Key pollutants: pollutants that are widely present in the environment, extensively monitored, and subject to well-defined emission standards, such as air pollutants, water pollutants, and industrial noise.

2. Characteristic pollutants: specific pollutants other than key pollutants that are reflective of the pollution characteristics of particular industries or processes.

3. Other controlled pollutants as stipulated in international environmental conventions for which domestic legislation has been enacted.

Table 4: Examples of Common Pollutant Types

Type	Pollutant
Key pollutant	Air pollutants such as particulate matter (PM), nitrogen oxides (NOx), and sulfur oxides (SOx), volatile organic compounds (VOCs); Water pollutants such as chemical oxygen demand (COD), biochemical oxygen demand (BOD), ammonia nitrogen (NH_3-N), total nitrogen (TN), and total phosphorus (TP); Noise pollution; (Solid wastes may be disclosed under the topic of waste disposal)
Characteristic pollutant	Heavy metals, non-methane hydrocarbons, hydrogen cyanide, hydrogen sulfide, etc.
Controlled pollutants as stipulated in international environmental conventions	Persistent organic pollutants (POPs), mercury (Hg), etc.

II. Scope of Pollutant Emission Calculation

The scope of pollutant emission calculation shall be consistent with that of the consolidated financial statements of the disclosing entity. If not, companies included in the calculation scope shall be listed.

While allowing for the full consideration of cost affordability in the early stage of consolidating and calculating pollutant emissions, the disclosing entity shall at least include in its calculation scope the entities listed on the registry of enterprises legally obligated to release environmental information and within the scope of consolidated financial statements.

III. Method for Calculating and Disclosing Pollutant Emission

To ensure the conciseness and comprehensibility of data on pollutant emission in the sustainability report, the disclosing entity may calculate and disclose the pollutant emission by pollutant type. For example, it is acceptable to make a list of pollutants and disclose their emission volume on a separate basis. For the disclosure of quantitative information on pollutant emission within China, please refer to the Appendix. Quantitative information on pollutant emission by overseas subsidiaries or assets may be disclosed in compliance with local regulations of their host countries or regions, or common international standards.

Disclosing entities involved in diverse business sectors and business types or with complicated pollutant emission circumstances, may categorize, aggregate and disclose their pollutant emission results by:

1. Business segment;

2. Type of pollutant, such as air pollutants, water pollutants, and industrial noise;

3. Type of facility, such as production facilities, auxiliary facilities, and residential facilities;

4. Source of pollutant, such as production, daily life, agriculture, and transportation;

5. Type of activity, such as production, sales, and research and development.

IV. Source of Data on Pollutant Emission

The disclosing entity may refer to the following methods for quoting, calculating, summarizing or compiling relevant information:

1. Total emission during the reporting period: For pollutants whose total emission has been disclosed in the management information of pollutant emission permit, such information may be quoted and consolidated. For pollutants without such disclosure, companies with stable monitoring equipment and complete monitoring data are encouraged to prioritize the use of supervisory monitoring data or actual measurement to estimate total pollutant emissions; for companies with relatively fixed production processes and readily available raw material and product data, the emission may be calculated using methods such as material balance or

pollutant-emission coefficient; in other cases, the empirical coefficient method may be employed to estimate total pollutant emissions.

2. Certified total emission: The total annual permitted emission of the pollutant as certified in the pollutant emission permit shall be consolidated.

3. Over-emission: Over-emission refers to a situation in which the disclosing entity's emission rate and/or concentration of air pollutants or surface water pollutants, the degree of soil and groundwater contamination, or the level of noise exceeds the threshold values stipulated in the applicable emission standards for the pollutants. The disclosing entity may disclose the frequency and multiple of over-emission in pollutant emission monitoring data (including records of exceedances from both manual and automatic monitoring for organized and unorganized emission), and may reference records of over-emission documented in the annual pollutant emission permit compliance report for the reporting period.

4. Emission reduction targets: Emission reduction targets can be classified into voluntary emission reduction targets (formulated by the disclosing entity voluntarily and independently for the purpose of achieving green development) and prescribed emission reduction targets (targets that the disclosing entity should achieve in accordance with laws and regulations, such as regional total reduction targets for air pollutants). The pollutant reduction targets mainly include year and metrics of reduction target. Voluntary pollutant reduction targets may be set at the entity's own discretion in terms of total value or intensity: total values are measured in tons, kilograms or other commonly-used suitable units; intensity is calculated on the basis of output, output value, industry added value, income, or cost and expense.

Chapter III Key Disclosure Items

The *Guidelines* prescribes that any disclosing entity that has already established holistic governance structure and internal rules to manage and oversee pollutant emission-related impacts, risks, and opportunities may make consolidated disclosures of the contents specified in the governance elements in lieu of disclosures for the individual topics.

Information regarding the pollutant emission-related governance, strategy, impact, risk and opportunity management as well as metrics and targets, may be disclosed in accordance with the relevant provisions of the *Guide No. 1 - General Requirements and Disclosure Framework*.

Key Disclosure Item 1: Information on Pollutant Emission

A disclosing entity shall disclose the pollutant emission information during the reporting period:

1. A disclosing entity shall, in light of its industry attributes, production processes and its own actual conditions, disclose in the sustainability report the types (such as air pollutants and water pollutants), names (such as nitrogen dioxide, sulfur dioxide and total nitrogen), total emission, certified total emission, over-emission (which can be presented in table form or summarily) and environmental performance grade (if any) of or in relation to the pollutants that have a significant impact on its production and operation and are covered by the pollutant emission permit, such as key pollutants, characteristic pollutants and controlled substances specified by international environmental conventions. Please refer to the relevant content in Appendix 1. Disclosure of pollutant emission intensity data is encouraged, such as pollutant emission per unit of output.

2. A disclosing entity with complex business types is encouraged to present details on its pollutant emission in the dimensions of business units or facilities, type of source, type of pollutants, or type of activity.

3. The technologies and methods employed to treat pollutants, as well as the building, operation and results achieved by pollution control facilities (e.g., reduction in the concentration, intensity or total amount of emission).

4. A disclosing entity is encouraged to explain the consolidation methods and data sources for pollutant emission (such as the operating entities related to pollutant emission data), as well as the standards and methods on which pollutant emissions are based.

Key Disclosure Item 2: Information on Pollutant Emission Reduction

A disclosing entity shall disclose the reduction targets of key pollutants and the specific measures taken to achieve the relevant targets, which may include the following contents. For specific details, please refer to the relevant contents in Appendix 2:

1. Names of pollutants included in the emission reduction targets.

2. Types of emission reduction, that is, voluntary or prescribed emission reductions.

3. Emission reduction targets, including the target year and target emission reduction, may be disclosed in the form of total value targets, intensity targets, concentration reduction targets, or other types of targets. Certain industries, which face difficulties in reducing pollutant emissions in the short term or setting emission reduction targets due to current process limitations, safety design, and material restrictions, may provide a comprehensive explanation of the relevant circumstances.

4. Measures and investments to achieve emission reduction targets, including engineering measures and management protocols, such as improving existing production equipment and processes, adopting advanced pollutant control equipment or technologies, and upgrading pollutant monitoring systems. The application of emission reduction technologies and funding may also be disclosed.

5. The specific achievements of the above-mentioned pollutant reduction measures (e.g. reduction in the concentration, intensity or total amount of emission, and the improvement to the community) and the progress towards the reduction targets.

Key Disclosure Item 3: Impact of Pollutant Emission on Such Groups as its Employees and Local Communities

A disclosing entity shall disclose the impact of pollutant emission on groups such as employees and local communities. The impact of pollutant emission on employees can be disclosed in conjunction with employee-related topics. Where there has been major complaints from local communities or other groups due to environmental pollution issues, the relevant information of the complaints may be disclosed.

Key Disclosure Item 4: Information on Environmental Compliance

A disclosing entity shall disclose the circumstances where it has received major administrative penalties or been held criminally responsible for pollutant emission during the reporting period, as well as whether there are any significant deficiencies in its environmental monitoring plans and risk management measures. It is encouraged to disclose the remediation measures taken.

Appendix 1: Example of Pollutant Emission Disclosure

Appendix Table 1: Total Pollutant Emission Data (Example)

Type of Pollutant	Names of Pollutants	Annual Total Emission	Certified Annual Total Emission? (Y/N)	Certified Annual Total Emission	Over-emission
Air pollutant					
	Particulate Matter (PM)	(ton)		(ton)	
	Sulfur Oxides (SOx)	(ton)		(ton)	
	Nitrogen Oxides (NOx)	(ton)		(ton)	
	Volatile Organic Compounds (VOCs)	(ton)		(ton)	
	Others	(ton)		(ton)	
Water pollutant	Total amount of industrial waste water	(m^3)		-	
	Total amount of sanitary waste water	(m^3)		-	
	Chemical Oxygen Demand (COD)	(ton)		(ton)	
	Biochemical Oxygen Demand (BOD)	(ton)		(ton)	
	Ammonia Nitrogen (NH_3- N)	(ton)		(ton)	
	Total Nitrogen (TN)	(ton)		(ton)	
	Total Phosphorus (TP)	(ton)		(ton)	
	Others	(ton)		(ton)	

Note: The company may specifically identify the types of key pollutants at its discretion based on actual emission conditions and its pollutant emission permit.

Appendix 2: Example of Disclosure Framework for Progress towards Emission Reduction Targets

Targets relating to pollutant emission may be set as short-term, medium-term or long-term quantitative or qualitative targets based on its actual conditions, with specific deadline and base year defined. The progress during the reporting period may include the target values and the actual values for the current year.

Appendix Table 2: Quantitative Emission Reduction Targets and Progress (Example)

Pollutant Type / Name	Reduction Target					Measures Taken in the Reporting Period	Progress in the Reporting Period
	Base Year	Target Year	Nature	Time Horizon	Description		
Air pollutants (inc. NOx, VOCs)	2025	2025	Quantitative	Medium	The emission of air pollutants per unit output/product be reduced by 20%	Add a new set of RTO equipment	The emission of air pollutants per unit output/product reduced by 2%

Appendix Table 3: Qualitative Emission Reduction Targets and Progress (Example)

Pollutant Type / Name	Reduction Target				Measures Taken in the Reporting Period	Progress in the Reporting Period
	Target Year	Nature	Time Horizon	Description		
Air pollutants (inc. VOCs)	2035	Qualitative	Long-term	Reduce the emission of air pollutants and enhance the level of green new quality productive forces	Replace oil-based paint with water-based paint that has a low VOCs content	The oil-based paint used in the XX production line and products has been replaced, reducing the VOCs content in the paint to XX% and enhancing the level of green production

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No. 4 Energy Utilization

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To assist listed companies on the STAR Market in accurately understanding and applying the applicable provisions of the *Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies—Sustainability Report (Trial)* (the "*Guidelines*"), and to standardize the disclosure of information related to energy utilization in sustainability reports, the Shanghai Stock Exchange (the "Exchange" or "SSE") has formulated this *Guide No.13 for Self-Regulatory Supervision on Listed Companies of the SSE STAR Market—Compilation of Sustainable Development Reports: No. 4 Energy Utilization*.

Chapter I Assessment of Energy-Related Risks and Opportunities

Companies use a diverse range of energy resources, such as coal, petroleum, natural gas, solar, wind, hydro, biomass, geothermal, and nuclear energy. Energy-related risks and opportunities of a disclosing entity may have negative or positive impacts on its business model, operations, development strategy, or financial position. Disclosing entities shall use energy in an integrated and efficient manner, enhance conservation management throughout the energy usage process, and promote energy reduction, reuse, and recycling in production and distribution processes.

I. Energy-Related Risks and Opportunities

(I) Energy-Related Risks

Energy-related risks mainly manifest in the impacts of energy shortages, supply disruptions, and energy price fluctuations on companies. These risks may have financial effects on disclosing entities, such as direct asset losses and indirect implications from supply chain disruptions.

Energy-related physical risks are those affecting the stability of energy supply due to dependence on specific energy sources or changes in the natural environment. Examples include insufficient recoverable reserves of fossil fuels and increasing extraction difficulty, as well as extreme weather events damaging power transmission networks, refineries, and other energy infrastructure.

Transition risks are those related to energy utilization, including policies, laws, technologies, and market conditions, leading to energy price fluctuations and increased operating costs. Examples include restrictions on energy imports caused by geopolitical instability, carbon emission caps and reductions in new energy subsidies.

An annual assessment is not required if there are no material changes to the company's business model or to the policy and natural environment it faces. The assessment should be conducted in a manner that aligns with the company's practical circumstances and takes into account the affordability of costs.

Table 1: Examples of Energy-Related Risks

Examples (company may conduct analysis based on its own circumstances)

Energy-related physical risks	1. Damage to energy infrastructure, disruption of energy supply, or impediments to energy production caused by extreme weather, geological disasters, or other natural environmental changes. 2. Dependence of certain renewable energy technologies on specific resources. For example, changes in the extraction and transportation of lithium or cobalt—essential resources for energy storage—may affect the continuity and stability of energy supply; sunlight fluctuation will have a direct impact on the efficiency of solar and photovoltaic power generation. 3. Changes in regional natural conditions, such as insufficient recoverable reserves of fossil fuels and escalating extraction challenges.
Energy-related transition risks	1. Impacts from environmental protection and public policies. Tightened fossil fuel policies would potentially drive GHG emission prices up; heightened energy efficiency and consumption requirements may increase operational costs. 2. Shifts in customer preferences. Reduced market demand for fossil fuels may decrease revenues of fossil fuel companies, lower the sales and income of manufacturers using fossil fuels, or pose impairment risks for fossil fuel-related production and service facilities. 3. Development of energy alternatives or new low-carbon energy (e.g., hydrogen energy, energy storage) increase companies' capital expenditures on technology development.

(II) Energy-Related Opportunities

Energy-related opportunities refer to the potential positive impacts of energy utilization on disclosing entities. For example, technological innovation can drive more efficient energy use and improve energy efficiency, thereby creating opportunities by cost savings, development of new products and services, and expansion into international markets. Energy-related opportunities vary depending on the region, market, and industry in which the disclosing entity operates. Typical opportunities may involve, among others, markets, energy resource efficiency, products and services, capital flows and financing, as well as reputation.

Table 2: Examples of Energy-Related Opportunities

Examples (company may conduct analysis based on its own circumstances)

Energy-related opportunities	1. By using energy-saving equipment, implementing energy cascade utilization, and establishing energy management systems, companies can enhance energy efficiency, reduce their reliance on energy resources, and lower energy procurement costs. Adopting renewable energy, hydrogen energy, and energy storage solutions, companies can further decrease operational expenses. 2. Due to financial institutions' green financial products and investor preferences, companies and projects with high energy efficiency and strong environmental performance are more likely to secure low-cost financing support. 3. Scientific energy utilization and management help build a positive image, win customer trust, enhance industry influence and brand value, and open up new product and market opportunities. 4. Companies can enjoy subsidies, tax benefits, and other policy incentives, including government subsidies, tax exemptions, or low-interest loans for clean energy and energy efficiency projects.

Energy-related opportunities, including innovations in renewable energy technologies and advancements in energy storage, allow companies to reduce energy costs and develop new energy products. These opportunities may also affect companies' strategic decisions on infrastructure investment and supply chain planning, or drive them to adjust product strategies, develop low-carbon product lines, and improve brand competitiveness through green certificates.

Disclosing entities are not required to assess energy-related risks and opportunities across their entire value chain annually. Instead, they may conduct such assessments periodically or on an ad hoc basis based on their specific circumstances. However, reassessment shall be considered when material events or changes occur.

Table 3: Scenarios for Company to Reassess Energy-Related Risks and Opportunities Across the Value Chain

Material Changes	Examples
Material changes in energy mix	Switching from coal to natural gas as part of energy substitution efforts; shifting from traditional grid electricity procurement to self-built distributed photovoltaic power generation.
Material changes in business model, activities, or corporate structure	Seeking mergers or acquisitions that expand the company's value chain.

Material changes in energy policies within the supply chain	Making major adjustments to the company's energy supply sources and mix when energy suppliers in the value chain are affected by unexpected policy or regulatory changes.

II. Financial Effects of Energy-Related Risks and Opportunities

The financial effects of energy-related risks and opportunities on a disclosing entity stem from such risks and opportunities the entity faces and are related to the entity's strategies and decisions in managing them. These risks and opportunities may have impacts on the entity's financial position, operating results, and cash flows, including both current and expected financial effects.

The financial effects of energy-related risks and opportunities mainly involve the following financial categories: revenues and expenses (income statement); assets and liabilities (balance sheet); and cash inflows and outflows (cash flow statement).

Table 4: Major Categories of Financial Effects Related to Energy Utilization

Category	Description
Revenue	Extreme weather events can impact or even disrupt energy supply, thereby affecting revenue. As renewable energy and green low-carbon technologies receive strong national support, companies should consider the potential impacts of energy utilization on revenue while identifying opportunities to increase or create income.
Expenses	Future energy transition requires increased R&D expenditures on new technologies, including strengthening research and application of hydrogen energy, energy storage, and biomass fuels.
Assets and Liabilities	New energy efficiency metrics, climate change policies, and other relevant policies may require companies to retire certain fixed assets early, leading to asset impairment or shorter depreciation period. Changes in estimated liabilities may also arise due to adjustments in the disposal costs and timing of fixed assets caused by technological advances, legal requirements, or market shifts.
Cash Flows, etc.	Extreme weather, natural disasters, and policy requirements can cause fluctuations in energy prices and transportation costs, affecting cash flows from operating activities.

Chapter II Method for Calculating Comprehensive Energy Consumption

A disclosing entity can calculate and disclose its comprehensive energy consumption in accordance with policy requirements issued by competent national authorities or applicable national standards. The scope of calculation covers all forms of energy actually consumed by the disclosing entity, including both direct energy (coal, gasoline, diesel, natural gas, liquefied petroleum gas, etc.) and indirect energy (electricity, steam, hot water, etc.). Energy losses during internal storage, conversion, and distribution (including external sales) shall be included in the calculation. Energy produced from energy processing and conversion, such as electricity generated from waste heat, shall be deducted from the comprehensive energy consumption, yet energy consumed by the waste heat power generation system shall be added.

Raw data for the calculation include energy meter readings, data records from online energy consumption monitoring systems, energy statistical reports, shipping documents, and energy bills.

The comprehensive energy consumption is generally calculated using Formula (1):

$$E = \sum_{i=1}^{n} (E_i \times k_i)/1000 \quad \cdots\cdots (1)$$

Where:

E — Comprehensive energy consumption, in metric tons of coal equivalent (tce);

E_i — Actual consumption of the i-th energy type in production and/or service activities, in kilograms (kg) for solid and liquid fossil fuels, in cubic meters (m^3) for gaseous fossil fuels, in kilowatt-hours (kWh) for electricity, and in megajoules (MJ) for heat;

k_i — Coal equivalent coefficient for the i-th energy type, in kilograms of coal equivalent per kilogram (kgce/kg) for solid and liquid fossil fuels, in kilograms of coal equivalent per cubic meter (kgce/m^3) for gaseous fossil fuels, in kilograms of coal equivalent per kilowatt-hour (kgce/kWh) for electricity, and in kilograms of coal equivalent per megajoule (kgce/MJ) for heat;

i — Number of energy types.

For each type of fuel consumed, the coal equivalent coefficient shall be calculated first with its as-received lower heating value using Formula (2):

$$k_i = \frac{NCV_i}{29307.6} \quad \cdots\cdots (2)$$

Where:

NCVi — Average lower heating value of the i-th fuel type, in kilojoules per kilogram (kJ/kg) for solid and liquid fossil fuels, and in kilojoules per cubic meter (kJ/m³) for gaseous fossil fuels;

29307.6 — Lower heating value of coal equivalent, in kilojoules per kilogram of coal equivalent (kJ/kgce).

In calculating coal equivalent coefficient, the lower heating value of energy shall be measured or provided by the supplier. If measured values are unavailable, the coefficient stated in relevant national standards may be taken as reference. For self-produced indirect energy, the coefficient shall be determined based on actual input-output calculations.

Chapter III Key Disclosure Items

Pursuant to the *Guidelines*, if a disclosing entity has created a holistic governance structure and internal rules for managing and supervising the impacts, risks, and opportunities related to energy utilization, it may integrate the disclosure of governance elements without disclosing the governance of energy utilization separately.

Information concerning the governance, strategy, impacts, risk and opportunity management, as well as metrics and targets related to energy utilization, may be disclosed in alignment with *Guide No. 1 - General Requirements and Disclosure Framework*.

Key Disclosure Item 1: Basic Information on Energy Usage

(1) Total energy consumption (calculated in metric tons of coal equivalent) by type of direct and indirect energy (e.g., coal, electricity, gas, or oil)

(2) Energy mix

(3) Total energy consumption intensity (e.g., calculated per unit of revenue or output)

The above information can be disclosed with reference to the following table:

Table 5: Example of Energy Usage Summary (company may determine the energy types based on its own circumstances)

Disclosure Items	Unit	Value	Parameter Source/Basis
Basic information on energy usage			
Direct energy consumption	tce		
Indirect energy consumption	tce		
Total energy consumption	tce		
Comprehensive energy consumption per unit of revenue/product/output value	tce/output (tce/RMB 10,000 yuan)		

Notes: 1.Where disclosures are made by energy type or category, the specific data on the use of each energy source and the corresponding standard coal equivalent data may be disclosed separately.

Key Disclosure Item 2: Clean Energy Usage

Companies shall disclose the types, total volume, and proportion of clean energy consumed, such as wind, solar, hydro, geothermal, biomass, and ocean energy. The proportion of clean energy can be calculated uniformly after converting all types of clean energy using the coal equivalent coefficient.

The above information can be disclosed with reference to the following table:

Table 6: Example of Clean Energy Usage Summary (company may determine the clean energy types based on its own circumstances)

Disclosure Items	Unit	Value	Coal Equivalent (Unit: tce)	Proportion of Total Clean Energy Usage or Clean Energy Type
Clean energy usage	tce			
Including: wind energy	MWh			
...				

Notes: 1. Companies may further disclose detailed usage of each type of clean energy based on the principle of materiality.

2. Companies may voluntarily disclose the proportion of clean energy in electricity procured from the state grid. The usage of green certificate electricity, independently procured green power, or self-generated and self-consumed green electricity may reflect clean energy consumption and hence can be disclosed accordingly.

Key Disclosure Item 3: Energy Conservation Targets and Specific Actions

1. Energy conservation targets, such as absolute or intensity-based targets.

A disclosing entity can select metrics from dimensions including energy consumption intensity, energy utilization efficiency, and proportion of renewable energy. Examples include comprehensive energy consumption per unit of revenue/product/output value, reduction rate of comprehensive energy consumption, and proportion of renewable energy usage to total energy consumption. The selection of metrics should take into account industry characteristics, the entity's operational contexts, and relevant policy standards to ensure relevance and comparability. Companies may, in line with their own development strategies, disclose other energy conservation targets in response to relevant risks and opportunities, and explain the basis and rationale for setting such targets.

Table 7: Examples of Energy Conservation and Emission Reduction Targets

Target Metric	Unit	Baseline	20XX (Year) Target	Progress During the Reporting Period
Electricity consumption per unit of revenue	MWh / RMB 10,000 yuan		Reduced by XX%	Reduced by XX%

2. Specific energy conservation actions include but are not be limited to purchasing energy-saving production equipment, lighting systems, and temperature control devices, retrofitting existing equipment for energy-saving purposes, reusing waste heat and residual pressure, and adopting energy cascade utilization. A disclosing entity may disclose the energy conservation actions taken and their expected outcomes.

Examples of major actions are as follows:

Table 8: Examples of Energy Conservation Actions

Category	Examples	Examples of Key Performance Metrics (Quantitative/Non-Quantitative)	
Energy-saving production equipment	In procurement activities, give preference to high-efficiency motors, inverter-driven air compressors, pumps, fans, and other key power equipment that comply with national energy efficiency standards (e.g., GB 18613); select devices with advanced energy-saving technologies (e.g., permanent magnet synchronous technology, and IE4/IE5 ultra-high efficiency grades) for new projects or equipment upgrades.	The company has replaced XX outdated motors with high-efficiency motors in production lines.	Estimated annual electricity savings: XX kWh
Energy-saving lighting systems	Phase out incandescent/fluorescent lamps entirely; promote LED lighting in plants/offices /workshops/warehouses; adopt intelligent control systems with	The company has completed LED retrofitting in plant public areas and workshops, covering	Comprehensive energy-saving rate: Over XX%

	light sensors/sound controls/timers/zoning functionalities.	XX lamps.	
Energy-saving temperature control devices	Select high-efficiency air conditioning systems such as magnetic bearing chillers and variable refrigerant flow units; apply high-efficiency heat pumps for heating/ventilation systems; install intelligent temperature control systems for critical equipment.	The company has replaced screw chillers with magnetic bearing chillers at a production base.	Annual electricity savings: XX kWh
Waste heat and residual pressure recovery	Systematically recover waste heat from kiln flue gas, process exhaust, air compressors, steam condensate, blast furnace gas pressure (through TRT), as well as chemical gas pressure.	The company has installed a top pressure recovery turbine (TRT) for blast furnace gas in a production line.	Annual power generation: XX kWh Annual coal reduction: XX tce
Application of technologies	Install waste heat boilers to generate steam for power generation; use heat pump technology to upgrade low-grade waste heat; implement closed-loop recovery of steam condensate; construct an organic rankine cycle (ORC) system for residue pressure power generation.	A factory has utilized medium-temperature exhaust from a reactor for ORC power generation.	Annual power generation: XX kWh

Note: The categories and content in this table are for illustrative purposes only. Each company shall customize actions according to its own circumstances. Quantitative outcomes can be calculated with reference to the *Guidance on Implementation of Measurement and Verification of Energy Savings GB/T 32045—2015* and other applicable standards.

3. Specific challenges encountered in energy utilization (if applicable).

A disclosing entity may disclose the challenges encountered in energy utilization based on its own circumstances, such as challenges related to energy supply concentration, stability, energy costs, energy management and technology, or talent and capital investment.

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No. 5 Water Utilization

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To assist listed companies on the STAR Market in accurately understanding and applying the applicable provisions of the *Guidelines No. 14 of Shanghai Stock Exchange for Self-Regulation of Listed Companies—Sustainability Report (Trial)* (the "*Guidelines*"), and to standardize the disclosure of information related to water utilization in sustainability reports, the Shanghai Stock Exchange (the "Exchange"or "SSE") has formulated this *Guide No.13 for Self-Regulatory Supervision on Listed Companies of the SSE STAR Market—Compilation of Sustainable Development Reports: No. 5 Water Utilization*.

Chapter I Assessment of Water-Related Risks and Opportunities

Water-related risks and opportunities of a disclosing entity may have negative or positive impacts on its business model, operations, development strategy, or financial condition. Companies shall use water resources in an integrated and efficient manner, enhance conservation management throughout the water usage process, and promote water reduction, reuse, and recycling in production and distribution processes.

I. Water-Related Risks and Opportunities

(I) Water-Related Risks

Water-related risks primarily include physical and transition risks. These may involve water quantity (like scarcity) and quality issues (such as suitability for use, need for pretreatment) within a basin or region.

Table 1: Examples of Water-Related Risks

Type	Examples (company may conduct analysis based on its own circumstances)
Water-related physical risks	1. Reduction in asset value caused by drought. 2. Unavailability of clean water resulting from sudden water contamination incidents. 3. Business shutdown or relocation in the absence of alternative water sources. 4. Direct disruption to major water-dependent processes such as agricultural irrigation, industrial cooling, and product cleaning. For example, water scarcity may constrain agricultural irrigation, leading to reduced output. 5. Deteriorating water quality necessitates increased investment in water treatment—such as pretreatment facilities and wastewater reuse systems—incurring additional pretreatment costs.

Type	Examples (company may conduct analysis based on its own circumstances)
Water-related transition risks	1. Tightening regulations or policies (e.g., water supply adjustments such as changes in water allocation or usage restrictions, enhanced or new water withdrawal permits, stricter wastewater discharge standards, and amendments to water quality regulations). 2. Cost increases arising from changes in water supply, demand, and water price, including fluctuations in water availability and pricing. 3. Transition from water-intensive products or services to more efficient technologies or advancement in water purification methods may render existing technologies obsolete and increase R&D expenses. 4. Production activities (or products/services) that affect water resources may trigger complaints from stakeholders (e.g., consumers, investors, and local communities) or lead to public incidents. Growing water scarcity heightens exposure to reputational risks, while declining water availability and quality exacerbate competition for clean water, straining relations between companies and local communities.

A company may assess water-related risks in a targeted manner through the following steps.

Step 1: Understand the company's current water usage data across various business processes and identify key processes in the entire workflow that are dependent on or have an impact on water resources.

Table 2: Examples of Water Usage by Business Processes

Business Process	Examples of Water Usage
R&D	Water is used for experiments, research, and testing during the R&D of new products and the improvement of existing ones.
Production	The company's production process directly relies on the availability and quality of water, which serves as a core production input. Water is also used as an auxiliary resource in activities like cleaning and equipment cooling.
Sales and Logistics	Water acts as a supporting resource in logistics and warehousing, such as for cleaning transport vehicles, product packaging, and sales experiences at retail stores.
…	…

Step 2: Understand the current water environment and relevant water usage policies in the regions where the company operates, and apprehend local water usage requirements and restrictions, so as to further evaluate and identify operational sites located in water-scarce or other high-risk areas.

Water risks are largely contingent on local environment, which can be the focus of the company's attention. In water-scarce areas, ecosystems are especially vulnerable to water consumption. Water withdrawals beyond the natural replenishment capacity, or water consumption surpassing the ecosystem's carrying capacity, can trigger cascading ecological issues, including groundwater decline leading to land subsidence, interruption of river flows damaging aquatic habitats, and wetland drying exacerbating regional droughts.

By identifying operational sites facing significant water stress, the company can determine the importance and priority of water risk management measures across different geographical areas.

Table 3: Examples of Physical Water Risk Assessment Metrics for Basins Where Operations Are Located

Risk Type	Examples of Common Assessment Metrics	Source
Physical risk	Evaluation of water scarcity based on water availability and demand	E.g., Ministry of Water Resources' *China Water Resources Bulletin*, regional water resources bulletins
	Frequency of droughts and floods	E.g., Ministry of Water Resources' disaster and hydrology data
	Regional water quality	E.g., Ministry of Ecology and Environment's water quality data, National Surface Water Quality Automatic Monitoring and Real-Time Data Release System
…	…	…

Step 3: Conduct a comprehensive analysis of the company's water usage, business criticality, and specific regional conditions to identify operational sites where water-related risks are concentrated and assess potential financial impacts, thereby tailoring management measures.

Table 4: Examples of Comprehensive Water-Related Risk Assessment for Operational Site

Operational Site	Business Criticality	Business Water Usage	Regional Water Availability Classification	Regional Water Quality Classification	Comprehensive Assessment Result
Region A	Critical	High proportion of total corporate water usage	Water-scarce region	Class I	Level 1 water risk; prioritize water conservation programs
Region B	Critical	High proportion of total corporate water usage	Non-water-scarce region	Class III	Level 2 water risk; continuously monitor changes in regional water quality
Region C	Non-core operational site	Low proportion of total corporate water usage	Water-scarce region	Class II	Level 3 water risk; non-core operational site; maintain ongoing monitoring
		…	…		…

Note: The text and values in this table are for illustrative purposes only. Each company shall customize assessments according to its own circumstances. For instance, regional water quality classifications can be based on the categorization used in the National Surface Water Quality Automatic Monitoring and Real-Time Data Release System.

(II) Water-Related Opportunities

Water-related opportunities are primarily reflected in new market development, improved resource utilization efficiency, and increased demand for products and services.

Table 5: Examples of Water-Related Opportunities

Type	Examples (company may conduct analysis based on its own circumstances)

Type	Examples (company may conduct analysis based on its own circumstances)
Water-related opportunities	1. New market emerges. For instance, regions with poor water quality may exhibit higher demand for household water filtration systems; areas with high leakage rates could require technical solutions such as smart water management systems. 2. Rising demand for water-saving equipment and wastewater treatment technologies in industrial and agricultural sectors allows related enterprises to increase market share and competitiveness. 3. Proactive measures in water risk management may lead to partnerships with enterprises that engage in supply chain water management. 4. Improving utilization efficiency of water resources directly reduces fresh water consumption and lowers water procurement expenses. 5. By optimizing water usage processes and introducing water recycling systems, treated wastewater can be reused in production or other non-potable applications. This enhances water reuse rates, reduces water waste, and decreases wastewater treatment and discharge costs. 6. Providing professional services such as water audits, water-saving solution design, and wastewater treatment operation and maintenance to other market participants can address market gaps and create new profit growth opportunities. 7. Enterprises and projects demonstrating high water usage efficiency and sustainable water management capabilities can attract financial support for technology R&D, equipment upgrades, and business expansion, accelerating their growth. 8. Establishing a differentiated advantage in water-scarce regions by producing water-efficient or water-saving products or investing in local water improvement is more likely to strengthen local customer loyalty and elevate brand value and reputation.

An annual assessment is not required if there are no material changes to the company's business model or to the policy and natural environment it faces. The assessment should be conducted in a manner that aligns with the company's practical circumstances and takes into account the affordability of costs.

II. Financial Effects of Water-Related Risks and Opportunities

The financial effects of water-related risks and opportunities on a disclosing entity stem from such risks and opportunities the entity faces and are related to the entity’s strategies and decisions in managing them. These risks and opportunities may have effects on the entity’s financial position, financial performance and cash flows, including financial impacts in the current year and expected financial impacts. Taking water scarcity as an example, inadequate water resources may disrupt

business operations. The corresponding expected financial impact may be estimated qualitatively or quantitatively by considering the frequency of local water scarcity, the severity of individual occurrences, and the economic losses resulting from business disruptions.

The financial effects of water-related risks and opportunities mainly involve the following financial categories: revenues and expenses (income statement); assets and liabilities (balance sheet); and cash inflows and outflows (cash flow statement).

Table 6: Major Categories of Financial Impacts Related to Water Utilization

Category	Description
Revenue	Water scarcity or quality issues can disrupt production and reduce output, directly affecting corporate revenue. Insufficient water supply may force companies to reduce production capacity. In areas identified as over withdrawn in terms of water resources (e.g., surface water or groundwater), the inability to secure new water withdrawal permits can hinder potential business expansion. Proactive water management, including investing in water-saving technologies, can open up new revenue streams, such as income from wastewater recycling technologies.
Expenses	Water scarcity or pollution can escalate water withdrawal and treatment costs, adding to operating expenses. Higher water prices, water resource taxes, or fines for environmental non-compliance can further inflate expenditures. Companies may need to augment capital expenditures to tackle water risks, such as equipment upgrades or alternative water source projects. Comprehensive management in water-overwithdrawn regions—such as industrial restructuring, enhanced water conservation, water source replacement, stricter water regulation, and water rights trading—may modify operating costs. Efficient water management (e.g., water recycling) can reduce production costs in the long term.
Assets and liabilities	Water scarcity could result in asset impairment and could restrict the use of high water-consuming equipment. Penalties for non-compliant water usage, e.g., unpermitted water withdrawal or exceeding pollution thresholds, might invoke fines, litigation compensation, and other contingent liabilities.
Cash flows, etc.	Extreme weather or policy requirements can cause variations in water withdrawal costs, water treatment expenses, and water resource taxes, affecting cash flows from operating activities.

Chapter II Common Method for Calculating Water Usage

I. Water Withdrawal Volume

Water withdrawal volume is the amount of water obtained from various water sources or channels, including both conventional and non-conventional sources. Companies can calculate it based on their own available data.

Conventional water sources (i.e., fresh water) refer to fresh water withdrawn from natural environments or provided by municipal water supply facilities.

Non-conventional water sources include reclaimed water (i.e., sewage or wastewater that has been treated to meet specific water quality standards and requirements for reuse), harvested rainwater, desalinated seawater, mine (pit) water, and brackish water. Among these, if non-conventional water sources are used for non-production purposes (such as greening, cleaning, and employee daily use), they may be excluded from water withdrawal volume calculations. If used for production purposes (such as cooling, cleaning, and process water), they are generally included in water withdrawal volume calculations. Disclosing entities may also convert non-conventional water sources into equivalent conventional water sources at a specified ratio to calculate water withdrawal volume, based on requirements from national authorities or industry practices.

$$V_i = \sum_{j=1}^{n} V_{ij}$$

Where:

Vi – Water withdrawal volume during the statistical period, in metric tons

Vij – Water withdrawal volume of a water-consuming unit during the statistical period equals the sum of withdrawal volume from various water sources, in metric tons. Here, “j” represents different water sources.

II. Water Consumption Volume

Water consumption volume refers to the quantity of water that is consumed or lost in various forms during production and operational activities and cannot return to surface water bodies or aquifers. This figure can generally be calculated as the water withdrawal volume minus the water discharge volume (i.e., the volume of water treated to meet specific standards and released back to surface water, groundwater, seawater, or third parties). It reflects a company’s overall impact on the water availability of downstream users.

$$V_t = V_i - V_{\mathrm{d}}$$

Where:

V_t – Water consumption volume during the statistical period, in metric tons

V_i – Water withdrawal volume during the statistical period, in metric tons

V_d – Water discharge volume during the statistical period, in metric tons

Chapter III Key Disclosure Items

Pursuant to the *Guidelines*, if a disclosing entity has created a holistic governance structure and internal rules for managing and supervising the impacts, risks, and opportunities related to water utilization, it may integrate the disclosure of governance elements without disclosing the governance of water utilization separately.

Information concerning the governance, strategy, impacts, risk and opportunity management, as well as metrics and targets related to water utilization, may be disclosed in alignment with *Guide No. 1 - General Requirements and Disclosure Framework*.

Key Disclosure Item 1: Basic Information on Water Usage

1. Total Water Consumption

Disclosing entities shall disclose their total water consumption in metric tons, calculated with reference to the method outlined in Chapter II. When there is no measured data for water discharge or such data is unavailable, or when the cost of statistical measurement is high, companies may calculate and disclose the total water withdrawal volume based on their actual circumstances.

2. Water Use Intensity

Disclosing entities shall disclose water use intensity (e.g., per unit of product, per unit of revenue).

Enterprises with a concentrated product range disclose water intensity per unit of product (e.g., water consumption per unit of product). Enterprises with diverse product types, multiple product lines, or service-oriented operations disclose water intensity per unit of revenue (e.g., water consumption per unit of revenue).

Key Disclosure Item 2: Water Conservation Targets and Specific Actions

1. Water conservation targets. A disclosing entity may consider setting quantifiable and easily assessable targets related to water consumption, water reuse, and non-conventional water sources. Target selection should take into account industry characteristics, the entity’s operational contexts, and relevant policies and standards to ensure relevance and comparability.

2. Specific water conservation actions. A company can customize actions based on its own circumstances or consider starting with the following actions.

Table 7: Examples of Specific Water Conservation Actions

Process	Examples of Specific Actions

Process	Examples of Specific Actions
Water resource management	1. Improve the organizational structure for water resource management, such as having the board oversee water usage and conservation efforts, establishing a water resource management department and full- or part-time personnel, and clarifying roles and responsibilities. 2. Develop water conservation policies and rules, conduct staff training on water efficiency, and enhance overall water conservation awareness. 3. Create a water usage management and accounting system. Regularly conduct water usage accounting to adjust water usage plans dynamically, and define clear physical boundaries for water resource management. For example, identify water sources (surface/ground/reclaimed water) and corresponding water rights (such as statutory withdrawal permits or customary water rights in basins) within the boundaries of all production and operational sites, including leased premises. 4. Enhance smart management. Improve water metering infrastructure and promote the installation of smart water meters to achieve precise monitoring of water usage data.
Planning and designing	1. Prioritize water resource compatibility in site selection decisions. Conduct water withdrawal feasibility analysis and water resource assessments to align business operations with local water carrying capacity. Avoid siting high-water-consumption activities or projects in water-scarce or -stressed regions to minimize risks of water shortages, production disruptions, and supply chain interruptions. 2. Equip new, renovated, or expanded construction projects with water-saving facilities, ensuring these facilities are designed, constructed, and operated simultaneously with the main projects. 3. Integrate effective management measures, water reuse, non-conventional water sources utilization, and water-saving technologies or processes into planning, designing, and developing water usage and conservation programs.
Water withdrawal	1. Rationally plan and calculate water withdrawal volumes to ensure total volume control and quota management. 2. Select water sources based on production needs and local water availability, obtain approvals from local water authorities, and withdraw water in accordance with approved plans. 3. Maximize the utilization of non-conventional water sources according to local conditions. Substitute high-quality water with lower-quality alternatives that meet usage requirements. For instance, companies in coastal areas may use seawater, while mining companies can utilize mine water. 4. Strengthen control and management of water obtained from public supply

Process	Examples of Specific Actions
	systems and external sources. 5. Equip self-built water supply systems with standard water withdrawing, metering, and treatment equipment.
Water supply, storage, and usage	1. Develop and implement maintenance and management rules for water supply, storage, and usage pipelines and equipment, and conduct regular inspections. Establish a leakage control system for water supply and usage networks, and take other actions to reduce water leakage and losses. 2. Enhance management of key water-consuming equipment and processes by setting and enforcing water usage standards and operational procedures. 3. Strengthen internal water management by instituting water conservation management systems. Adopt advanced and proper water-saving technologies, processes, and equipment, such as graded water supply, efficient cooling and washing, water recycling, and wastewater treatment and reuse. Evaluate water quality and usage volume across production units to avoid mismatches between water quality and application scenarios and prevent overuse, thereby optimizing water balance. 4. Recycle cooling water from production equipment, air conditioners, and boiler condensate. High water-consuming industrial enterprises should progressively adopt advanced wastewater treatment and reuse technologies to improve water recycling rates. Enhance the design of internal water treatment and reclaimed water reuse systems to increase efficiency. Construct storage ponds/reservoirs to collect rainwater for reuse in production. 5. Develop water-saving irrigation technologies, such as sprinkler irrigation, micro-irrigation, pipeline irrigation, lined canal irrigation, and supplementary irrigation with rainwater, to enhance irrigation water efficiency.

3. Describe water recycling and reuse practices. Specific actions and outcomes of water recycling and reuse can be disclosed together with water conservation actions. Outcomes can be measured and disclosed using quantitative metrics, such as the proportion of reused water in total water usage.

4. Describe any specific challenges encountered in water utilization (if applicable).