UK PACT

SSC State Securities Commission of Vietnam

ESG DISCLOSURE GUIDANCE

REAL ESTATE – CONSTRUCTION SECTOR

Unlocking Green Finance through Disclosure of Climate-Related Financial Risks

31/07/2025

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

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TABLE OF CONTENTS

DISCLAIMER....2
CATEGORIES OF FIGURES AND TABLES....4
ACRONYMS AND ABBREVIATIONS....5
INTRODUCTION OF ESG DISCLOSURE GUIDANCE FOR THE REAL ESTATE AND CONSTRUCTION SECTOR....7
PART 1: ESG DISCLOSURE CONTEXT FOR ENTERPRISES IN THE REAL ESTATE – CONSTRUCTION INDUSTRY....8
1. The urgency of enhancing ESG disclosure practices among businesses in the Real Estate – Construction industry....8
2. ESG frameworks and standards for the Real Estate – Construction industry....12
3. Sustainability disclosure context in Vietnam....14
PART 2: GUIDELINES FOR ESG DISCLOSURE IN THE IN THE REAL ESTATE – CONSTRUCTION SECTOR....17
1. Materiality assessment....18
2. Governance....22
3. Strategy....25
4. Risk Management....32
5. Metrics and targets....34
SECTION 3: ADDITIONAL GUIDANCE ON CLIMATE-RELATED DISCLOSURE....39
1. Governance....39
2. Strategy....42
3. Risk Management....47
4. Metrics and targets....49
APPENDIX....53
APPENDIX A: LIST OF SUBSECTORS OF THE REAL ESTATE – CONSTRUCTION SECTOR GUIDANCE....53
APPENDIX B: REC SECTOR - RATING SYSTEMS AND TOOLS....54
APPENDIX C: INITIATIVES ON ESG TRANSFORMATION FOR THE REAL ESTATE – CONSTRUCTION SECTOR FOR REFERENCE....55

CATEGORIES OF FIGURES AND TABLES

LIST OF FIGURES

Figure 1: TCFD-aligned disclosures by Materials and building industry for fiscal years 2022 and 2023..... 10
Figure 2: Sustainability Reporting Standards 12
Figure 3: Sustainability Report Structure..... 17
Figure 4: The life cycle of the real estate industry – Construction –Source: EY General 19
Figure 5: Some ESG rating agencies in the market..... 20
Figure 6: The most widely recognized evaluation tools for the development of the real estate and construction industry 28

LIST OF TABLE

Table 1: Other environment impact of the REC sector..... 8
Table 2: Average number of recommended disclosures per company for fiscal year 2023 for Materials and Building industry 10
Table 3: Disclosure by Materials and Building industry for fiscal year 2023 11
Table 4: The development of specific guidelines for the real estate - construction industry..... 13
Table 5: Key stakeholders in the transition to a resilient built environment – Source: Worldbgc 19
Table 6: List of material topics for the REC sector..... 20
Table 7: Sustainable development strategies of some international real estate and construction organizations 26
Table 8: Real Estate – Construction – Concept of Key Certifications..... 28
Table 9: Disclosure metrics for REC sector - Source: GRI & SASB 35
Table 10: Climate-related transition and physical risks across the REC value chain 43
Table 11: : Illustrative climate-related metrics for REC sector companies - Construction and Building Materials TCFD Preparer Forum..... 50
Table 12: Holistic rating systems and tools in more detail. Source: USGBC 54

LIST OF DISCLOSURE EXAMPLES

Example 1: ESG Disclosure - Materiality Assessment..... 21
Example 2: ESG Disclosure – Governance 23
Example 3: ESG Disclosure – Strategy..... 30
Example 4: ESG Disclosure – Risk Management..... 32
Example 5: ESG Disclosure – Metrics and Targets 37
Example 6: Climate-related disclosures – Governance 40
Example 7: Disclosure of information on climate – Governance..... 41
Example 8: Climate-related Disclosure – Strategy..... 46
Example 9: Climate-related disclosure – Risk management..... 48
Example 10: Climate-related Disclosure - Metrics and Targets 51

ACRONYMS AND ABBREVIATIONS

	Acronyms and Abbreviations	Explanation
A	**ACCC**	Australian Competition and Consumer Commission
B	**BCA**	The Building and Construction Authority
	BIM	Building Information Modelling
	BMS	Building Management Systems
	BRE	The Building Research Establishment
	BREEAM	Building Research Establishment Environmental Assessment Method
C	**Capex**	Capital Expenditure
	CCUS	Carbon capture and storage
	CEFC	Clean Energy Finance Corporation
	CEO	Chief Executive Officer
	CFO	Chief Financial Officer
	COFRAC	The French Accreditation Committee
	COSO	Committee of Sponsoring Organizations of the Treadway Commission
	CSO	Chief Sustainability Officer
E	**EPDs**	Environmental Product Declarations
	ERIA	Economic Research Institute for ASEAN and East Asia
	ERM	Enterprise Risk Management
	ESG	Environmental, Social, and Governance
	ESRS	European Sustainability Reporting Standards
	EV	Electric Vehicle
F	**FGD**	Focus Group Discussions
	FSB	Financial Stability Board
G	**GBCA**	Green Building Council of Australia
	GBCI	Green Business Certification Inc.
	GBCSA	Green Building Council of South Africa
	GBI	Green Building Initiative
	GlobalABC	Global Alliance for Buildings and Construction
	GM	Green Mark
	GRCF	Green Recovery Challenge Fund
	GRI	Global Reporting Initiative
H	**HPDs**	Healthy Product Declarations
	HQE	Haute Qualité Environnementale
I	**IFRS**	International Financial Reporting Standards
	ILO	International Labour Organization
	IoT	Internet of things
	IUCN	International Union for Conservation of Nature
	ISSB	International Sustainability Standards Board
K	**KPI**	Key Performance Indicators
	KVMRT	Klang Valley Mass Rapid Transit
L	**LEED**	Leadership in Energy and Environmental Design
N	**NABERS**	National Australian Built Environment Rating System
	NBS	Nature-Based Solutions
	NZGBC	New Zealand Green Building Council
O	**OpEx**	Operation Expenditure
	OSH	Occupational Safety and Health
	OSHA	Occupational Safety and Health Administration
P	**PAAS**	Product as a Service
	PRA	Project Risk Assessment
R	**REC**	Renewable Energy Certificates
R	**REIT**	Equity Real Estate Investment Trust
	RICS	Royal Institution of Chartered Surveyors
	RM	Ringgit Malaysia
	R&DDD	Research, development, demonstration, and deployment)
	R&D	Research and Development
S	**SASB**	Sustainability Accounting Standards Board
	SBTi	Science Based Targets initiative
	SDG	Sustainable development goal
	SSC	State Securities Commission
T	**TCFD**	Task Force on Climate-related Financial Disclosures

	Acronyms and Abbreviations	Explanation
	TNFD	Taskforce on Nature-related Financial Disclosures
	TPT	Transition Plan Taskforce
U	**UK FCDO**	UK Foreign, Commonwealth and Development Office
	UK PACT	UK Partnering for Accelerated Climate Transitions
	UKAS	UK Accreditation Service
	UNEP	United Nations Environment Programme
	UNEP-WCMC	United Nations Environment Programme - World Conservation Monitoring Centre
	USGBC	United States Green Building Council
V	**VGBC**	Vietnam Green Building Council
W	**wbcsd**	World Business Council for Sustainable Development
	WEF	World Economic Forum
	WorldGBC	World Green Building Council
	WLC	Whole Life Carbon
	WRI	World Resources Institute

INTRODUCTION OF ESG DISCLOSURE GUIDANCE FOR THE REAL ESTATE AND CONSTRUCTION SECTOR

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

The ESG Disclosure Guidance for the Real Estate and Construction Sector ("Sectoral guidance") provides instructions and reference materials to encourage and support businesses in Real Estate and Construction Sector in Vietnam in disclosing ESG information. It ensures alignment with both domestic and international regulations, as well as with leading industry practices. The primary users of this Sectoral Guidance are public companies operating in fields classified under Section F: Construction and Section L: Real estate business activities (Level 1 industry) according to Decision No. 27/2018/QĐ-TTg on promulgating Vietnam standard industrial classification. Other companies within the sector are also encouraged to refer to this Guidance when developing their sustainability disclosures..

The guide consists of 3 main parts:

- Part 1: Context of ESG disclosure for businesses in Real Estate and Construction Sector
- Part 2: Guidelines for ESG disclosure in Real Estate and Construction Sector
- Part 3: Additional guidance on climate-related disclosure

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

Indications used in the document:		
Specific guidance or additional information 	**Case studies or examples** 	**Diversity and Inclusion Focus** 

Note:

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

PART 1: ESG DISCLOSURE CONTEXT FOR ENTERPRISES IN THE REAL ESTATE – CONSTRUCTION INDUSTRY

1. The urgency of enhancing ESG disclosure practices among businesses in the Real Estate – Construction industry

According to the UNEP (2025) - Global Status Report for Buildings and Construction 2024/2025,[1] in 2024, the goals of the Paris Agreement for the Real Estate – Construction (REC) sector are completely out of reach. As of early 2025, the REC sector, including the embodied carbon of building materials, will continue to contribute significantly to global energy-related carbon emissions. In 2023, the sector's emissions accounted for 34%, with energy consumption accounting for about 34% of global demand. Although certain progress has been made, the sector is not yet on track to align with net zero carbon and climate resilience targets by 2050, as progress remains slow and fragmented. The industry's CO_2 emissions have increased by 5% since 2015, and are far from reaching the 28% reduction target by 2030 under the Paris Agreement. Besides, activities related to the construction, management, use, and demolition of buildings and infrastructure also deplete natural resources and create a wide range of pollutants in soil, air, and water.

Socioeconomically, the built environment has a significant direct and indirect impact on the social well-being, livelihoods, and well-being of local communities and individuals. The industry's long-term impact on the community, both positive and negative, is inherited and sustained over generations. In addition, through diversified activities, the real estate - construction industry is a major employer in the economy, with a diverse and complex supply chain, which can positively impact the local economy by providing jobs, training and industry. The real estate and construction industry plays an important role in providing housing, education and entertainment facilities for the community, but at the same time it also impacts the relocation of local people.

Due to the significant environmental and social impacts, the REC sector faces increasing demands for transparency and accountability from various stakeholders. Investors, customers, and communities increasingly expect clear and specific insights into the internal operations of businesses in the real estate and construction sector, particularly regarding how companies assess and respond to environmental, social, and governance (ESG) risks, opportunities, and impacts. ESG disclosure plays a critical role as a bridge connecting these stakeholders with businesses in the sector, fostering long-term relationships and goodwill. The ability to meet—and exceed—these expectations depends on the industry's commitment and long-term action plans for ESG integration.

Other environment impact of the REC sector

Table 1: Other environment impact of the REC sector

Impact	Description
Use of natural resources	Globally, the real estate and construction industry is one of the industries that consumes the most resources and has the most impact on the environment in the world. The construction industry accounts for 40% of the total raw materials used in the global economy each year – about 3 billion cubic tons.[2] Real estate – construction is also a major consumer of resources and materials globally and this demand is expected to increase rapidly in the coming decades and in that context, it is still necessary to ensure that the industry's emissions are within the global permissible limit.[3]
Pollution	The construction industry is the industry with the greatest influence on air pollution, water pollution, and noise pollution. Research conducted by Bimhow shows that the construction industry contributes to 23% of the causes of air pollution, 40% of the causes of drinking water pollution and 50% of solid waste.[4] Globally, construction, retrofits, and demolition activities generate about 100 billion tons of waste, with about 35% going to landfills.[5]

Loss of biodiversity	According to the World Economic Forum (WEF),[6] the real estate and construction industry is one of the top three industries that threaten global biodiversity. Overall, infrastructure and built spaces are estimated to affect 29% of the International Union for Conservation of Nature (IUCN) list of threatened and threatened species.[7] The projected growth in a linear model could increase the industry's impact on global biodiversity loss.[8]

Real estate industry – construction and its social impacts

The REC industry employs about 7% of the workforce worldwide. Although the REC industry helps solve employment difficulties by opening up many different career opportunities, workers in this field still face many different risks in many aspects, including:

- Occupational safety and health in construction: The construction industry has a high accident rate. Many activities in the construction industry, including loading and unloading, working at heights, near falling materials, and working in tight spaces, pose a high risk to health and safety in the workplace. Other construction activities that are dangerous to human life include noise, exposure to hazardous substances, dust, electrical cables and fire, and the use of machinery and equipment. A large number of workers in the construction industry are facing health risks or hazards related to their work.
- Forced Labor: The construction industry is known for its high risk of forced labor, with an estimated 4.5 million people working in the industry globally suffering from exploitative practices. The problem of forced labor is very common, occurring in many countries around the world – from developing countries such as Angola, China, and Qatar, to more developed economies such as Russia, the United Kingdom, and the United States. Migrant workers are vulnerable to forced labor in the construction industry.
- Diversity and inclusion: Globally, the construction industry is known for its lack of diversity and inclusion in the workforce, with a low percentage of women in the workforce and at management levels.
- Child labour: The ILO points out that the Covid pandemic has led to an increase in child labour in the construction industry, especially in Uganda with children as young as 8 years old working at construction sites and factories. This means that minors are facing the risk of permanent complications such as chronic pain or loss of mobility.
- In addition to the risks faced by workers, the real estate and construction industry also poses risks to human health due to the impact of air quality. Studies show that humans spend 90% of their time indoors, so exposure to indoor pollutants can cause serious harm to human health and worsen in indoor environments that are enclosed or contain reduced airflow.

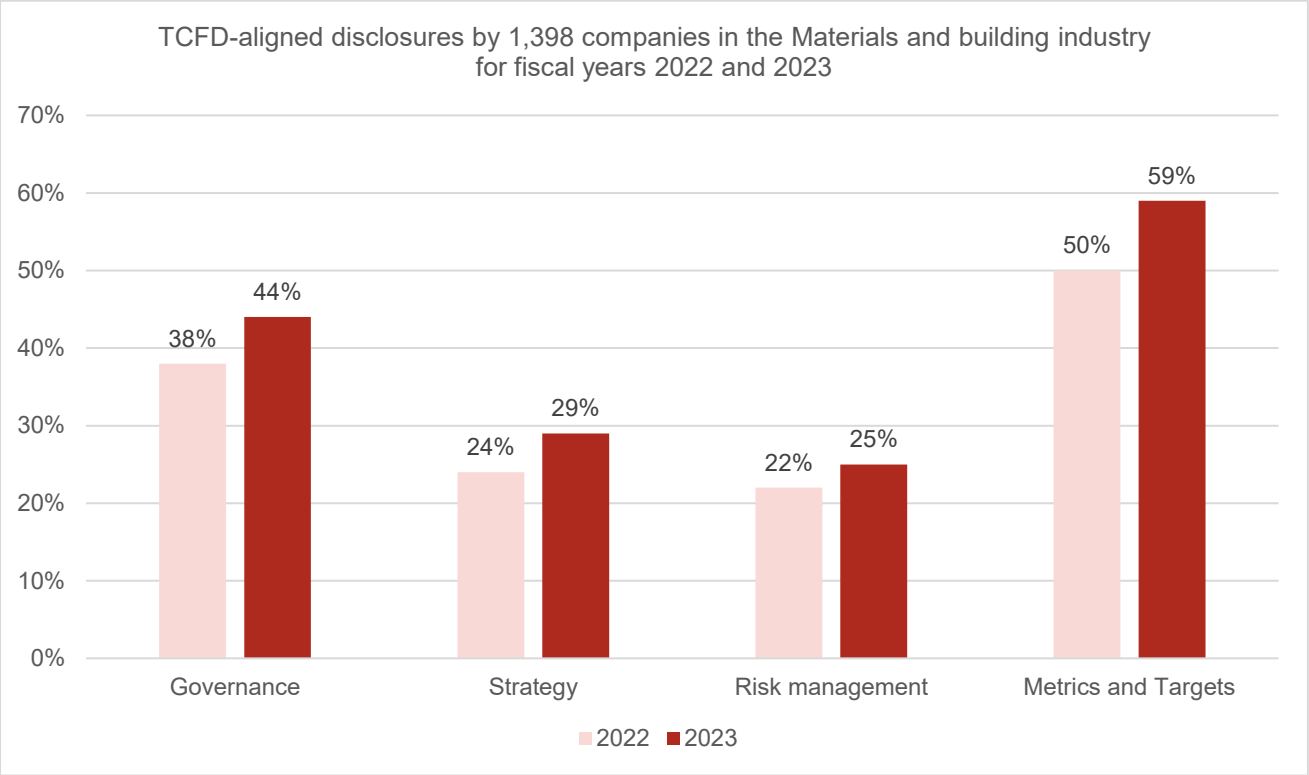
Climate-related disclosures

The context of climate information disclosure is changing, along with the transition to a low-carbon economy, which is pushing stakeholders to demand that businesses in the REC industry become more transparent in climate action. Stakeholders—including investors, governments, customers, and suppliers—are increasingly seeking to understand how real estate and construction businesses assess their resilience and adaptability to climate change, and how they are adjusting their strategies in response. The TCFD encourages businesses to improve the quality and quantity of climate-related disclosures, focusing on risks, opportunities and strategic resilience to climate change.[9] The TCFD provides guidance for businesses in the industry on the disclosure of climate-related financial risks in a consistent, meaningful manner for stakeholders including investors, lenders and insurers. However, currently the number of real estate and construction enterprises complying with the requirements of TCFD is still limited.

According to the results of the 2023 survey by the Financial Stability Board's (FSB) Task Force on Climate-related Financial Disclosures (TCFD) on the progress of reporting on 11 information disclosure

recommendations of the TCFD, businesses have made certain strides in climate-related reporting and are in the process of transitioning from using TCFD recommendations to using ISSB Standards. In 2022 and 2023, the proportion of enterprises in the Materials and Construction industry disclosing information under the TCFD has increased.[10]

Figure 1: TCFD-aligned disclosures by Materials and building industry for fiscal years 2022 and 2023



Of the total 11 information disclosure recommendations of the TCFD, enterprises in the Materials and Buildings industry have made an average of 4.3 content, second only to the Insurance and Energy industry in 2023.

Table 2: Average number of recommended disclosures per company for fiscal year 2023 for Materials and Building industry

Industry	Number of disclosures
Materials and buildings	4.3

Businesses in the Materials and Building industry are more focused on disclosure related to the role of Board on climate issues and the publication of climate metrics and targets, including greenhouse gas emissions.

Table 3: Disclosure by Materials and Building industry for fiscal year 2023

Percentage of companies		
Recommendation	**Recommended disclosure**	Materials and buildings (1,398)
Governance	a) Board oversight	54%
	b) Management's role	33%
Strategy	a) Risks and opportunities	37%
	b) Impact of risks and opportunities on company	40%
	c) Resilience of strategy	11%
Risk management	a) Risk identification and assessment processes	27%
	b) Risk management processes	33%
	c) Integration into overall risk management	15%
Metrics and targets	a) Climate-related metrics	57%
	b) GHG emissions	66%
	c) Climate-related targets	54%

Benefits of transparent and consistent disclosure of environmental protection information

Benefit	Description
Enhancing investor confidence	Provide clear, consistent information about climate risks, helping investors make accurate decisions
Meet management requirements	Complying with increasingly stringent global ESG regulations, ensuring compliance with legal standards
Strategic Risk Management	Integrate climate-related factors into business strategy, strengthen resilience and sustainable development
Improving corporate reputation	Demonstrating a proactive commitment to sustainable development activities, creating a positive image in the business community and society

Challenges[11]

The REC industry is facing a number of challenges in applying the TCFD framework. The real estate and construction sector is facing several challenges in applying the TCFD framework. Due to the diversity and broad scope of the industry, identifying and quantifying climate risks across the value chain is particularly difficult. Data collection is also hindered, especially when multiple parties are involved in a single project. Additionally, sustainability considerations are often overlooked due to cost optimization pressures.

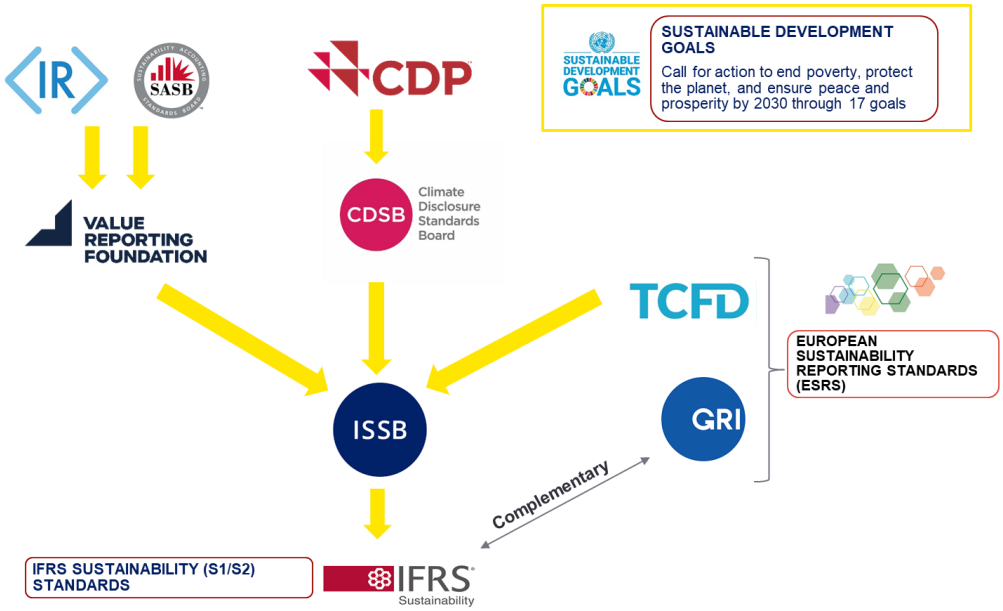
Specific challenges:

- Time and future orientation: Many businesses in the construction industry are involved in long-term projects that span many years, creating buildings and infrastructure that last for decades.
- Data collection: Collecting accurate and consistent climate data, especially for Scope 3 emissions, remains a major challenge.
- Internal coordination: Close alignment between departments such as finance, operations, and sustainability is required to ensure adequate information disclosure.
- Difficulties in climate impact analysis: Identifying the right climate plan and assessing financial impacts is challenging, due to the need for adequate data and accurate assessment methods.
- Limited resources: ESG initiatives require investment in systems, training, and expertise, increasing the financial burden.

2. ESG frameworks and standards for the Real Estate – Construction industry

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

Figure 2: Sustainability Reporting Standards



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

Table 4: The development of specific guidelines for the real estate - construction industry

Sustainability reporting Framework and Standards	Recent updates
GRI	• GRI is considering developing its own standards for the real estate and construction industry.[12]
IFRS Sustainability	• The International Sustainability Standards Board (ISSB) has released Industry-Based Guidance on the Implementation of Climate-Related Disclosures, along with IFRS S2 standards, to propose indicators that businesses can use to identify, measure, and disclose information about climate-related risks and opportunities.[13] In addition, more and more economies and financial systems recognize biodiversity as a systemic risk. In April 2023, the International Standards for Sustainable Development (ISSB) announced a plan to consult additional standards related to biodiversity, ecosystems, and ecosystem services in accordance with the recommendations of the Task Force on Nature-Related Financial Disclosures (TNFD)[14] published in September 2023. The Natural Risks and Biodiversity Dataset, developed by S&P Global Sustainable in partnership with UNEP-WCMC, has been introduced to support reporting in line with TNFD's recommendations. If the new TNFD recommendations are also applied as the TCFD, TNFD may become a mandatory element of reporting and disclosure. • In April 2024, in its 2024-2026 plan, ISSB announced that it will start implementing research projects on risks and opportunities related to biodiversity, ecosystems and ecosystem services to assess investors' information needs for these risks and opportunities to assess the development potential of businesses. This could be a sign for the ISSB to develop the next IFRS S3 guidance standard on Biodiversity, Ecosystems and Ecosystem Services. • The recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) have been integrated into the ISSB's IFRS standards, in response to the growing demand from investors and financial markets for useful, comparable, and reliable sustainability information.[15,16]

TPT Transition Plan Taskforce	• TPT's Information Disclosure Framework provides recommendations for businesses by industry, including the real estate and construction industry, to come up with credible and comprehensive transition plans by focusing on five key elements: foundation, implementation strategy, engagement strategy, metrics & targets, and governance..
	  ◦ In 2024, to supplement the Information Disclosure Framework, TPT has also issued industry-specific guidelines, which include the real estate – construction industry (Engineering & Construction services, Real estate)
	  ◦ Since June 2024, IFRS has been responsible for managing the specific disclosure documents developed by the TPT, ensuring these standards are integrated into global financial reporting activities.

ESRS	• ESRS E1-1 (Transition plan for climate change mitigation) of ESRS E1 (on climate change)[17] requires organizations, including REC businesses, to disclose their transition plans to mitigate climate change and the purposes of the disclosure.

Sustainability reporting Framework and Standards	Recent updates
SCIENCE BASED TARGETS DRIVING AMBITIOUS CORPORATE CLIMATE ACTION	• In August 2024, SBTi issued separate guidelines for the real estate - construction industry https://sciencebasedtargets.org/sectors/buildings and updated in June 2025.

3. Sustainability disclosure context in Vietnam

For the real estate and construction industry in Vietnam, the Vietnamese government's strategic perspective includes:

- Modernize the construction industry based on science and technology, creating breakthroughs that foster interconnected and complementary development across regions.
- Align the sustainable development of the construction sector with strengthening national defense, security, environmental protection, climate change adaptation, and the implementation of social welfare policies.
- Promote sustainable urbanization, linking urban development with technical infrastructure for environmental protection; emphasize the development of green spaces, green buildings, eco-cities, smart cities, and climate-resilient urban areas.
- Proactively respond to climate change by simultaneously implementing adaptation and greenhouse gas mitigation measures, in line with Vietnam's COP26 commitment to achieve net-zero emissions by 2050 and meet climate adaptation goals. This should be based on an integrated, cross-sectoral, and inter-regional management approach, ensuring balanced interests among stakeholders and generations, while enhancing dynamism and innovation..

The Government of Vietnam has made efforts to establish mechanisms and policies towards sustainable development for construction investment projects in Vietnam. Decision No. 1658/QD-TTg approving the National Strategy for Green Growth for the period 2021 – 2030, with a vision to 2050, has proposed solutions related to sustainable development of the sector, including sustainable infrastructure development and sustainable urbanization. Other relevant regulations include: regulations on planning, construction, management and sustainable urban development (Resolution 06-NQ/TW dated January 24, 2022 of the Central Executive Committee), digital transformation for sustainable development in the construction industry and green buildings (Decision No. 749/QD-TTg dated June 3, 2020 of the Prime Minister and Decision 1004/QD-BXD of the Ministry of Construction).[18]

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

STT	Topic	Disclosure Requirements
	General Information	
	Development direction	• Sustainability goals (environmental, social and community) and key programs related to the Company's short- and medium-term
	Corporate Environmental and Social Impact Report	
1.	Impact on the environment	• Total direct and indirect GHG emission • Measures and initiatives to reduce GHG emission
2.	Management of raw materials	• The total amount of raw materials used for the manufacture and packaging of the products as well as services of the organization during the year • The percentage of materials recycled to produce products and services of the organization
3.	Energy Consumption	• Direct and indirect energy consumption • Energy savings through energy efficiency initiatives

STT	Topic	Disclosure Requirements
		• Energy efficiency initiative reports (providing energy-efficient or renewable energy products and services); Report on the results of these initiatives
4.	Water consumption	• Water sources and water usage • Percentage and total amount of recycled and reused water
5.	Compliance with the law on environmental protection	• Number of times the company is fined for failing to comply with laws and regulations on environment • The total amount to be fined for failing to comply with laws and regulations on the environment

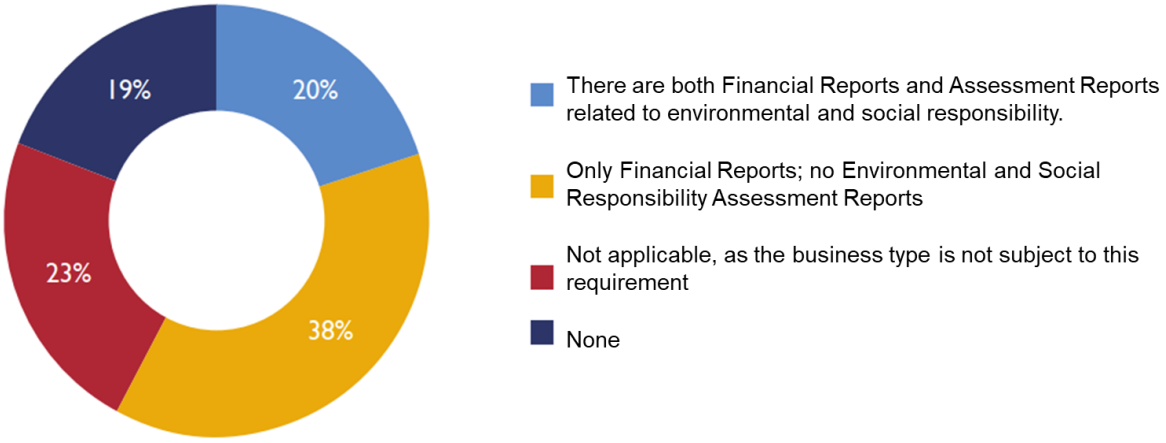
6.	Policies related to employees	• Number of employees, average salary for employees
		• Labor policy to ensure the health, safety and welfare of employees
		• Employee training activities:
		  ◦ Average number of training hours per year, by employee and by employee classification
		  ◦ Continuing learning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

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

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

Current state of sustainability disclosure of real estate and construction businesses in Vietnam

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



The APED survey report also indicates that ESG practices among businesses in the construction sector are the most limited compared to all other industries, with a high level of ESG implementation risk:

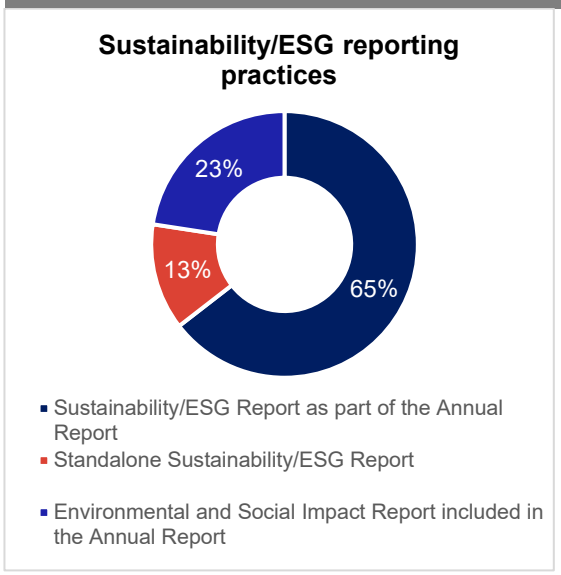
- The percentage of companies that achieved grade A (rating score of over 80%) - which is a pioneer in ESG practices is only about 6%, the second lowest among all industries surveyed, only higher than enterprises in the sector of Information and Communication Technology (4%).
- 49% of enterprises in this sector achieve Grade B (rating score from 50-80%) - have the potential and opportunity to practice good ESG if the difficulties and limitations specific to the business are addressed.
- The remaining 45% of enterprises achieved a C rating (rating score of <50%) when most did not implement or had few ESG-related activities/solutions - the lowest among all surveyed industries.

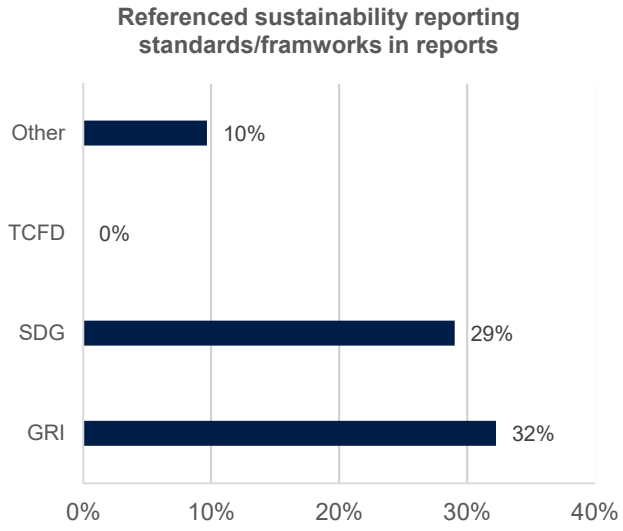
Among enterprises in the construction sector, about 60% of enterprises do not have or lack ESG information, and about 42% lack ESG introduction and training programs, leading to difficulties in publishing and reporting ESG.

In addition, according to this survey, businesses in the real estate – non-manufacturing sector have a higher level of ESG practices, but also face difficulties in reporting ESG practices.

According to the 2025 statistics from the UK PACT project team, which surveyed 120 companies among the top listed enterprises with the highest volume of listed/registered stock transactions on the HOSE and HNX exchanges, among the 31 real estate and construction (RE-C) companies: 78% have implemented sustainability/ESG reporting, and 13% have published standalone sustainability/ESG reports. GRI (Global Reporting Initiative) is the most commonly referenced ESG reporting standard among RE-C companies, with 1% using it in their report development. In addition, some RE-C companies also refer to other standards/frameworks such as: SASB sector-specific reporting standards, IFC reporting framework, Integrated Reporting framework. None of these companies have yet adopted TCFD (Task Force on Climate-related Financial Disclosures) reporting for climate-related information disclosure..

Sustainability/ESG reporting practices of 31 top REC businesses listed on HOSE and HNX

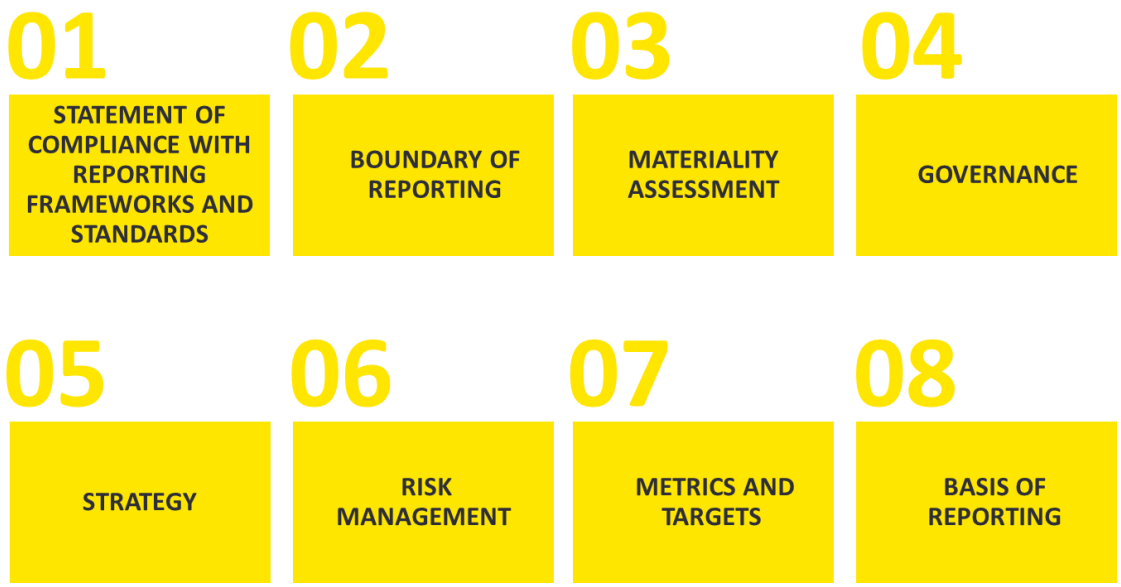




PART 2: GUIDELINES FOR ESG DISCLOSURE IN THE IN THE REAL ESTATE – CONSTRUCTION SECTOR

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

Figure 3: Sustainability Report Structure



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

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

The instruction in each element will include:

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

Note:

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

Guiding Principles for sustainability reporting

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

1. Materiality assessment

GENERAL REQUIREMENTS FOR ESG DISCLOSURE

Elements	Content

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

GUIDANCE ON DEVELOPING DISCLOSURE CONTENT ON MATERIALITY ASSESSMENT FOR ENTERPRISES IN THE REAL ESTATE - CONSTRUCTION INDUSTRY

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

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

- **Value Chain and Business Operations**

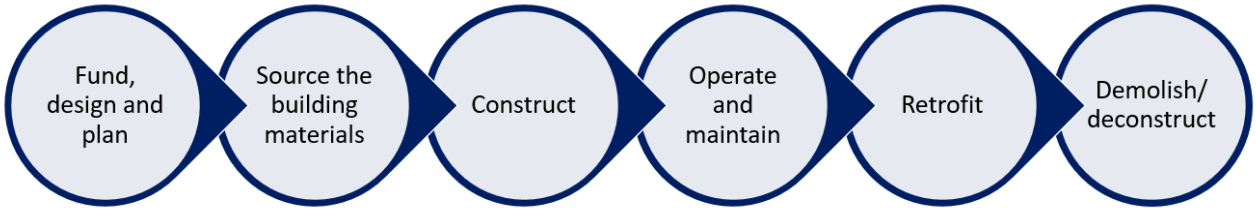
To pinpoint material sustainability issues, the organisation firstly should establish an initial scope overview of its business operations. This includes:

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

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

In this Secroral guidance, the identification of key topics is evaluated across the entire value chain of the real estate – construction industry as illustrated in the Figure below.

Figure 4: The life cycle of the real estate industry – Construction –Source: EY General



- **Identify and engage with stakeholders**

Stakeholder engagement is a key to integrating ESG into an organisation's strategy and operations. It is also a critical tool for identifying material ESG issues, ESG risks and developing strategies that ensure sustainable, long-term value creation and profitability. Engagement with stakeholders therefore may occur in business-as-usual such as day-to-day liaison with customers and suppliers or broader ongoing engagement as part of strategic planning and risk assessment.

REC organisations should identify key stakeholders including both internal and external stakeholders with whom interactions and relationships are important to the organization to identify material topics and conduct comprehensive impact analysis. These groups might include:

- City (e.g., governments, local communities, policymakers, etc.);
- Community & neighbourhood (e.g., architects, contractors, designers, etc.);
- Building (e.g., consultants, contractors, developers, etc.).

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

Table 5: Key stakeholders in the transition to a resilient built environment – Source: Worldbgc [20]

City	Community and neighbourhood	Building
• Academic institutions • Governments • Local communities • NGOs • Policymakers • Professional Associations • Public entities • Urban planners	• Architects • Contractors • Designers • Engineers • Investors • Landscape architects • Owners / Occupiers • Urban planners	• Consultants • Contractors • Developers • Investors • Local communities • Manufacturers • Owners / Occupiers • Suppliers

Step 2: Identify potential topics

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

- GRI
- United Nations Sustainable Development Goals (SDGs).
- SASB Standard guidance on disclosure topics as required by IFRS S1.
- ESG Ratings and Indices

Figure 5: Some ESG rating agencies in the market

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

- UN Sustainable Development Goals (SDGs): Since the SDGs and targets associated with them are integrated and indivisible, REC organizations have the potential to contribute to all SDGs by enhancing their positive impacts, or by preventing and mitigating their negative impacts, on the economy, environment, and people. The REC sector is particularly relevant to achieving the following SDGs:

Table 5 below discusses the suggested material issues for REC companies in Vietnam with reference to above mentioned standards and frameworks. This enables companies operating at only one stage or across several stages to refer to the material matters relevant to their operations. It is important to note that companies should review whether the topics proposed in this guidance are applicable and material to their business context. Additionally, they should analyse other ESG topics that are not included in the list below for materiality inclusion.

The table below also identifies material topics under the SASB Standards for sub-sectors related to real estate and construction. For the scope of this guidance, they are[21]:

- **Engineering & Construction Services**: This sub-sector is characterised by the provision of engineering, construction, design, consulting, contracting and other related services that support building (non-residential) and infrastructure projects.
- **Home Builders**: Entities in this sector primarily develops residential properties. Activities include the development (e.g. land acquisition, site preparation, home construction) and sale of homes.
- **Real Estate**: Entities in this sub-sector own, develop, and operate real estate assets as a source of income, which can include property types such as residential, retail, office, health care, industrial and hotel. In certain countries, entities in this sub-sector can be structured as Real Estate Investment Trusts (REIT).
- **Real Estate Services**: Entities in this sub-sector offer services such as property management, brokerage, appraisal and information services to real estate owners, tenants, investors, and developers.

Table 6: List of material topics for the REC sector

Proposed material topics for REC companies in Vietnam			Sub-sectors material topics mapping			
	Topic Groups	**Topic**	**Engineering & Construction Services**	**Home Builders**	**Real Estate**	**Real Estate Services**
1	**Environmental factors**	Water and wastewater management	x	x	x	

Proposed material topics for REC companies in Vietnam				Sub-sectors material topics mapping			
2		Biodiversity and ecological impacts		x	x	x	
3		Waste and hazardous materials management		x	x	x	
4		GHG Emissions		x	x	x	
5		Energy management				x	
6		Climate adaptation, resilience, and transition		x	x	x	
7		Materials Sourcing & Efficiency		x	x	x	
1	**Social factors**	**Affected communities**	Human rights and community relations	x	x	x	
2		**Consumers and end-users**	Product quality and safety	x	x	x	
3		**Human Capital/ Workforce**	Labor practices	x	x		
4			Employee health and safety	x	x		
5			Employee engagement, diversity, and inclusion	x	x		
1	**Governance factors**	**Business Model and Innovation**	Product Design & Lifecycle Management	x	x	x	x
2		**Leadership and Governance**	Business Ethics	x	x	x	x

Example 1: ESG Disclosure - Materiality Assessment

The process of identifying the material topic of a company operating in the field of real estate and construction based in Japan[22]

1. Identifying long-term social problems

The company consults international standards such as ISO 26000, GRI Standards and SASB, and gathers information from external ESG assessments. Issues closely related to the group's business were selected after considering the long-term impact, including climate change, social issues, and global technology trends.

2. Identify key themes

Based on the identified social issues, the company held workshops with 183 young and mid-level employees to gather opinions on how the company should create value in 2050 and how it wants to be seen in 2050. Thereby, 12 key topics were identified, then continued to organize workshops with 214 senior leaders to evaluate and score these topics.

Contribute to a circular economy	Contribute to a decarbonized society	Maintain harmony with the natural environment
Provide healthy and comfortable lifestyles	Develop smart cities	Promote secure and safe urban development
Make unique contribution to regional revitalization	Pursue happiness and dignity for future society	Implement co-creation and open innovation in society
Contribute to diversity and inclusion	Cultivate creativity and sensitivity	Develop rules and standards for market creation

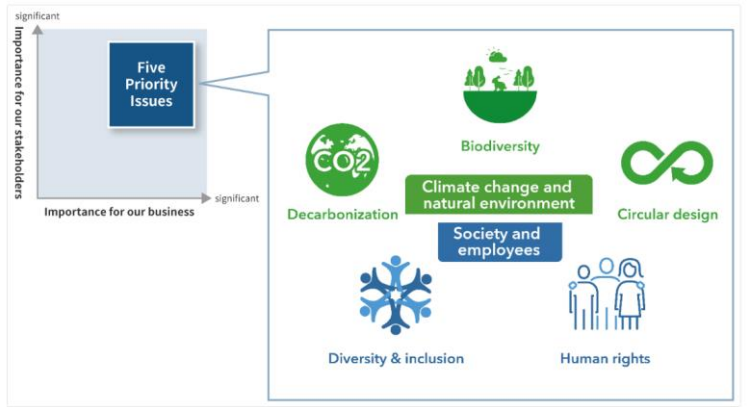
3. Gathering input from stakeholders

Consult with sustainability experts, investors, business partners, and clients to ensure the relevance of selected topics. They were asked to score 12 identified topics based on the level of expectations for the group and the importance of each issue.

4. Develop sustainability policies and identify key themes

Based on the evaluation results from Step 2 and Step 3, the company surveyed 20 senior managers to get more opinions. Subsequently, through many meetings of the Sustainable Development Committee, the group agreed on the Sustainable Development Policy (vision 2050), three main themes, and key issues to be prioritized by 2030, and reported to the Board of Directors for approval.

For each material topic identified, the Company has published information on the current process in managing that topic in the following contents of the Sustainability Report:



39 Environment (Climate Change and the Natural Environment)
40 Environment (Climate Change and the Natural Environment)
42 Environmental Management
46 Decarbonization
54 Biodiversity
59 Circular Design
63 Approach to Environmental Pollutants and Water Resources
121 Governance
122 Governance (Group Policy)
123 Corporate Governance
138 Compliance
147 Risk Management
153 Supply Chain Management
65 Social (Society and Employees)
66 Social (Society and Employees)
68 Diversity and Inclusion
76 Human rights
82 Wellness Management
89 Human Resource Management
95 Safety Quality from Design to Management
108 Safety and Security in Disasters
111 Care for and Activation of Communities
117 Contributions to Local Communities and Society

2. Governance

GENERAL REQUIREMENTS FOR ESG DISCLOSURE

Elements	Content
Board Oversight	• Governance roles and responsibilities, structure, and composition for sustainability-related matters, including: composition and diversity, roles and responsibilities, quality

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

GUIDANCE ON DEVELOPING DISCLOSURE CONTENT ON GOVERNANCE FOR THE REAL ESTATE - CONSTRUCTION SECTOR

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

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

Example 2: ESG Disclosure – Governance

Oversight and the role of the Board of Directors of a leading real estate company in China[23]

Board of Supervisors

The company has established a comprehensive corporate governance framework, internal controls and risk management systems to ensure that business operations are conducted with integrity. The company's approach to managing and monitoring sustainability-related issues is integrated into the business strategy, influencing how sustainability tasks are integrated into daily operations.

Governance structure:

The role of the Executive Board in governance processes, controls and procedures is applied to monitor, manage and monitor issues related to sustainable development

Our Board of Directors is responsible for planning and executing the 5C Sustainability Strategy, as well as monitoring the risks and opportunities related to climate change that it encompasses. The Sustainability Committee of the Board of Directors directly supports the Board to ensure that our business activities are aligned with the 5C Sustainability Strategy. This governance structure demonstrates our commitment to integrating sustainability efforts into the highest levels of leadership, particularly in terms of climate change resilience.

Sustainability Governance and Oversight

The Board of Directors	Our highest governance body with overall responsibility for our sustainability efforts.
The Board Sustainability Committee	The committee, comprised of selected company directors, meet regularly to discuss and decide on sustainability objectives, including climate-related issues, for SOL's long-term development and stakeholder value creation. The Committee directly monitors and guides our overall sustainability performance. During the reporting year, the Committee reported to the Board twice on sustainability-related progress and issues, including matters related to climate change.
Sustainable Development Executive Committee (SD EXCOM)	Consisting of Vice Chairman, the CEO, Executive Directors, Senior Directors, and the CSO, the Committee is responsible for the strategic direction of sustainable development and establishing key long-term targets. The committee meets regularly to consider sustainability issues, including climate-related issues, and make decisions on behalf of the Board Sustainability Committee, which makes further decisions as necessary.
Chief Sustainability Officer	The CSO leads and drives the integration of sustainability principles and practices into SOL's strategy and operations. The CSO is also tasked with fostering a culture within SOL that embeds and prioritises sustainability and climate-related matters.
5C Teams	Responsible for the central steering and implementation of SOL's sustainability strategy, these teams manage the KPIs for their goals. They meet regularly to drive implementation and address problems that arise. KPIs are distributed to relevant departments for execution. Each team reports progress to the Sustainable Development Executive Committee regularly and provides consolidated reports to the Audit and Risk Committee for submission to the Board of Directors.
Sustainable Development Department	The Department supports the development and implementation of sustainability policies and strategies by offering technical expertise, coordinating communication across departments and sustainability-related trainings, both internally and externally, and monitoring SOL's progress in achieving its sustainability goals and targets. During the reporting year, we reported four times to the Sustainable Development Executive Committee, and twice to the Board Sustainability Committee on sustainability and climate-related progress and issues.

Integrating the evaluation of the effectiveness of the implementation of sustainable development into the remuneration and remuneration system

By actively promoting sustainability through employee training and aligning compensation with sustainability-related performance indicators (KPIs), we demonstrate a commitment to sustainability at every level of the organization – from employees to senior management and 5C teams. To effectively promote sustainability, we have embedded sustainability KPIs into the remuneration of the Chief Executive Officer (CEO), Chief Financial Officer (CFO), Chief Sustainability Officer (CSO), Sustainability Executive Committee, as well as working groups, department heads and project leaders at Feng Cheng Property Management and Shui On Construction. These KPIs measure effectiveness in climate change and social

change goals. In 2024, the following initiatives have been implemented to align corporate governance with the 5C Sustainability Strategy:

- Implement sustainable KPIs associated with compensation to department heads and project leaders at Feng Cheng Property Management and Shui On Construction for all projects.
- Conduct a comprehensive review and update of the Crisis Management Manual, and organize advanced training on crisis management for governing bodies.
- Organize training courses to improve climate risk management capacity for senior leaders

3. Strategy

GENERAL REQUIREMENTS FOR ESG DISCLOSURE

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

GUIDANCE ON DEVELOPING STRATEY DISCLOSURE CONTENT FOR REAL ESTATE AND CONSTRUCTION SECTOR

a. Developing sustainable development strategies and goals

To develop strategies and goals for sustainable development, real estate and construction enterprises should consider their ability to contribute to national or international commitments, such as Vietnam's national commitment to achieve the goal of net zero emissions by 2050; national strategies or policies on carbon emission reduction and climate change adaptation; global sustainable development goals and strategies of enterprises in the same industry.

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

Table 7: Sustainable development strategies of some international real estate and construction organizations

Organization	Strategy
World Green Building Council (WorldGBC)[24]	Addressing carbon emissions throughout the entire life cycle of existing and newly built buildings; facilitate sustainable, healthy, equitable, and inclusive spaces with safe, resource-efficient, and waste-free infrastructure.
Global Alliance for Buildings and Construction (GlobalABC)[25]	Towards zero-emission, efficient, and resilient buildings and construction.
Green Building Initiative (GBI)[26]	Improve the impact of the built environment on climate and society.
Architecture 2030[27]	Transform the construction industry from a major source of greenhouse gas emissions to a central solution to the climate crisis.
Royal Institution of Chartered Surveyors (RICS)[28]	Build a building space that is in harmony with nature and sustainable, highly resilient and suitable for everyone.
The Building Breakthrough[29]	By 2030, ensuring zero emissions and resilience will become the new standard for buildings.

At the same time, businesses can also refer to the orientations and goals of sustainable development in Vietnam for the real estate industry – construction according to some of the following documents:

No	Document
National Objectives	
1	• Decision No. 1658/QD-TTg of the Prime Minister: Approving the National Strategy on Green Growth for the 2021-2030 period, with a vision to 2050.
2	• Decision No. 179/QD-TTg of the Prime Minister: Approving the Strategy for the development of the construction industry to 2030, with a vision to 2045.
3	• Decision No. 149/QD-TTg of the Prime Minister: Approving the National Strategy on Biodiversity to 2030, with a vision to 2050.
4	• Decision No. 491/QD-TTg of the Prime Minister: Approving the adjustment of the National Strategy on integrated solid waste management to 2025, with a vision to 2050
5	• Decision 385/QD-BXD in 2022 approving the Action Plan of the Construction sector to respond to climate change for the period 2022-2030, with a vision to 2050 to implement Vietnam's commitments at the 26th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP26)
6	• Decision No. 280/QD-TTg of the Prime Minister: Approving the National Program on Economical and Efficient Use of Energy for the 2019-2030 Period.
7	• Decision No. 1413/QD-BXD on the promulgation of the Strategy for human resource development in the construction industry for the period of 2022 – 2030.
8	• Resolution No. 19/NQ-CP dated February 16, 2022 of the Government promulgating the National Program on Occupational Safety and Health for the period of 2021 - 2025.

b. Develop a transformation plan to implement the Strategy and achieve the Sustainable Development Goals

- Enterprises in the real estate and construction industry can refer to some of the proposed environmental transformation actions below to plan, implement and report on progress and implementation results in ESG information disclosures.

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

2. **Operation:** REC enterprises experiences economic, environmental, and social impacts from consuming energy, materials, water, and other resources during its operations, leading to solid, liquid, and gaseous waste emissions, as well as biodiversity and social impacts. It is, therefore, essential to develop capacities and initiatives aimed at reducing and controlling these impacts.

   - **Value chain management:** For businesses in the real estate and construction industry, the transformation of the 5 main factors below can contribute to the implementation of strategic ambitions on sustainability.

     (i) ***Decarbonisation:*** permanently remove carbon emissions from the value chain of businesses by implementing clean, sustainable energy systems and implementing radical methods for the remaining carbon emissions.

     - Energy Efficiency
     - Electrification
     - Renewable energy and carbon-free fuels
     - Smart building technologies and automation

     (ii) ***Circularity*** optimizing the use of resources while minimizing waste throughout the life of the building.

     - Reduce material and resource consumption
     - Optimize material and product lifespan
     - Designed for dismantling, reuse, and recycling, while eliminating any waste
     - Regenerate nature.

     (iii) ***Biodiversity:*** protect and enhance biodiversity in a particular habitat when developing a construction project.

     (iv) ***Resilience:*** The ability of buildings and infrastructure to withstand climate-related hazards, maintain essential functions, and adapt to changing conditions.

     (v) ***Improve social and governance issues:*** establish a safety and health program at construction sites to protect workers and ensure business ethics in the real estate and construction industry.

     Details of these 5 implementation initiatives are provided in Appendix B.

   - **Manage stakeholders:** Businesses should strengthen their ability to manage stakeholder relationships throughout the supply chain. Since REC enterprises are not isolated, effective stakeholder management and engagement are crucial for achieving sustainability objectives, making them more attainable and manageable.
   - **Risk management:** Companies should bolster their risk management capabilities to identify ESG risks to the business and the risks that the business poses to ESG issues. This heightened awareness will enable businesses to devise more suitable strategies and plans, respond proactively and flexibly to emerging risks, and ensure that sustainability goals are within reach.

3. **Data and Reporting:** The REC sector is facing intense pressure to prioritize ESG data governance due to the vast amount of data collected in the industry and the complexity of its value chain, which involves various stakeholders including suppliers, manufacturers, contractors, etc. As companies increasingly

recognize the importance of sustainability, establishing and prioritizing strong ESG data governance frameworks become crucial for achieving long-term environmental and socio-cultural objectives. Effective ESG data management capability is essential for sustainable REC, as it aids in tracking, assessing, and enhancing ESG initiatives. At the same time, to meet the requirement for transparent and complete ESG information from stakeholders such as investors, enterprises need to identify and report on several key environmental, social and governance metrics – refer to the General Handbook and Part 4 of this Sectoral Guidance.

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

Green and sustainable building certifications

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

According to the UN Environment Programme, as of 2021, there were 74 green building certification schemes globally, most of which are managed by the members of the World Green Building Council (WorldGBC)[30]. Vietnam itself has the LOTUS Rating System, administered by the Vietnam Green Building Council[31].

Certification schemes or verification frameworks were developed to define, document, and certify performance and best practices in the design, construction and operation of buildings. The 6 rating tools represented in Figure below are used in several taxonomies internationally and are commonly referenced by investors and real estate companies within their frameworks. All these rating tools are comprehensive rating tools that evaluate various aspects of sustainability and performance, with NABERS Energy being included as it is relevant to GBCA's Green Star.[32]

Figure 6: The most widely recognized evaluation tools for the development of the real estate and construction industry

The table below include an introduction to key, well-known certifications within the REC industry. For further detailed information on these certification schemes, please refer to APPENDIX A: REAL ESTATE AND CONSTRUCTION INDUSTRY – ASSESSMENT SYSTEMS AND TOOLS.

Table 8: Real Estate – Construction – Concept of Key Certifications

Certificate	Description
LEED[33]	• LEED is the world's most widely used green building rating system. LEED certification provides a framework for healthy, highly efficient, and cost-saving green buildings, which offer environmental, social and governance benefits. LEED certification is a globally recognized symbol of sustainability achievement, and it is backed by an entire industry of committed organizations and individuals paving the way for market transformation.
BREEAM[34]	• BREEAM is the world's leading science-based suite of validation and certification systems for a sustainable built environment. Since 1990, BREEAM's third-party certified standards have helped improve asset performance at every stage, from design through

	construction, to use and refurbishment. BREEAM is owned by BRE - a profit-for-purpose organisation with over 100 years of building science and research background
BCA Green Mark[35]	• Developed by Singapore's Building and Construction Authority (BCA) in 2005, Green Mark (GM) evolved rapidly as the leading green building rating tool for the urbanised tropics and is a key instrument of Singapore Green Building Masterplan, and other national policies on environmental sustainability. Green Mark has a strong focus on verifiable measured building performance.
Green Star[36]	• An internationally recognised rating system that aims to create healthy, resilient, and positive places for people and the natural environment. Green Star covers new buildings (Green Star Buildings), existing buildings (Green Star Performance), new homes (Green Star Homes), new fitouts (Green Star Fitouts), and precincts (Green Star Communities). • Green Star is the most used holistic rating system in Australia by far, with more than 4000 certifications awarded, and a further 3000 registered.
NABERS[37]	• In operation since 1999, NABERS is one of Australia's most successful government initiatives for the built environment. It is composed of four programs (Water, Waste, IE, and Energy) all based on actual building performance.
HQE (Haute Qualité Environnementale)[38]	• HQE is a comprehensive French green building certification system established in 2004 that has evolved over two decades into a globally recognised standard for creating and operating high-performing sustainable buildings. HQE provides a robust framework for minimising environmental impact, enhancing quality of life, safeguarding minimum economic performance, and ensuring strong project governance.
LOTUS[39]	• LOTUS is a set of voluntary green building rating systems developed by Vietnam Green Building Council (VGBC), a project of the non-profit Green Cities Fund, based in California, USA. LOTUS provides a holistic assessment of environmental performance over the life cycle of buildings. It provides an integrated approach for evaluating buildings in terms of energy consumption, water use and waste management as well as indoor environmental quality.

Example 3: ESG Disclosure – Strategy

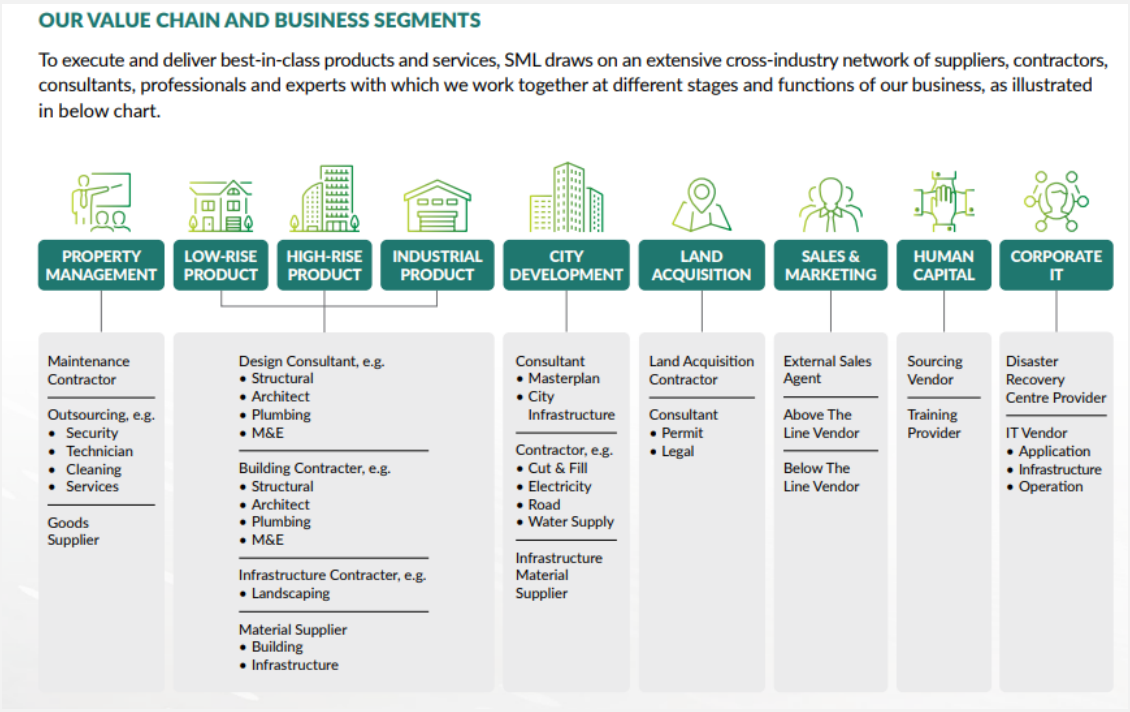
Business Strategy of the Largest and Diversified Real Estate Group in Indonesia[40]

Market positioning, strategy, business model and value chain

The Best in Class Real Estate embodies the company's vision of providing modern, high-quality products, facilities and services at outstanding value. The company is present in many countries such as Indonesia, Malaysia, Singapore, China, Australia and the United Kingdom, with a land fund of about 10,000 hectares to develop urban projects. The Group positions itself as a pioneering real estate business in sustainable development, focusing on reducing environmental impact and responding to climate change. Through the promotion of international green standards such as BCA Green Mark and Indonesia Greenship Certification, and the use of Renewable Energy Certificates (RECs) for some buildings.

Regarding the key strategy: aiming to become the leading real estate group in Southeast Asia, trusted by customers, employees, society and stakeholders. The company's core values include: Integrity, Positive Attitude, Commitment, Continuous Improvement, Innovation, Loyalty.

Group's Value Chain



Benefits and perspectives of stakeholders

- Based on the principle of two-way communication, the business always maintains regular interaction with both internal and external stakeholders to better understand their views and update them on the Group's strategy and operational efficiency.
- In addition, businesses also regularly work with regulatory agencies through the submission of periodic compliance reports or other assessment reports as required. In order to maintain a close relationship with the community around its development projects, it provides channels for feedback and exchange such as periodic meetings and focus group discussions (FGDs).
- Communication channels with residents and commercial customers in the group's residential areas, buildings and malls include annual satisfaction surveys among other methods. In addition, the business also connects with

employees through annual employee surveys and periodic FGD sessions, and creates conditions for them to interact with the management through internal communication forums.

Stakeholder groups & their significance to SML	Key concerns & expectations	Mode of engagement	Frequency of engagement
Employees The performance of SML depends on the welfare, knowledge, health, safety, and professional growth of its staff.	• Employee welfare • Remuneration and benefits • Labor management relation and human rights • Diversity and equal opportunity • Competency development and career promotion • Occupational health and safety • Good code of ethics	1. Employee engagement survey 2. Employee community activities (sports and arts) 3. Communication forum between management and employees 4. Townhall (synergy day) 5. Focus Group Discussion ("FGD") 6. Employee training sessions & performance appraisal 7. Safety drills and awareness sessions 8. Whistleblowing system	1. Annually 2. As needed 3. As needed 4. Annually 5. As needed 6. Annually 7. Annually 8. Based on case
Local communities SML ensures that the negative impact of our developments on the quality of life for the communities surrounding our operational areas are minimised, and that our presence can empower them and improve their livelihoods.	• Environmental conditions of their neighbourhood • Community empowerment • Education quality in surrounding area	1. Meetings with local communities 2. Public communication plan with residents in 200 m radius of our new developments 3. Implementing the CSR programme 4. FGD 5. Public facility provision (schools, hospital, etc).	1. As needed 2. As needed 3. As needed 4. As needed 5. As needed
Media SML sees the media as a vital channel to convey information to the public.	• Transparency of the Company's information and disclosure • Product knowledge information	1. Press releases 2. Press conferences 3. Public exposes 4. Interviews & discussions	1. Approximately 15 releases/month 2. Based on events 3. Annually 4. Based on event
Academics (university representative) SML ensures that our ESG practices can be an example for the academic literature and society.	Socialisation and education on the Company's ESG practices	FGD	As needed
Civil society (GBCI, MASKEEI, IABHI)* SML ensures that our ESG initiatives reduce our operational negative impact and support civil society's social and environmental goals.	• The Company's operational impact on society and the environment • The Company's social and environmental programmes	1. FGD 2. Green building certification 3. Association (REI, APPBI)*	1. As needed 2. Depending on the green building development plan as directed by Management 3. As Needed
Tenants The performance of SML depends on the satisfaction of tenants.	• Tenant satisfaction with facility and service quality • Tenant occupational health and safety • Eco-friendly facilities	1. FGD 2. Tenant satisfaction survey 3. Provision of building facilities	1. As needed 2. Annually, utilising real-time online customer satisfaction survey method 3. As needed
Residential & commercial customers The performance of SML depends on the satisfaction of customers.	• Customer satisfaction with facility and service quality • Customer and occupational health and safety • Eco-friendly facilities	1. FGD 2. Customer satisfaction survey 3. ONE Smile Application	1. As needed 2. Annually, utilising real-time online customer satisfaction survey method 3. Realtime
Business partners (Vendors) SML's product delivery depends on the performance of its business partners.	• Fairness in tender processes • On time payment by the Company	FGD	As needed
Regulator SML is committed to operating within the boundaries of the law and to complying with all regulations.	• Compliance with related regulations • Complete and timely report submission	1. FGD 2. Sustainability report submission 3. Compliance report 4. Implementing the CSR programme 5. Provision of public facility	1. As needed 2. Annually 3. Periodically or as required. 4. As needed 5. As needed

Impacts, risks and key opportunities and linkages to business strategy and model

Climate risk and opportunity analysis: Conduct periodic assessments of physical climate risks and transition risks, in order to assess the impact of these risks on the assets of the business.

4. Risk Management

GENERAL REQUIREMENTS FOR ESG DISCLOSURE

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

GUIDANCE ON DEVELOPING RISK MANAGEMENT DISCLOSURE CONTENT FOR ENTERPRISES IN THE REAL ESTATE – CONSTRUCTION SECTOR

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

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

Real estate – construction enterprises can refer to more detailed information in the General Handbook – Part 2, section 2.2.2 and Part 3, section 3.6.

For material climate risks, businesses can refer to Part 3 – section 2.

Example 4: ESG Disclosure – Risk Management

A construction, engineering and real estate corporation based in Malaysia[41]

1. The process of identifying, assessing and prioritizing risks and opportunities

The Group uses risk management tools including: WRI's Aqueduct Water Risk Atlas – a water-related risk assessment tool; 3D Visualisation technology – helps mitigate occupational safety risks through 3D model visualization; ISO monitoring system for Occupational Safety and Health – supports monitoring and improvement of management safe; and cloud data collection systems – which provide real-time emissions data through a dashboard.

2. Risk Management Methodology

Enterprises apply project risk assessment (PRA) to identify hazards and identify control measures; analyze scenarios to simulate different climatic conditions to assess impacts; monitor Occupational Safety and Health (OSH) through KPIs to link performance to measurement results; and the KVMRT Safety Training Center – a place of intensive training for high-risk activities.

3. Integrating sustainable risk management into corporate strategy

Businesses have incorporated ESG factors into the risk management framework, helping to assess risk portfolios and management processes more effectively. Measures include:

- Link the Critical Matrix to the Risk Management Framework.
- Assess the financial impacts of sustainability risks, from ESG compliance costs to the long-term value of the project.
- Integrate ESG strategy into the overall management process, from project design to long-term operation.

Pillar 1: Sustainable Planning and Design for Construction

Related Material Matters

- Economic Performance
- Innovation
- Supply Chain Management
- Effluents and Waste
- Water Management
- Materials

Relevance and Risk

- Changes in laws and regulations may lead to an increase in operations cost and alter the competitive landscape
- Sustainability of raw materials supply and production risks may have a direct impact on the Group's core business operations
- Greenwashing risks and erosion of trust

Opportunities

Supporting a low carbon economy through implementing low carbon strategies across our developments. Chance for policy change, green premium consideration, business growth in RE space, and supply change management for the construction sector. In addition, install effective controls in ESG management approach in line with GRI, TCFD and SBTi.

Strategic Response

Refer to pages 80 to 91 for more information on how we facilitate sustainable masterplanning featuring climate-responsive design, renewable energy adoption, integrated green transport, super low energy buildings with smart features, and ESG evaluation in supply chain.

Alignment with the UN SDGs

Pillar 2: Our Community and Our Business

Related Material Matters

- Safety and Health
- Employee Management
- Stakeholder and Community Relations
- Governance
- Supply Chain Management

Relevance and Risk

- Competency adequacy or mismatch to drive the Group's strategy
- Non-compliance with labour welfare practices and socio-economic laws and regulations may lead to loss of investors' trust and negative impact on reputation

Opportunities

To develop and apply new technologies to meet the Group's growth ambitions. The need to recruit, retain and upskill our workforce to inculcate an innovative culture and become a more agile, diverse and inclusive organisation.

Our Strategic Response

Refer to pages 92 to 115 for information on how we develop talent capabilities especially in climate science, cultivate good ESG practices, and measure socio-economic impact of our projects.

Alignment with the UN SDGs

Pillar 3: Environmental and Biodiversity Conservation

Related Material Matters
- Climate Action
- Biodiversity
- Land Remediation, Contamination or Degradation

Relevance and Risk
- Emergence of more stringent environmental laws and regulations
- Failure to anticipate climate-related physical and transition risks will lead to stranded assets and affect the health and well-being of the communities and ecosystem in which we operate

Opportunities

To have effective cooperation and transparency with the local communities, governments, and NGOs. This facilitates proven track record of positive natural resources and biodiversity stewardship.

Our Strategic Response

Refer to pages 116 to 123 for information on how we drive impactful efforts in nature conservation and biodiversity stewardship in our developments.

Alignment with the UN SDGs

Pillar 4: Enhancing Sustainability via Digitalisation

Related Material Matters
- Economic Performance
- Innovation
- Supply Chain Management

Relevance and Risk
- Failure to keep abreast with the latest technological innovation may cause increased inefficiency in operations which may result in a loss of competitive advantage, increased operations cost and reduced natural resources conservation

Opportunities

Accelerating digitalisation and upskilling the digital and data skills of our workforce to transform into a data-driven organisation for enhanced technical and operational efficiency.

Our Strategic Response

Refer to pages 124 to 131 for more information about how we leverage on technology and data management to enhance Group-wide efforts in sustainable development.

Alignment with the UN SDGs

5. Metrics and targets

GENERAL REQUIREMENTS FOR ESG DISCLOSURE

Elements	Content

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

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

GUIDANCE ON DEVELOPING METRICS AND TARGETS DISCLOSURE CONTENT FOR REAL ESTATE AND CONSTRUCTION SECTOR

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

The table below summarizes some industry-specific disclosure indicators based on GRI and SASB standards. Each business needs to assess the materiality and relevance of these disclosure topics and contents to its operations and objectives. At the same time, enterprises should also include reporting on environmental, social and governance indicators as required by law, in addition to international frameworks and standards. The table below summarizes some key indicators of ESG disclosure of GRI standards for reference by REC businesses. Refer to the list of some relevant documents and objectives in Part 2, Section 3 – Strategy.

Table 9: Disclosure metrics for REC sector - Source: GRI & SASB[42]

TOPIC	KEY METRIC
ENVIRONMENT	
Water and wastewater management	• Total water withdrawal from all areas • Total water withdrawal from all areas with water stress • Total water discharge to all areas • Total water discharge to all areas with water stress • Total water consumption from all areas • Total water consumption from all areas with water stress • Percentage of suppliers with significant water-related impacts from water discharge that have set minimum standards for the equality of their effluent discharge
Biodiversity and ecological impacts	IUCN Red List species and national conservation list species with habitats in areas affected by operations
Waste and hazardous materials management	• Total weight of waste diverted from disposal • Total weight of waste directed to disposal • Total weight of waste generated
GHG Emissions	• Scope 1 emissions • Scope 2 emissions • Scope 3 emissions (at least for the categories of …) • Emissions of ozone-depleting substances (ODS)

TOPIC	KEY METRIC
Energy management	• Total energy consumption from own operations • Total energy consumption outside of own operations • Amount of reductions in energy consumption achieved as a direct result of conservation and efficiency initiatives • Reductions in energy requirements of sold products and services achieved • Energy intensity ratio
Climate adaptation, resilience, and transition	• Exposure to carbon-related assets of a portfolio • Total carbon emissions of a portfolio • Weighted average carbon intensity of a portfolio • Carbon efficiency of a portfolio
Materials Sourcing & Efficiency	• Materials used by weight or volume • Recycled input materials used • Reclaimed products and their packaging materials
SOCIAL	
Human rights and community relations	• Incidents of violations involving rights of indigenous peoples • Operations with local community engagement, impact assessments, and development programs • Operations with significant actual and potential negative impacts on local communities • Security personnel trained in human rights policies or procedures • Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk
Product quality and safety	• Assessment of the health and safety impacts of product and service categories • Incidents of non-compliance concerning the health and safety impacts of products and services
Labor practices	• Average hours of training per year per employee • Programs for upgrading employee skills and transition assistance programs • Percentage of employees receiving regular performance and career development reviews • New employee hires and employee turnover • Benefits provided to full-time employees that are not provided to temporary or part-time employees • Parental leave • Operations and suppliers at significant risk for incidents of child labor • Operations and suppliers at significant risk for incidents of forced or compulsory labor
Employee health and safety	• Workers covered by an occupational health and safety management system • Work-related injuries
Employee engagement, diversity and inclusion	• Incidents of discrimination and corrective actions taken • Diversity of governance bodies and employees • Ratio of basic salary and remuneration of women to men

Example 5: ESG Disclosure – Metrics and Targets

One of the world's largest construction companies based in France[43]

Indicators related to key issues of sustainable development

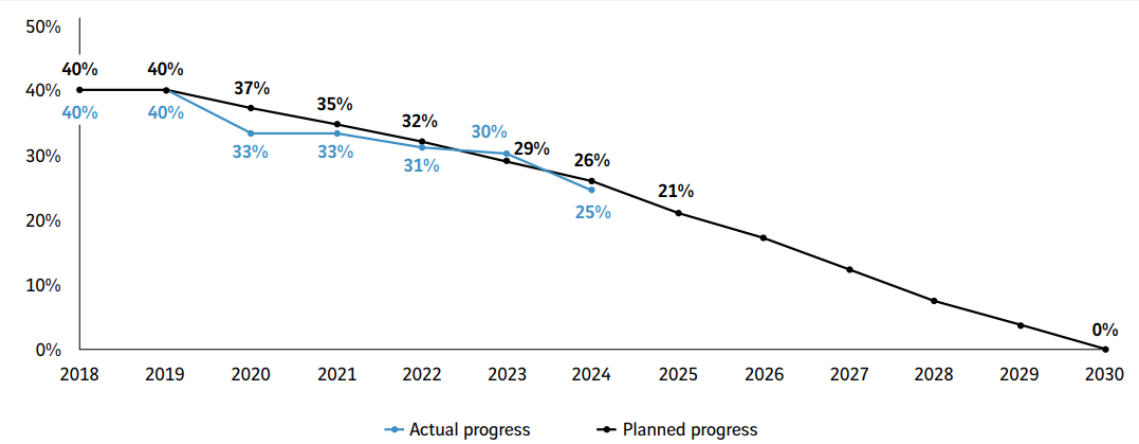
Enterprises disclose information on indicators related to key issues of sustainable development as follows:

(1) Energy Consumption

(2) Greenhouse Gas Emissions

(3) Progress against emissions reduction targets

Roadmap to reduce direct emissions



Businesses have set environmental goals based on their business segments:

	Acting for the climate	Optimising resources thanks to the circular economy	Preserving natural environments
VINCI Autoroutes	• 50% reduction in Scope 1 and 2 greenhouse gas (GHG) emissions by 2030 (from 2018 levels) • 50% average reduction in GHG emissions for each category of activities at worksites by 2030 (from 2019 levels) • 20% reduction in the GHG emissions of purchases and commercial installations by 2030 (from 2019 levels) • 20% reduction in the GHG emissions of VINCI Autoroutes customers by 2030 (from 2019 levels)	• 100% of asphalt mix recovered by 2030, of which 45% reused at VINCI Autoroutes' own worksites • 100% of non-hazardous waste recovered, of which 80% material recovery from operations waste	• 10% reduction in water withdrawals by 2030 (from 2018 levels) • Land rehabilitation plan • Zero phytosanitary products in use by 2030
VINCI Airports and other concessions	• 66% reduction in Scope 1 and 2 GHG emissions by 2030 (from 2018 levels) • Net zero emissions (Scopes 1 and 2) for airports in the EU (including London Gatwick and Edinburgh) by 2030 and for the other airports by 2050	• Zero waste to landfill by 2030	• 50% reduction in water consumption per unit of traffic by 2030 • Zero phytosanitary products in use by 2025 • Implement ecological management measures more widely at sites in operation and monitor natural environments
VINCI Energies	• Alignment with the Group's reduction targets	• 80% of inert waste recycled by 2030	• Alignment with the Group's reduction targets

Objectives to track the effectiveness of policies and actions

- For the group's business activities

The Group has set environmental ambitions for 2030, with two goals: to significantly reduce the direct impact of its operations and to help customers and partners reduce their environmental footprint. Environmental goals are based on 3 main pillars: (1) Climate action; (2) Resource optimization thanks to the circular economy; (3) Protect the natural environment.

Acting for the climate	Optimising resources thanks to the circular economy	Preserving natural environments
• Reduce direct greenhouse gas emissions (Scopes 1 and 2) by 40% from 2018 levels by 2030 • Reduce indirect upstream and downstream emissions (Scope 3) by 20% from 2019 levels by 2030, by taking action across the value chain for the Group's businesses • Adapt infrastructure and activities to improve their climate resilience SCIENCE BASED TARGETS	• Promote the use of construction techniques and materials that economise on natural resources • Improve waste sorting to implement waste recovery more widely • Expand the offer of recycled materials to limit extraction of virgin materials	• Prevent environmental nuisances and incidents by systematically implementing an environmental management plan in all Group businesses • Optimise water consumption, especially in areas of water stress • Aim to achieve no net loss of biodiversity

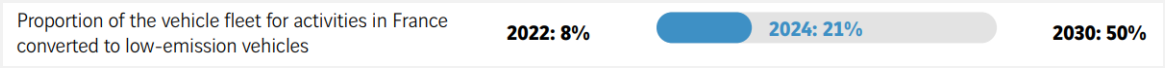
- For operational activities

In 2024, the Group continues to implement action plans to reduce direct emissions in four priority areas:

(1) Employee mobility;
(2) The performance of machinery at construction sites and heavy trucks;
(3) Optimize energy for industrial and building operations;
(4) Decarbonization in the energy mix

The Group updates data on the process of implementing the targets, including: data from the year the target implementation begins, current data and data for the target year

For example, with the Employee Mobility Target measured by the percentage of fleets for operations in France converted to low-emission vehicles, the process is announced as follows:



SECTION 3: ADDITIONAL GUIDANCE ON CLIMATE-RELATED DISCLOSURE

Stakeholder requirements for climate-related information for REC businesses are increasing due to the industry's significant impacts on the environment, society and governance. The Task Force on Climate-related Financial Disclosures (TCFD) has provided a globally recognized climate disclosure framework for financial institutions, and at the same time, other climate-related disclosure frameworks and standards are also referenced and aligned to ensure consistency with the TCFD.

According to TCFD,[44] the business operations of enterprises in the real estate and construction industry are assessed to have financial risks related to large greenhouse gas emissions and high energy consumption. Furthermore, several sectors in the industry are significantly dependent on water resources and/or susceptible to acute or chronic physical risks from weather events. Due to the high investment requirements and long service life of factories and buildings, it is extremely important to accelerate research, development, demonstration, and deployment (R&DDD). Therefore, the disclosure of information related to R&DDD plans and progress is an important factor for stakeholders to assess the current status and consider the current and future risks of enterprises in the industry.

At the same time, TCFD recommends that companies in the sector focus on disclosing information related to both qualitative and quantitative assessments, as well as the potential impacts of the following issues:

- Increasingly stringent regulations on emissions and/or carbon pricing, and their cost implications.
- REC sector should assess risks associated with the rising frequency and severity of extreme weather events or growing water scarcity, which may affect the business operating environment.
- Opportunities to develop products or services that enhance efficiency, reduce energy consumption, and support closed-loop product solutions.

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

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

1. Governance

TCFD CLIMATE-RELATED RECOMMENDED DISCLOSURES

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

Element	TCFD climate-related recommended disclosures
Integration of climate-related performance in incentive schemes	• Details of the board and executive member incentives linked to climate initiatives and a description of the criteria for the incentive compensation, including connection to specific metrics.

GUIDANCE ON DEVELOPING CLIMATE-RELATED GOVERNANCE DISCLOSURES FOR REAL ESTATE – CONSTRUCTION BUSINESSES

According to the Construction and building materials TCFD Preparer Forum report of wbcsd,[45] for governance, TCFD expects companies to clearly disclose whether they have integrated climate-related considerations into the governance processes of the Board of Directors and Executive Management, and to explain how this integration has been implemented. By integrating climate considerations into routine decision-making processes, the intention is that companies will develop investment, strategic planning and business development plans that effectively prepare them for shifts in consumer behavior, new regulatory environments and behavioral incentives designed to combat climate change. The TCFD expects that governance processes applied to climate change "would be similar to those used for existing public financial disclosures and would likely involve review by the chief financial officer and audit committee, as appropriate ".

The WBCSD's Construction and Building Materials TCFD Preparer Forum report[46] also conducts surveys and research on how industry leaders integrate climate considerations into governance such as enhancing diverse skills, knowledge, and expertise for committees and working groups. Business processes that integrate climate considerations outline the roles and responsibilities of the personnel involved, including the process for approving policies, job descriptions and assignments, and the relevant code of conduct and decision-making processes. Relevant processes and systems support the flow of information both internally and externally, reflect the company's culture and values for sustainable development, and ensure compliance with regulatory requirements and governance standards. Some businesses also conduct discussion meetings with the Board of Directors to provide comprehensive information on trends, developments and challenges that may impact the achievement of strategic goals. Climate change, emissions, and energy are all topics that are included in the discussion. A number of other businesses have implemented in-depth interview and survey processes to capture views from relevant leads across multiple jurisdictions and business streams.

Example 6: Climate-related disclosures – Governance

A world-leading building materials corporation headquartered in Switzerland[47]

Role of the Board of Directors

The Board of Directors is most responsible for the overall strategy and governance of the company.

The Health, Safety & Sustainability Committee advises the Council on all issues related to sustainable development, including climate change and energy. The Health, Safety & Sustainability Committee also reviews and approves the company's climate-related plans and targets.

The Executive Committee is responsible for implementing the climate and energy strategy. Climate-related issues are managed at the operational level by the Chief Sustainability Officer (CSO), an executive-level position established in 2019. The Chief Sustainability Officer is supported by a dedicated sustainability team. Half of the R&D projects focus on solutions to reduce carbon emissions. About 40% of the company's patents have a positive impact on carbon emissions throughout the value chain.

Example 7: Disclosure of information on climate – Governance

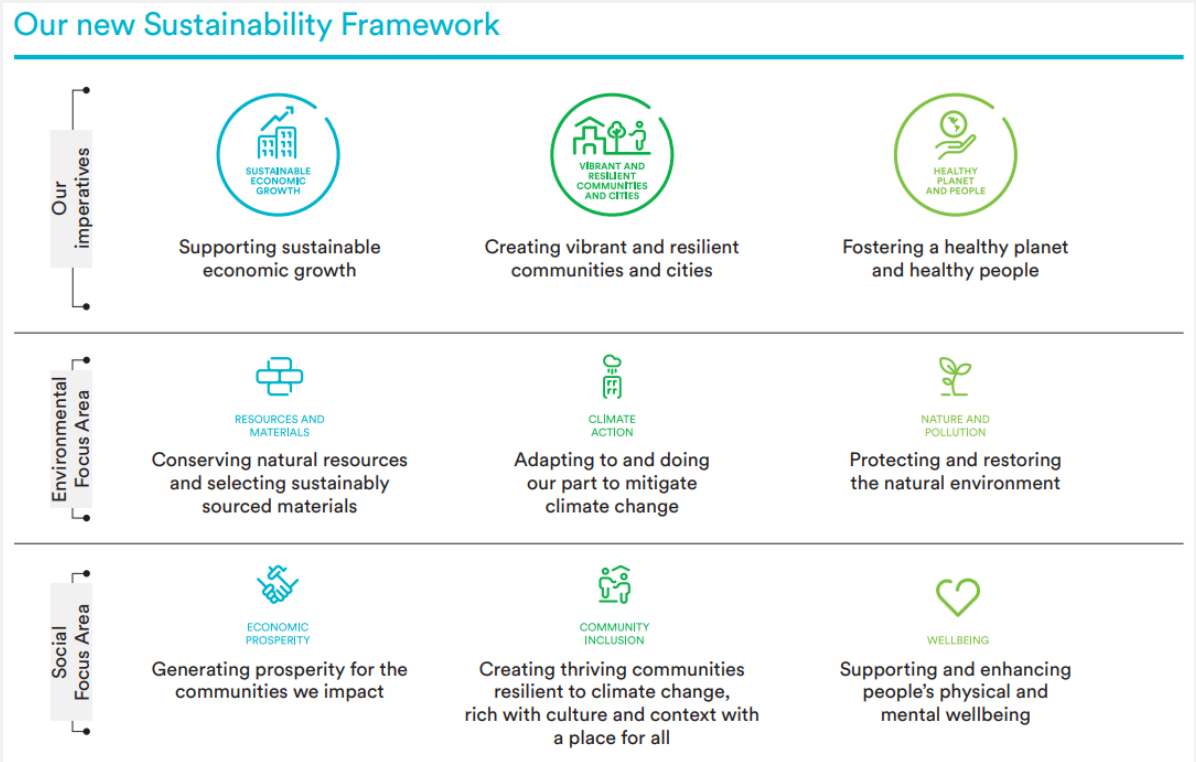
An Australian-based real estate, construction and investment group[47]

Manage and optimize performance in the context of the challenges of the built environment, including climate change and social pressures such as population growth and housing affordability.

Activities of the Board of Directors and the Sustainability Committee

- Approved the company's new Sustainability Framework for 2020, which aims to strategize for future generations and integrate sustainability into all business activities.
- Support the reconciliation commitment and initiatives in the Elevate Reconciliation Action Plan, as well as the ratification of the Uluru Statement from the Heart.
- Five Directors joined the Garma Program in August 2018, supporting the culture of Indigenous Australians. A total of seven current Board members have participated in this program.
- Approve the plan to develop "20 by 20" environmental goals, which aim to improve the environmental performance of projects and business activities.
- Discuss the group's four Climate Scenarios, designed to examine business strategy and respond to emerging trends, in line with the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD).
- Receive a report on the 10-year partnership between the business and the Great Barrier Reef Foundation, which supports initiatives to protect critical ecosystems in the Reef.
- Continue to support management to engage in industry discussions on forced labor and supply chain, to enhance transparency and accountability in business operations.

The Sustainable Development Framework relates to sustainable development activities:



2. Strategy

TCFD CLIMATE-RELATED RECOMMENDED DISCLOSURES

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

GUIDANCE ON DEVELOPING CLIMATE-RELATED STRATEGIES FOR ENTERPRISES IN FOR REAL ESTATE AND CONSTRUCTION BUSINESSES

i. Key climate-related risks, opportunities and impacts for businesses in the real estate and construction industry

Physical risks and opportunities

Acute physical risks of climate change include extreme weather events such as floods, hurricanes, strong winds, and wildfires. These events can have financial and operational impacts on companies in the REC sector, including halting of extraction activities, disruption of raw material supply chains, interruption of transportation and distribution routes, delays in construction activities and damage to infrastructure.[48] Chronic climate and environmental changes manifest themselves in the form of rising average temperatures, rising sea levels, and changes in precipitation patterns. These changes affect the energy needs of buildings and the suitability of sites for new development projects.[49] They can also affect the cost and availability of insurance products. In addition to the risks, the physical impacts of climate change also bring opportunities for businesses in the real estate and construction industry, including adaptation activities such as creating infrastructure that is resilient to both acute and chronic impacts of climate change. Mitigation measures include reducing the intensity of emissions in the construction value chain by developing low-carbon materials; providing infrastructure to generate renewable energy; and use CCUS.

Transition risks and opportunities

Transition risks to the REC industry are related to markets, reputation, technology, and policy/regulatory changes, such as carbon pricing.[50] Large emitters will incur higher operating costs associated with carbon pricing schemes in certain jurisdictions. This has an impact on global market competitiveness, prompting some companies to support policies such as “green border adjustment”, which are designed to prevent carbon leakage. In December 2019, the European Green Deal proposed a carbon border adjustment mechanism in

case climate ambition gaps between regions persist.[51] While there are still uncertainties about carbon pricing, some businesses are using internal carbon pricing as a basis for evaluating project options and deciding to invest in low-carbon alternatives to mitigate the impact.

Opportunities for the REC industry are increasing as the industry trend increasingly focuses on "greening" the built environment. Downstream in the value chain, some businesses in real estate construction and development see low-carbon regulations as an opportunity to market energy-efficient buildings. The growing demand for low-emission materials is also creating opportunities upstream for building material manufacturers, encouraging the development of carbon-efficient production techniques.[52]

To support businesses in the REC industry in disclosing information on climate-related risks and opportunities, the Construction and Building Materials TCFD Preparer Forum Report of wbcsd[53] has launched a list of climate risks and opportunities in the industry value chain, in order to support businesses to assess the most critical risks and opportunities and publish information on climate risks and opportunities. corresponding news.


Opportunity for strategic change and/or differentiation


Collaboration potential

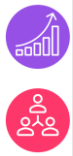

Increased operational costs

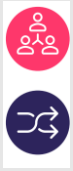

Business interruption


Increased capital expenditure and/or project investment

Table 10: Climate-related transition and physical risks across the REC value chain

Category	Sub-Category	Impact Type	VALUE CHAIN IMPLICATIONS	
			DEVELOPMENT	CONSTRUCTION
Policy and Legal	GHG emissions pricing		**Potential impact** • More demand for efficient buildings and lower embodied carbon. • Higher materials costs if carbon taxes are passed through the value chain. **Response** • Align development processes, decisions and expenditure plans with low-carbon priorities.	**Potential impact** • Requirement to work with lower carbon materials/ products. • Higher materials costs if carbon taxes are passed through the value chain. • Demand for companies to reduce their operational emissions. **Response** • Expenditure to adopt new materials and methods. • Innovation to drive increased material efficiency. • Explore options, such as carbon offsetting, to reduce impact of operational emissions.
Policy and Legal	Enhanced emissions reporting obligations		**Potential impact** • Increased operational spend on reporting activities. • Increased scrutiny from investors and other stakeholders on emissions reporting and action taken to mitigate climate change. • Greater stakeholder scrutiny of Scope 3 emissions reporting throughout the value chain. • Increasing discrepancy between legal reporting requirements and stakeholder disclosure expectations in some jurisdictions, requiring companies to produce an increasing number of specific reports. **Response** • Dialogue and collaboration between value chain players and other stakeholders to improve emissions reporting standards, with a focus on Scope 3 emissions calculations and reporting.	

Category	Sub-Category	Impact Type	VALUE CHAIN IMPLICATIONS	
			DEVELOPMENT	CONSTRUCTION
			• More transparent reporting of Scope 1, 2 and 3 emissions across the value chain..	
Policy and Legal	Product specification and regulatory changes		**Potential impact** • Introduction of new processes and regulations potentially leading to new ways of working, greater compliance costs and increased risk of fines and/or project cancellation. **Response** • Stay up to date and compliant with evolving regulation. • Source from suppliers that are compliant with new product specifications and regulatio.	**Potential impact** • Requirement to use materials and conduct activities in conformance with updated specifications. • Project timelines and methods impacted by variation in availability of certain materials. **Response** • Stay up to date and compliant with evolving regulation.
Policy and Legal	Climate change litigation		**Potential impact** Climate change litigation risks are nascent but include exposure to damages claims, financial and reputational costs of defending litigation, disruption to operations and enforcement of financial disclosure requirements. **Response** • Use existing risk management processes to manage exposure to climate change litigation. Company risk registers typically include 'exposure to litigation' as a risk. • Monitor developments in climate-related disclosure requirements, including evolving investor and stakeholder expectations regarding climate-related disclosures..	
Technology	Substitution of existing products and services with lower emissions options		**Potential impact** • Prioritize lower emissions products, services and methods. **Response** • Adopt a holistic approach focused on reducing embedded carbon and operational emissions of the built environment. • Include climate change-related screening in supplier and partner selection to procure lower carbon products and materials.	**Potential impact** • Construction methods and materials increasingly incorporate lower emissions options. **Response** • Ensure capability to incorporate lower emissions materials and products. • Develop a framework for selecting suppliers, materials and products based on sustainability criteria. • Increase collaboration with upstream suppliers to optimize lower emissions materials.
Technology	Costs to transition to lower emissions technology		**Potential impact** • Fluctuation in the profitability of projects depending on upstream costs of producing lower emissions materials and products. • Increased profitability of projects where regulatory changes/ government	**Potential impact** • Construction costs could rise periodically as companies adapt to working with lower emissions materials and methods.

Category	Sub-Category	Impact Type	VALUE CHAIN IMPLICATIONS	
			DEVELOPMENT	CONSTRUCTION
			incentives favor low-carbon options. **Response** • Assess the viability of construction projects that utilize low emissions technologies. • Communicate results of viability assessment to help identify solutions and promote adoption/ uptake of these technologies..	**Response** • Provide training and preparation for key actors and employees. • Maintain communication with value chain partners to prepare for disruptive changes.
Market	Increased cost of raw materials, shift in consumer preferences		**Potential impact** • Increased materials costs impact profitability and/ or viability of construction projects. • Ability to prioritize use of lowcarbon materials jeopardized if they become too expensive. • Increased energy prices affect operational costs. **Response** • Materials price sensitivity assessment and contingency plans for procurement.	**Potential impact** • Increased costs if prices of energy and/or raw materials rise and are passed through the value chain. • Changing customer preferences incentivize use of new materials.. **Response** • Improve capacity to satisfy consumer preferences and manage exposure to price volatility. • Develop contingency plans to manage material price fluctuations. • Improve efficiency of energy consumption and material use.
Reputation	Changing public perceptions of the sector		**Potential impact** Negative public image arising from issues related to sustainability and climate change results in reduced demand for products and services. **Response** • Maintain focus on sustainability reporting, corporate citizenship and environmental responsibility, ensuring this is well documented and transparently communicated. • Maintain strategic focus on minimizing environmental impact and contributing to climate change mitigation and adaptation efforts. • Explore potential for differentiation in the market based on environmental credentials.	

ii. Strategic resilience to climate-related risks

Strategic resilience are threatened by climate-related shocks and stressors that affect the infrastructure, assets, plans, supply chains, products, processes, and finances that businesses depend on to realize their strategies and goals.

According to the Construction and Building Materials TCFD Preparer Forum Report of wbcsd[54], the resilience of enterprises can be proven through the following disclosure of enterprises:

- **Integrate climate considerations into the strategy**;
- **Innovate, research and develop new products and services that take advantage of mitigation and adaptation opportunities** such as expanding collaborative partnerships for business unit-led projects, connecting with academia and cross-functional R&D centers on carbon neutrality, energy efficiency, circularity, high-performance materials, insulation materials, sustainable materials, and low-carbon heating and cooling systems. Enterprises should clearly disclose:

- Explain the variety of approaches taken to pursue mitigation and adaptation opportunities;
- Identify collaborations relating to climate, energy and sustainability;
- Describe relevant patents for mitigation and adaptation technologies;
- Identify resources (financial, human and functional) allocated to climate mitigation and adaptation research;
- Describe the number/ proportion of new products and solutions that address climate-related challenges; and
- Describe the expected contribution, outcomes and impacts of the product/solution in terms of emissions reduction, energy saving, resource efficiency or adaptive capacity.

- **Future transition plans for business development are built on the basis of long-term analysis based on the following scenarios**: The TCFD encourages all businesses to consider using scenario analysis as a basis for strategic and financial planning, as well as the disclosure of strategic resilience in a range of climate-appropriate scenarios.

INVESTOR'S PERSPECTIVE - ASSESSING STRATEGIC RESILIENCE THROUGH SCENARIO ANALYSIS - CONSTRUCTION AND BUILDING MATERIALS TCFD PREPARER FORUM REPORT by wbcsd[55]

In the context of climate change, investors are interested in how businesses adapt to challenges and ensure sustainable operations in the long term. They want businesses to provide information about strategic resilience by answering questions: How will businesses respond to different climate scenarios? When is it necessary to change strategy to adapt to new impacts?

Strategic resilience assessment disclosures based on scenario analysis are valuable when providing information about the factors involved.

- Awareness and response plans of businesses to potential changes, including how to adjust operations in different situations.
- The commitment of the enterprise to the long-term strategy, reflected in governance, capital allocation and resource mobilization to achieve adaptation goals.
- Transformation roadmap, clearly define the steps to be taken based on existing capacity and development orientation.
- Assumptions and references that explain and justify the thought processes behind the assessment, the scenarios used and the assumptions that inform the outcome;
- Assessment purpose and impact, explaining whether scenario analysis is being used to inform strategic decisions at board and management levels and, if so, what effect those decisions might have in terms of driving change within the company;
- Narrative to explain the use of KPIs and other quantified information;
- Financial implications under different scenarios, including impact on revenues, capital expenditure and operational expenditure..

If the business does not publish a scenario analysis, investors often estimate the level of resilience based on the available data. However, they still encourage businesses to proactively conduct assessments to increase transparency and clearly demonstrate responsibility during the transformation process.

Example 8: Climate-related Disclosure – Strategy

A leading company in the construction and real estate sector in Switzerland and Germany[56]

Describe key climate-related risks and opportunities in the short, medium and long term, and their linkages to the development of a strategy for each planning period.

According to TCFD guidance, the company considers both physical risks, such as the increased frequency of extreme weather events; and conversion risks, including regulatory changes and shifts in market demand. The company uses qualitative and quantitative methods to assess the severity of these risks.

The company also considers regional differences and different timelines, with risk classification by period:

- Short-term (less than 1 year)
- Medium-term (2–5 years)
- Long-term (over 5 years)

Analysis of the effects of climate impacts, risks and critical opportunities

Transition risks

Policy & legal

Climate-related risks	Potential financial impact	Likelihood	Mitigation measures
Failure to meet ESG criteria	■ Potential loss of investors and clients ■ Potential impact on share price ■ Increased borrowing costs	Probable	■ Improve data quality and expand ESG indicators ■ Drive goals ■ Update reports for rating agencies ■ Hold regular meetings on ESG strategy
Non-compliance with environmental standards in the construction sector	■ Loss of market share or reduced market presence ■ Negative effects on order book ■ Loss of trust among private and government customers	Possible	■ Improve awareness of environmental standards among project managers through regular education and training
Increased cost of carbon	■ Higher spending on carbon-intensive materials ■ Higher project costs ■ Lower profits ■ Legal penalties ■ Competitive disadvantages	Possible	■ Monitor impact of carbon pricing regulations on the company and its supply chain ■ Reduce carbon-intensive materials or replace them with lower-carbon alternatives

Market

Climate-related risks	Potential financial impact	Likelihood	Mitigation measures
Changing customer behaviour	■ Loss of market share ■ Loss of revenue ■ Lower income	Possible	■ Ongoing monitoring of market trends ■ Further development of products and services to meet evolving sustainability and efficiency requirements
Availability and increased cost of raw materials	■ Higher project costs ■ Project delays and feasibility risks ■ Smaller portfolio offering	Possible	■ Analyse supply chains to identify risks ■ Improve forecasts and safety stocks ■ Promote renewable materials and supply chain diversity
Non-sustainable supply chains	■ Fines and litigation ■ Reputational problems ■ Loss of customers and investor confidence	Probable	■ Manage the sustainability goal "sustainable supply chain" ■ Improve value chain reporting ■ Focus on the sustainability of the supply chain in four key areas: human rights, work, environment, anti-corruption

Physical Risks

Acute

Climate-related risks	Potential financial impact	Likelihood	Mitigation measures
Extreme weather events	■ Increased operating costs ■ Loss of revenue ■ Supply chain disruptions ■ Damage to infrastructure	Probable	■ Improve worker safety ■ Plan for emergencies ■ Insure against damage ■ Strengthen supply chain logistics

Chronisch

Climate-related risks	Potential financial impact	Likelihood	Mitigation measures
Persistently higher temperatures and rising sea levels	■ Increased costs for cooling and maintenance ■ Flood defence costs	Probable	■ Improve worker safety ■ Design buildings with reflective, insulated, waterproof materials ■ More research and development focused on innovation

3. Risk Management

TCFD CLIMATE DISCLOSURE REQUIREMENTS

Elements	TCFD climate-related recommended disclosures
Description of the extent to which, and how, the processes for	• Describe the organization's processes for identifying and assessing climate-related risks.

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

GUIDANCE ON DEVELOPING CLIMATE-RELATED RISK MANAGEMENT DISCLOSURES FOR REAL ESTATE AND CONSTRUCTION ENTERPRISES

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

Example 9: Climate-related disclosure – Risk management

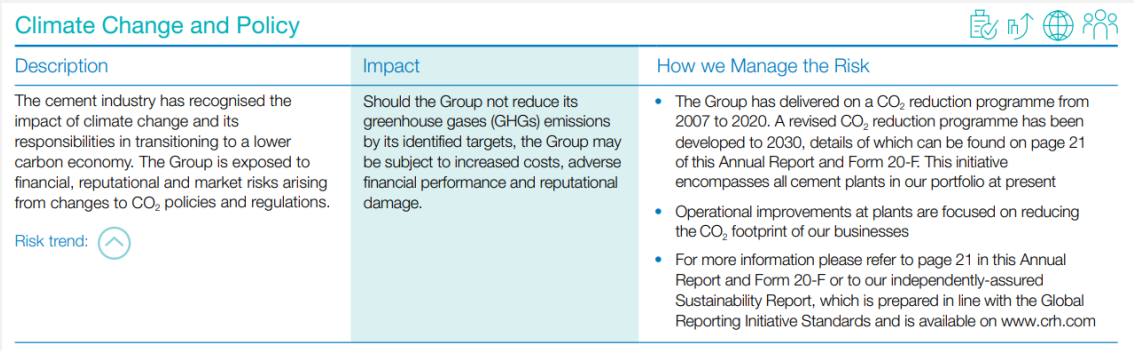
A world's leading building materials corporation[47]

Businesses apply the Three Lines of Defense model to manage risk throughout the system, from the enterprise level to the branch level, ensuring effective risk control processes and good compliance with governance principles. To enhance the effectiveness of the Three Lines of Defense model, enterprises integrate risk management into their operational strategies to minimize the impact of external factors, especially risks related to climate change and environmental policies. These risks include the cost of complying with emissions regulations, the financial impact of carbon policies, as well as changing market demand for sustainable products.

(1) The first line of defense – Operations management: Member companies and business leaders are responsible for identifying, managing risks and ensuring a tightly controlled environment.

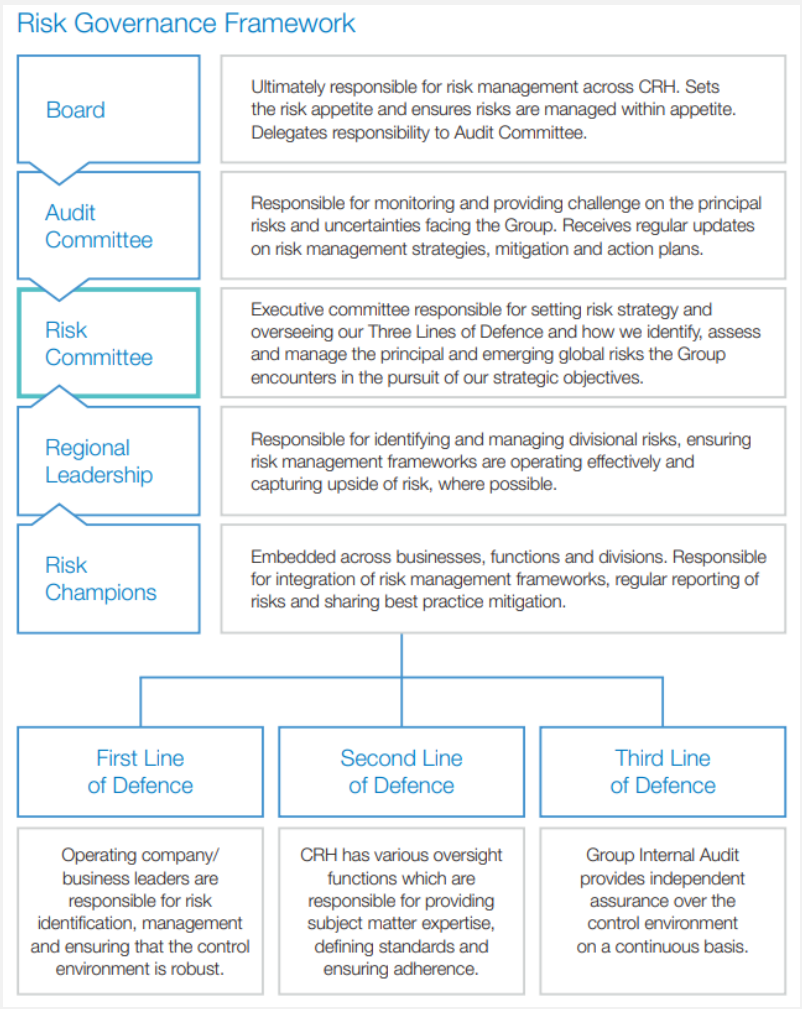
(2) Second line of defense – Monitoring & compliance: The Group has specialized oversight departments, which are responsible for providing in-depth knowledge, setting standards and ensuring compliance. Businesses also apply real-time data collection technology to track emissions, thereby adjusting their emission reduction strategies more effectively.

(3) Third line of defense – Assessment & assurance: The group's Internal Audit department conducts continuous monitoring and provides an independent assessment of compliance with ESG risk standards. The findings from the audit process help businesses improve their ability to adapt to environmental and financial risks, and adjust their strategies to maintain stability and sustainable development.



Climate Change and Policy

Description	Impact	How we Manage the Risk
The cement industry has recognised the impact of climate change and its responsibilities in transitioning to a lower carbon economy. The Group is exposed to financial, reputational and market risks arising from changes to CO_2 policies and regulations. Risk trend:	Should the Group not reduce its greenhouse gases (GHGs) emissions by its identified targets, the Group may be subject to increased costs, adverse financial performance and reputational damage.	• The Group has delivered on a CO_2 reduction programme from 2007 to 2020. A revised CO_2 reduction programme has been developed to 2030, details of which can be found on page 21 of this Annual Report and Form 20-F. This initiative encompasses all cement plants in our portfolio at present • Operational improvements at plants are focused on reducing the CO_2 footprint of our businesses • For more information please refer to page 21 in this Annual Report and Form 20-F or to our independently-assured Sustainability Report, which is prepared in line with the Global Reporting Initiative Standards and is available on www.crh.com



4. Metrics and targets

TCFD CLIMATE-RELATED RECOMMENDED DISCLOSURES

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

GUIDANCE ON DEVELOPING CLIMATE-RELATED METRICS AND TARGETS FOR REAL ESTATE AND CONSTRUCTION ENTERPRISES

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

Construction and Building Materials TCFD Preparer Forum[57] has developed a list of useful disclosure metrics for real estate and construction enterprises to refer to. The purpose of is to promote increased industry

disclosure and provide options for businesses to communicate about climate goals and climate efficiency, based on their business operations, impacts, dependencies and their own priorities.

Businesses when disclosing metrics need to explain the approach in calculating the metrics, including the relevant definitions, scope, and activities to which the metrics apply. Businesses should consider and choose to report the most relevant and important metrics for the business.

Table 11: : Illustrative climate-related metrics for REC sector companies - Construction and Building Materials TCFD Preparer Forum[58]

Category	Metric	Unit
Energy Consumption	Total energy consumed - percentage from coal, natural gas, oil and different renewable sources[59]	GJ and %
	Total energy intensity[60]	GJ/(business factors – tons of products, amount of sales, number of products)
	Scope 2 electricity purchased/consumed[61]	GJ or %
GHG emissions	Scope 1 and 2 GHG emissions[62]	Tons of CO_2e
	Scope 3 GHG emissions[63]	Tons of CO_2e
	Emission intensity	Tonnes CO_2e/revenue[64]
	CO_2 emissions avoided [65]	Tons of CO_2e
Use of water	Freshwater withdrawn in regions with high or extremely high baseline water stress	Tonnes & %
	Manufacture/production/operating water intensity	Tons of water (production unit/output)
	Recycled water used in manufacture/production/operations	% of total water used or tonnes of recycled water / (production unit/output)
Physical impact and climate resilience	Insurance coverage of gross high-risk sites [66]	%
	Projected changes in production, operational expenditure or capital expenditure due to climate change [67]	Currency
	Current projects/solutions supporting physical climate resilience (e.g. heat stress, flooding etc.)	Quantity &/or %
Carbon Pricing	Internal carbon price	Currency
	Scope of emissions covered by an ETS/carbon taxation regime	%
	Total cost of carbon tax paid	Currency
Investment and Research & Development (R&D)	Investment (Capex) in low-carbon alternatives	Currency
	Revenues/savings from investments in low-carbon alternatives (e.g. R&D, equipment, products or services)	Currency
	Innovative climate-related collaboration agreements (e.g. with academics, technology partners)	Amount
	New low-carbon or climate resilient products	Quantity &/or % (e.g., market size, growth potential)
	Products and solutions (e.g. materials, properties) certified as sustainable	Quantity &/or %
	Development pipeline targeting climate mitigation/adaptation criteria	Quantity &/or %

Category	Metric	Unit
Expenditures	Expenditures (OpEx) for low-carbon alternatives (e.g. R&D, technology, products or services)	Currency
	Materials used/purchased certified as sustainable	%
Green Finance	Value of capital raised through green financing/green bond issuance	Currency
	Financial performance of green projects or products	Currency & % (e.g., return on investment (ROI), sales, growth)
	Portfolio of green projects	Quantity &/or %
	Pipeline for green projects	Quantity &/or %

Example 10: Climate-related Disclosure - Metrics and Targets

The real estate and infrastructure construction group based in Malaysia.[68]

The Group publishes a full range of indicators covering the following topics: GHG Emissions, Energy Use, Water and Waste. In which, the indicators are divided by category and country where the Group operates

Description	UoM	FY2024	FY2023	FY2022
Intensity				
GHG emissions intensity ratio for the organisation	tCO_2e/RM million revenue	5	4	7
Environmental Fines and Penalties				
Total costs	RM	0	0	0
Gross direct (scope 1) GHG emissions				
Total	tCO_2e	31,224	7,245	8,428
Gross direct (scope 1) GHG emissions by categories				
Total	tCO_2e	31,224	7,245	8,428
Managed infrastructures	tCO_2e	10,458	5,501	3,298
Construction sites	tCO_2e	19,556	158	6
Operating plants	tCO_2e	1,210	1,586	5,124
Gross direct (Scope 1) GHG emissions by countries				
Australia	tCO_2e	12,880[2]	99	N/A
Malaysia	tCO_2e	18,334[2]	7,146	8,428
Singapore	tCO_2e	0	N/A	N/A
Taiwan	tCO_2e	2	N/A	N/A
Vietnam	tCO_2e	8[2]		N/A
Gross location-based energy indirect (Scope 2) GHG emissions				
Total	tCO_2e	36,699	20,897	18,147
Gross location-based energy indirect (Scope 2) GHG emissions by categories				
Total	tCO_2e	36,699	19,677	18,147
Managed infrastructures	tCO_2e	33,223	19,526	16,342
Construction sites	tCO_2e	457	857	29
Operating plants	tCO_2e	3,019	513	1,776
Gross location-based energy indirect (Scope 2) GHG emissions by countries				
Australia	tCO_2e	631[2]	206	N/A
Malaysia	tCO_2e	33,267[2]	19,677	18,147
Singapore	tCO_2e	12	N/A	N/A
Taiwan	tCO_2e	4	N/A	N/A
Vietnam	tCO_2e	2,784[2]	1,134	N/A
Gross other indirect (Scope 3) GHG emissions				
Total	tCO_2e	398,606	130,008	5,709
Gross other indirect (Scope 3) GHG emissions by categories				
Category 1: Purchased Goods and Services	tCO_2e	71,767	91,636	37,927
Category 2: Capital Goods	tCO_2e	2,515	823	99
Category 4: Upstream Transportation and Distribution	tCO_2e	175	N/A	N/A
Category 5: Waste Generated in Operations	tCO_2e	112	392	313
Category 6: Business Travels	tCO_2e	757	774	216
Category 7: Employee Commuting	tCO_2e	11,237	28,651	18,361
Category 8: Upstream Leased Assets	tCO_2e	401	1,375	1,266
Category 9: Downstream Transportation & Distribution	tCO_2e	195	N/A	14,229
Category 13: Downstream Leased Assets	tCO_2e	338	238	176
Category 15: Investments	tCO_2e	311,109	N/A	N/A
Energy consumption				
Total	kWh	86,123,273	30,167,811	32,213,524
Renewable sources	kWh	37,138,691	6,717,286	1,348,642
Non-renewable sources	kWh	48,984,582	23,450,525	30,864,882

Description	UoM	FY2024	FY2023	FY2022
Electricity consumption by countries				
Malaysia	kWh	43,888,617	24,645,024	30,864,882
TNB Green Electricity Tariff (GET)/ RECs				
Total	kWh	34,128,360	5,981,355	2,056,531
Malaysia	kWh	3,852,871	3,943,025	2,056,531
Australia	kWh	30,275,489	2,038,330	N/A
Electricity generated from solar panels				
Total	kWh	3,010,332	3,285,700	1,846,020
Australia	kWh	43,893	N/A	N/A
Malaysia	kWh	2,095,886	2,347,311	921,777
Vietnam	kWh	870,553	938,389	924,243
Water				
Water withdrawal by source				
Total	m³	1,872,475	1,713,669	1,200,000
Third-party water	m³	1,490,269	980,026	1,060,800
Surface water	m³	382,206	773,643	139,200
Water withdrawal in malaysia by source				
Total	m³	1,519,263	1,628,019	1,200,000
Third-party water	m³	1,241,607	932,838	1,060,800
Surface water	m³	277,656	695,181	139,200
Waste				
Total weight of waste generated	tonnes	3,974,271	27,587	6,326
Total weight of waste generated by categories				
Hazardous waste				
Total	tonnes	2,807,933	96	84
Non-hazardous waste				
Total	tonnes	1,166,338	27,490	6,242
Non-recycled waste (general waste)	tonnes	188,885	24,187	5,421
Garden waste	tonnes	1,264	239	211
Food waste	tonnes	1,823	284	16
Recycled waste	tonnes	974,366	1,549	585
Conservation area				
IUCN Red List species				
Total	numbers	91	82	79
Critically endangered	numbers	8	7	7
Endangered	numbers	17	14	14
Vulnerable	numbers	30	26	24
Near threatened	numbers	36	35	34

In fiscal year 2024, the Group further strengthened its commitment to climate-related initiatives by continuing to collect Scope 3 emissions data from its suppliers. The Group is also assessing its carbon stocks to determine the carbon life cycle as part of its preparation for future carbon credits/taxes.

The Group also publishes information on design and planning that helps reduce carbon emissions in construction.

	2022 - 2023	2024
Our Landmark Penang Silicon Island		
50% reduction in CO_2e emissions compared to business as usual (BAU) by 2030	• The island's master plan obtained a 5-Diamond recognition for the Design category from the Malaysian Green Technology and Climate Change Corporation (MGTC) in the Low Carbon Cities 2030 Challenge (LCC2030C)	• Ongoing carbon accounting for reclamation works • Ongoing improvements to the masterplanning
Developments and townships: 40% reduction in CO_2e emissions compared to BAU by 2030		
Urban planning emissions reduction targets	Low Carbon Cities Framework (LCCF) Rating: • Gamuda Cove - 45% • Gamuda Gardens - 24% • twentyfive7 - 10%	• Ongoing assessment for a new township, Gardens Park
35% reduction in urban planning emissions with sustainable masterplanning, shared facilities and green features	• Installed 24 EV chargers	• 62 EV chargers installed across our townships, projects and assets
10% reduction in transport emissions through green mobility plans	• Installed 97 km out of 250 km planned cycling pathways	• Installed 97 km out of 250 km planned cycling pathways
Reduction of construction waste to landfill of 20%	• 7% waste reduction to the landfill from our assets and developments	• 95% of waste produced from our developments, construction sites and assets were successfully diverted from the landfill
Recycle 50% of water at our construction sites	• Recycled 26% and 17% of surface water within our construction sites and developments respectively	• Recycled 19% of surface water within our operations

As part of its commitment to the Green Plan 2025, the Group has prioritized reducing carbon emissions as a key performance indicator, with active efforts to install solar panels and EV charging stations throughout our properties. The Group owns RM1,749 million in properties and investment properties, of which RM1,342 million (77%) is equipped with renewable energy sources, such as solar panels and green facilities, including EV charging stations. This leaves RM 407 million (23%) of the Group's buildings and investment properties still not fully equipped with renewable energy sources and green facilities.

Among the physical climate-related risks assessed, the most relevant risk to current local operations is flood risk, especially for projects located in low-lying areas. Potential impacts include operational disruptions and elevated maintenance costs. Currently, about RM6.7 million of factories and equipment are located in locations identified as flood-vulnerable.

The Group has formed a joint venture to develop the 187.5 MW Ulu Padas Hydropower Project in Tenom, Sabah and proposed a floating solar solution to integrate with the project to Sabah Energy Corporation Sdn Bhd. This RM3.0 billion initiative is expected to make a significant contribution to the national grid and support sustainable energy production in Sabah. In Australia, through its subsidiary, the Group has signed a contract to build the Boulder Creek Wind Farm project, worth A$243 million (approximately RM702 million). The project will boost Queensland's efforts to achieve its target of 50% of total electricity generation from renewable energy by 2030.

APPENDIX

APPENDIX A: LIST OF SUBSECTORS OF THE REAL ESTATE – CONSTRUCTION SECTOR GUIDANCE

According to Decision No. 27/2018/QD-TTg on the promulgation of Vietnam's economic sector system, organizations within the scope of this sector guidance are enterprises operating in:

- Level 1 Industry: F – Construction: " his section includes: General construction and specialized construction activities for buildings and civil engineering works. It includes new work, repair, additions and alterations, the erection of prefabricated buildings or structures on the site and also construction of a temporary nature. General construction is the construction of: entire dwellings, office buildings, stores and other public and utility buildings, farm buildings etc. Construction of civil engineering works includes: motorways, streets, bridges, tunnels, railways, airfields, harbors and other water projects, irrigation systems, sewerage systems, industrial facilities, pipelines and electric lines, sports facilities etc." Level 1: F – Construction is divided into 3 subdisciplines (Level 2), further classified into 7 groups (Level 3). After that, these 7 groups were divided into 18 classes (Level 4) and further classified into 19 subclasses (Level 5).
- Level 1 Industry: L – Real Estate Business Activities: " This section includes the activities of lessors, agents and brokers in one or more of the following: selling or buying real estates, leasing real estates, providing other real estate services such as appraising real estate or acting as real estate brokers. This section also includes: Purchasing or renting property on a fee or contract basis, building of structures, combined with maintaining ownership or leasing of such structures, real estate management." Level 1 Industry: L - Real Estate activities include 1 sub-sector (Level 2), divided into 2 groups (Level 3). After that, these 2 groups were then divided into 2 classes (Level 4) and further classified into 7 subclasses (Level 5).

The table below provides a detailed classification of the Real Estate – Construction industry according to Decision No. 27/QD-TTg.

System classify	Section	Division	Group	Description
Decision No. 27/QD-TTg				
	F			**CONSTRUCTION**
		41		**Construction of buildings**
		42		**Civil engineering**
			421	Construction of roads and railways
			422	Construction of utility projects
			429	Construction of other civil engineering projects
		43		**Specialized construction activities**
			431	Demolition and site preparation
			432	Electrical, plumbing and other construction installation activities
			433	Building completion and finishing
			439	Other specialized construction activities
	L			**REAL ESTATE BUSINESS ACTIVITIES**
		68		**Real estate activities**
			681	Trading of own or rented property and land use rights
			682	Real estate consultancy and brokerage and auctioning, land use right auctioning

APPENDIX B: REC SECTOR - RATING SYSTEMS AND TOOLS

Table 12: Holistic rating systems and tools in more detail. Source: USGBC[69]

	BREEAM	Green Mark	HQE
Building Stage	Planning; Construction; Operational; Retrofits.	Planning; Construction; Operational; Retrofits.	Planning; Construction; Operational; Retrofits.
Type of System	Holistic, voluntary	Holistic, voluntary/mandatory for key (strategic) land sales sites and public buildings	Holistic, voluntary
Origin	United Kingdom	Singapore	France
Description	BREEAM is the world's leading science-based suite of validation and certification systems for sustainable built environment	Green Mark is a leading holistic rating system with a strong focus energy performance and efficiency, decarbonization, health and wellbeing as well as climate resilience. Used in Singapore and regionally within Asia	HQE is an international certification that evaluates a building's environmental performance, occupant health and comfort, economic efficiency, and responsible management throughout its entire life cycle.
Assessment process	Assessments are conducted by Assessors trained and licensed by BRE to determine the rating achieved. On site verification is required as part of the process and the assessments undergo a rigorous quality assurance process by BRE before certification can be issued	Two independent assessors within the BCA or independent external assessors to conduct assessment for the project including interactive sessions, documentation review and through onsite verifications.	HQE verification involves third-party audits by independent auditors at each project stage-design, construction, and operation. Auditors evaluate documentation and conduct site visits to ensure the building meets HQE's criteria before certificate issuance by CERTIVEA
Governance	BREEAM acts with impartiality and in line with its UKAS (UK Accreditation Service) accredited processes. BREEAM works alongside industry experts during the scheme development and approval process. BREEAM has been adapted for 7 markets by National Scheme Operators (see Additional Notes) who are required to follow the same governance process and the versions signed off by BRE as being appropriately aligned with the International version of BREEAM.	Green Mark is developed in consultation with industry & reviewed by expert technical and industry Advisory Groups. Oversight through the Green Building Advisory Committee with escalation to the BCA Management Board, made up of a higher level of public and private members.	HQE sustains rigorous governance standards to ensure impartiality and consistency across its global operations. Its certification process is accredited by COFRAC (Comité Français d'accréditation) in compliance with the NF EN ISO/IEC 17065:2012 standard, requiring competence, consistent operation, and impartiality of certifying bodies. HQE collaborates with industry experts in developing and approving HQE's schemes, and independent third-party auditors carry out the audits. National Scheme Operators might adapt methodologies to local markets, but must align with HQE's structure, and follow the same governance processes.

APPENDIX C: INITIATIVES ON ESG TRANSFORMATION FOR THE REAL ESTATE – CONSTRUCTION SECTOR FOR REFERENCE

1. Decarbonisation

1.1 Energy efficiency

Energy efficiency stands as a cornerstone initiative in the quest to decarbonize commercial real estate. It encapsulates the practice of reducing energy consumption while maintaining or improving services in commercial buildings. The importance of this initiative cannot be overstated, as it not only leads to substantial cost savings but also significantly curtails greenhouse gas emissions, contributing to the mitigation of climate change. Given that commercial buildings are major energy consumers, often relying on fossil fuels, any reduction in energy demand translates directly into decreased CO2 emissions. This is a critical step towards a more sustainable and environmentally responsible commercial buildings sector.

It's necessary to adopt holistic energy efficiency strategies through a strategic combination of early planning and collaborative team efforts by architects, surveyors, engineers, and building professionals in design and construction through passive and active energy efficiency measures.

- Passive design measures introduce energy conservation through architectural design.
- Active design measures introduce energy efficiency methodology through engineering design and the selection and operation of energy-efficient equipment and systems such as air-conditioning, chillers, boilers, and lighting.

Organisations can refer to some passive and active design measures to increase energy efficiency in buildings in ERIA's Technical Guidelines for Energy Efficiency and Conservation in Commercial Buildings.[70]

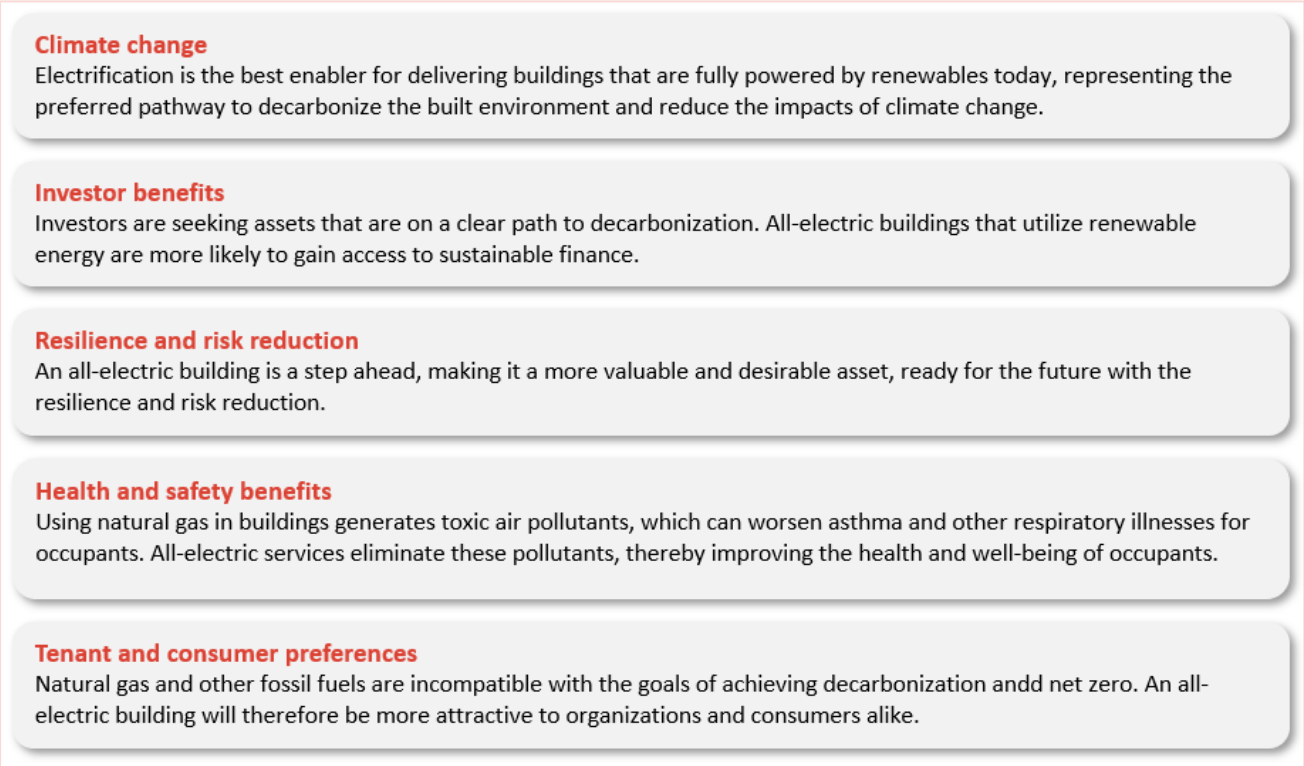
1.2 Electrification

“Electrification is found to reduce total greenhouse gas emissions in single family homes by 30% – 60% in 2020, relative to a natural gas-fuelled home. As the carbon intensity of the grid decreases over time, these savings are estimated to increase to ~80% – 90% by 2050, including the impacts of upstream methane leakage and refrigerant gas leakage from air conditioners and heat pumps.” (E3 2019 Study)[71]

Electrification in the commercial real estate sector is the process of transitioning from fossil fuel-based systems to electric systems for functions such as heating, cooling, and cooking. The ultimate aim is to power buildings entirely with electricity derived from renewable sources, thereby reducing emissions and enhancing the health and safety of building occupants.

All new buildings can be built to be all-electric today. Building organizations are currently under pressure and motivated to foster electrification in the built environment. The figure below shows key motivations for the electrification of REC organizations.

Figure 1 Key motivations for electrification of REC companies – Source: CEFC[72]



The transition to electrification in commercial real estate is not just a trend; it is an imperative shift that carries profound financial, environmental, and regulatory significance. Enterprises can find several key alternatives to natural gas for electrifying a building in CEFC's A practical guide to electrification: For new buildings.[73]

1.3 Transition to renewable energy and carbon-free fuels

Adopting renewable energy is a key strategy for making the commercial real estate sector more sustainable. By incorporating sources like solar, wind, and geothermal power into buildings, the industry can move away from fossil fuels, cut down on carbon emissions, and support global efforts to combat climate change. This not only helps meet environmental goals but also increases the value of properties, benefiting everyone from tenants to investors and the broader community.[74]

Organizations can procure renewable energy in three ways: (i) Owning renewable energy systems and consuming the energy they generate, (ii) purchasing renewable power from third-party-owned systems, or (iii) purchasing unbundled renewable energy credits (RECs). Renewable energy generation can occur on-site (e.g. rooftop solar, micro-wind) or off-site (e.g. utility-scale renewables, community solar).[75]

Before selecting an appropriate renewable energy technology to apply to a building project, it is important to first consider a number of factors. Examples of these factors include:

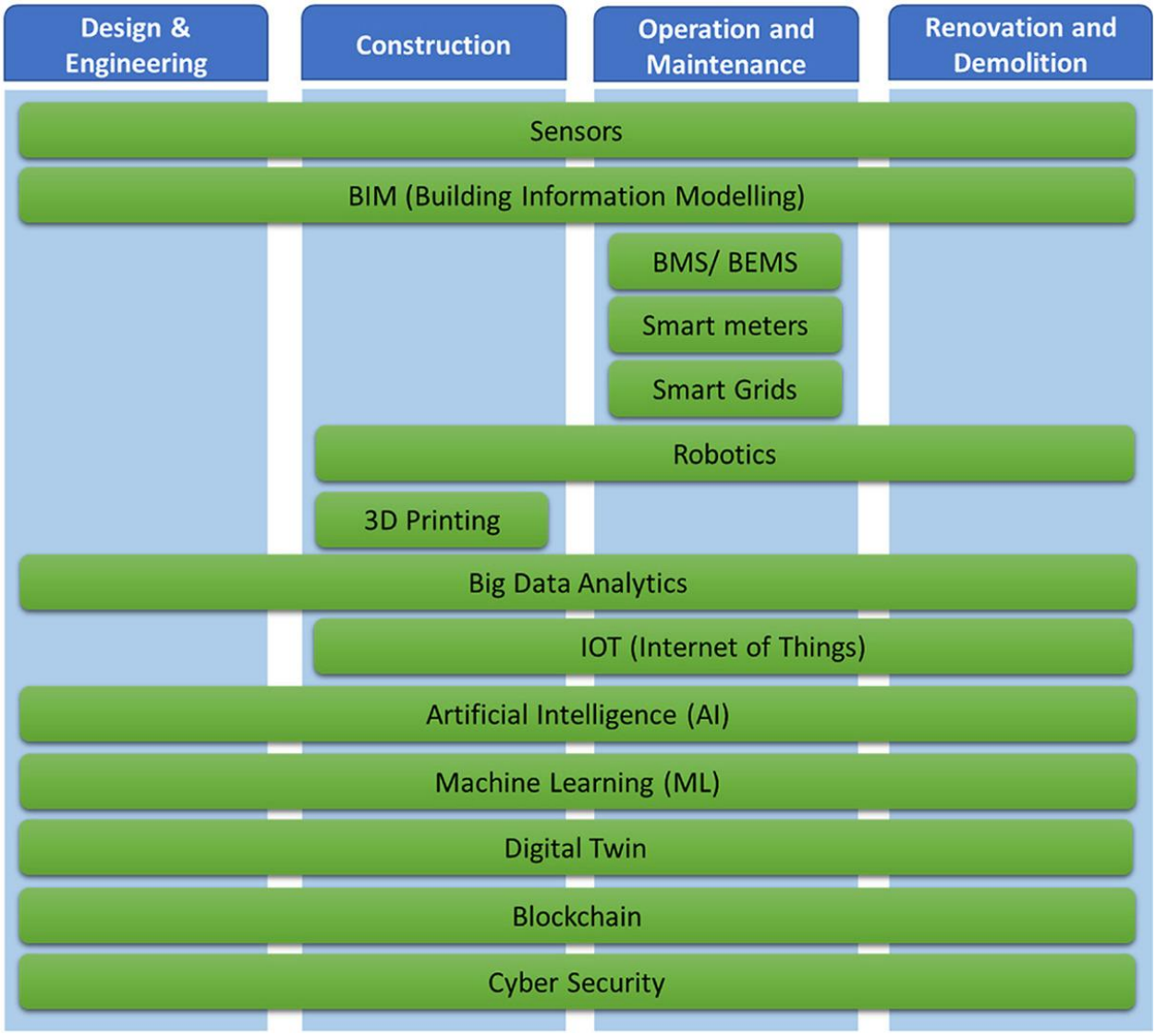
- Available renewable energy resource at or near the building site;
- Available area for siting of the renewable energy technology;
- Cost of energy purchased from the electrical or thermal energy provider for the building;
- Available incentives for offsetting the installation cost of the renewable energy system;
- Local regulations affecting renewable energy systems;
- Desire to preserve or not alter existing architectural features;
- Characteristics of the energy profiles to be offset by the renewable energy installation.[76]

1.4 Smart building technologies and automation

Smart building technologies and automation are revolutionizing the commercial real estate industry's approach to decarbonization. Digital technologies can lead to a 30%–50% improvement in energy intensity in the building sector by 2040. By integrating systems like IoT sensors, building automation, and data analytics, these technologies enable real-time monitoring and management of energy consumption, leading to enhanced efficiency, reduced costs, and improved occupant well-being.

Currently, there are some key digital technologies in REC sector that include sensors, Building Information Modelling (BIM), Building Management Systems (BMS), smart meters, 3D printing/additive manufacturing, robotics, big data analytics, the Internet of Things (IoT), machine learning, artificial intelligence, digital twins, blockchain, cybersecurity, etc. For instance, sensors enable real-time data collection, BIM facilitates sustainability assessments, and AI enhances energy management.[77]

Figure 2 Digital technologies across a building's lifecycle for decarbonisation and sustainability[78]



The purpose of smart building technology in decarbonization is twofold. Firstly, it directly reduces the carbon footprint of buildings by optimizing energy use and shifting towards more sustainable practices. Secondly, it contributes to social sustainability by creating healthier and more efficient spaces for occupants, which is increasingly important as urban populations grow.

2. Circularity

A built environment ensuring the safe, responsible and sustainable manufacturing and use of building materials, creating positive cycles through new business models and practices that avoid resource depletion and pollution, and the regeneration of natural systems that promote social and economic benefits. A circular building optimises the use of resources whilst minimising waste throughout its whole lifecycle.

Tackling these sustainability issues will require a systemic transformation across the entire built asset value chain. The principles of a circular economy must be implemented at all building scales and across all geographies and regions, whilst being applicable to assets of all typologies, both new and existing buildings and infrastructure. The core principles of a circular economy for the built environment are:

- Reduction in consumption of materials and resources
- Optimisation of lifespan for material and product use
- Design for disassembly, reuse and recycling, and the elimination of all waste
- Regeneration of nature.

This section provides instructions on adopting circularity into the operations of REC organizations, as referenced from The Circular Built Environment Playbook launched by the World Green Building Council in May 2023.[79]

2.1. Building and construction materials

As the construction industry faces a projected surge in demand for materials, it's imperative to mitigate the associated rise in carbon emissions to stay within global carbon budgets. The industry's significant carbon footprint calls for a shift towards materials with circular properties that minimize environmental impact. The use of materials with circular properties, whether conventional or alternative, are essential in reducing carbon emissions from the built environment.

Despite the potential for circularity to revolutionize material markets, its principles are currently underutilized. The table below summarizes key concepts for adopting circularity principles in building and construction materials to reduce carbon emissions from the built environment.

Table 1 Key concepts of circularity for building and construction materials - Source: Worldgbc[80]

Digital Materials Passports
Digital materials passports are a key strategy for tracking the circulation of building and construction materials in a closed-loop system, by hosting open-source data defining the characteristics of materials in products used, and enabling the identification of value for recovery, reuse and recycling. In simple terms, digital material passports provide detailed digital records of building materials for reuse and recycling. They integrate environmental impact assessments like Lifecycle Analysis (LCA) and Environmental Product Declarations (EPD) into a transparent digital database, facilitating material comparison and valuation at a building's end of life.
Buildings as material Banks
With the concept of buildings as ‘material banks’, buildings are seen as places that store materials that can be reused, recycled, or upcycled for new products. This method supports a circular economy by maintaining the value of construction materials beyond the life of a building, necessitating accurate material databases and collaboration among industry professionals. The practice encourages designing buildings for easy deconstruction and material recovery, ensuring resources remain in use and reducing environmental impact.
Locally Sourced Materials
Selection of materials that require less energy for production and transportation can significantly reduce embodied carbon emissions of a building project. By prioritizing local materials, the construction industry not only minimizes its carbon footprint but also contributes to the social and economic well-being of the community, potentially providing jobs to segments of the population that may face higher rates of unemployment.
Responsible and Healthy Materials
Use of responsible and healthy materials in the construction industry is being globally promoted by focusing on products that are environmentally friendly, support human health, and are suitable for a circular economy. This could be achieved by establish a common language and multi-attribute criteria to guide the selection of better building products.

There is a growing consensus on the core attributes of a responsible product despite some difference among existing frameworks. For instance, based on established industry protocols such as EPDs and HPDs, several frameworks such as 'Mindful Materials' and GBCA's 'Responsible Products Framework' have significant commonalities.
Urban Mining and Material Cascading
Urban mining is the process of reclaiming materials from urban waste and material cascading maximises resource effectiveness by re-using products to create the most economic value over multiple lifetimes. Urban mining views city waste as a resource for monetization, while material cascading advocates for reusing materials in a hierarchy of value, from high-quality applications to energy recovery as a last resort. This approach aims to reduce waste, minimize carbon emissions, and promote a circular economy by extending the life and utility of construction materials.
Material Take-Back
Material take-back involves manufacturers or retailers retrieving used materials from consumers to reintroduce them to the original processing and manufacturing cycle. This programme reduces the demand for new raw materials and encourages product designs that are easier to disassemble and recycle. While offering several benefits like cost savings and reduced environmental impact, the implementation can be complex and costly. Government support is essential for establishing the requisite infrastructure, incentives, and waste management regulations to accelerate the adoption and expansion of take-back programs.
Carbon-Storing Materials
This approach focuses on capturing and storing carbon dioxide within construction materials to help achieve net-zero carbon targets in the built environment by selecting materials that sequester carbon, reducing the need for carbon offsets. Key methods include: • Bio-based materials: Derived from plants, these materials store carbon that would otherwise be released upon decay. • Mineral carbonation: This process involves carbon dioxide reacting with minerals to form stable carbonates, which can be used in products like cement bricks and plasterboards, locking away carbon for long periods.

2.2. Design and retrofit

Circular design and construction offer extensive environmental opportunities and socio-economic benefits if the appropriate design and construction strategies are implemented. In practical terms, it requires all stakeholders, including investors, clients, developers, and design teams, to take a longer-term view, considering the past, present, and future use of a building's products and components—including how to procure, maintain, and retain their value and usefulness over multiple lifetimes.

Table 2 Circular building design and construction strategies - Source: Worldgbc[81]

Design for Reuse Over Multiple Lifetimes
This type of design advocates for the adaptive reuse of buildings and repurposing existing structures for new uses to avoid the need for new materials and reduce emissions, waste, and urban sprawl. This approach emphasizes designing buildings with the flexibility to adapt to different functions over time, extending their functional lifespan while maintaining their physical integrity. It also involves selecting materials that do not pose health risks, ensuring that building components can be reused without compromising occupant well-being.
Design for Disassembly and Deconstruction
This approach encourages designing buildings for easy end-of-life material recovery, aiming to minimize waste and facilitate reuse. By using fewer, standardized components and fasteners, buildings become easier to dismantle and maintain. This strategy replaces demolition with deconstruction, preserving material value and promoting a circular economy.
Design Out Waste
This design method focuses on integrating circular economy principles to reduce waste by planning efficient material use and sustainable waste management from the design stage. It emphasizes maximizing reuse

and recycling, developing early waste management plans, and designing buildings for effective waste separation and recovery. The goal is to minimize landfill use and maintain a transparent record of waste recovery and destinations, moving towards a zero-to-landfill target and a more sustainable construction industry.

2.3. Regenerate nature

A circular built environment aims to integrate nature-based solutions in order to enhance natural capital, close resource loops and reduce new resources consumption. Cities and buildings could extend the use of nature-based principles even further, by developing solutions inspired by natural cycles. Nature-Based Solutions (NBS) can also lower energy demand for buildings, when passive design approaches minimise the requirements for heating, cooling and ventilation. At a neighbourhood scale, green corridors in urban areas could mitigate the urban heat island effect while improving air quality. NBS should be integrated into climate resilience measures as well. Notably, in coastal locations, by using vegetation, the shoreline is stabilised, soil erosion is reduced, and the risk of flooding is minimised whilst safeguarding ecosystem services and allowing nature to regenerate and thrive.

Combining biology and technology, real estate and construction enterprises can refer to biomimicry methods, which apply the effective operating principles of natural ecosystems to the design of products, buildings, services or even organizations in the Worldgbc's The Circular Built Environment Playbook.[82]

Product as a Service (PAAS)

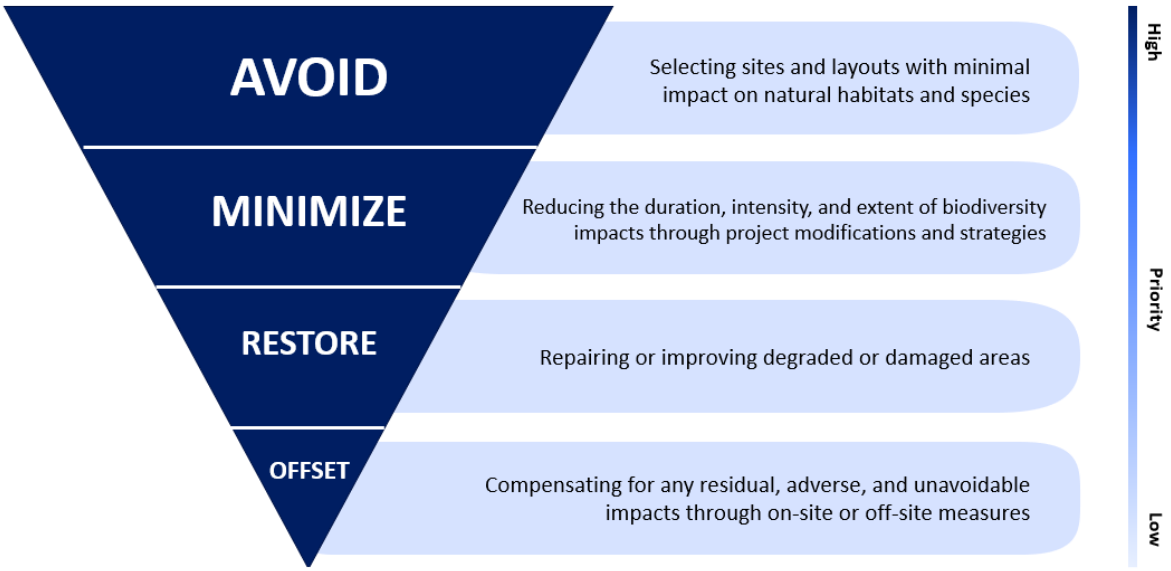
A key part of the business case for circular economy – as well as being an enabler of a closed-loop future – is the use of innovative business models, such as Product as a Service.

Service-based business models can increase the utilisation of underused products, components and buildings. Rather than procuring a product, businesses and goverments can also procure the ‘use’ of a product. This can incentivise the supplier to lengthen the lifespan of a product and reuse it mutiple times.

3. Biodiversity practices

Biodiversity in sustainable construction refers to the practice of protecting and enhancing the variety of life in a particular habitat while developing a project. It involves careful planning and execution to ensure that the natural environment is preserved and that any potential harm to biodiversity is addressed effectively. The purpose of incorporating biodiversity into sustainable construction is to ensure that development projects do not lead to a net loss of biodiversity but instead contribute to its enhancement. To address this issue, the biodiversity mitigation hierarchy provides a step-by-step approach that aims to minimize negative impacts and promote sustainable construction practices.

Figure 3 The biodiversity mitigation hierarchy[83]



Organisations can find details on the steps of the hierarchy in Jackie De Burca's 2024 paper 'Guidance on Biodiversity Mitigation Hierarchy in Construction Projects' at: https://constructive-voices.com/biodiversity-mitigation-hierarchy-in-construction-projects/.[84]

4. Social and governance matters improvement in REC sector

4.1. Labour conditions improvement

Establishing a safety and health program at the construction site is one of the most effective ways to protect an organization's most valuable asset: its workers. Safety and health programs foster a proactive approach to 'finding and fixing' job site hazards before they can cause injury or illness. Instead of reacting to an incident, management and workers collaborate to identify and resolve issues before they occur. This collaboration builds trust, enhances communication, and often leads to other business improvements.

Organisations can find details on the core elements of the recommended practices for safety and health programs in construction, as developed by the Occupational Safety and Health Administration (OSHA) in 2016(https://www.osha.gov/sites/default/files/publications/OSHA3885.pdf).[85]

Employee engagement, diversity and inclusion in REC industry

As a recommended material matter in the REC industry, leading practices for enhancing employee engagement, diversity, and inclusion should be considered for integration into the business's strategy, governance, and operations within the ESG journey.

(i) HR policy

- Opportunities for promotion should be available to all qualified workers, regardless of possible or actual need for accommodation. All qualified workers should be able to compete on an equal basis.[86]
- To attract a diverse workforce, vacancies should not build any barriers that may reduce the pool of qualified job applicants. For instance, job announcements should be available in a variety of formats.[87]
- OSH policy should take into account need for accommodation, ensuring that workers with reduced mobility impairments or specific needs are assisted during emergency evacuations.[88]

(ii) Cultural and engagement

- Promote a culture of inclusion where diverse perspectives are valued and respected.

- Promote the inclusiveness through various ways such as providing on-site childcare facilities, providing food with a range of options and cater for different dietary requirements, etc.

4.2. Anti-corruption in REC industry

Bribery and corruption exist in various sectors, yet they pose a heightened risk in REC sector due to the scale, complexity, and critical significance of infrastructure projects in both developed and developing nations.

By assessing infrastructure, real estate and related value chains, corruption risks can be mapped across the life cycle of typical projects, making it easier to determine where transparency issues arise and focusing industry-wide engagement on the most important areas for mitigation and response.

Organisations can refer to some anti-corruption tools for construction investment projects in the document on how to reduce corruption in the infrastructure sector by John Hawkins in 2013 at http://www.undp-aciac.org/publications/ac/publications/EoD_Consultancy_May2013_Reducing_Corruption_in_Infrastructure.pdf , which introduces seven tools that can be used at different stages of the project cycle to help identify and reduce corruption risks.[89].

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For any enquiries, please get in touch via email at communications@ukpact.co.uk

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[59] On-site self-produced energy versus purchased renewable energy can be declared when applicable.
[60] Reporting energy consumption intensity by revenue is an option to align with the GHG Protocol.
[61] Companies can report this index by analyzing thermal fuel consumption and electricity consumption, or internal/external electricity consumption.
[62] Companies need to provide a detailed description of the methodology, scope, and approach used to calculate or estimate the metrics. Companies can report emissions in detail by each business segment, unit, product, geographic region, etc.
[63] Companies need to provide a comprehensive description of the methodology, scope, and approach used to calculate or estimate Scope 3 emissions, including the categories that are taken into account (i.e., upstream, downstream, etc.).
[64] For enterprises exploiting raw materials, the replacement unit can be kg CO_2/ton of cemented materials or kg CO_2/m³ of concrete. For construction contractors, the replacement unit can be kg CO_2/functional unit of the building or kg CO_2/m² of construction area.
[65] The disclosure of avoided emissions can show the benefits of the company's choice of low-emission options. To calculate this metric, a control scenario is required, which may be easier to identify for industrial production than for developers and construction contractors. An industry standard will help increase comparability, consistency and transparency.
[66] Adjusted from the EBRD's recommended index of "the number of climate-impacted locations and businesses" due to challenges related to the choice of net or overall impact disclosure.
[67] When appropriate and feasible, there should be further discussions and dialogues with users about how to interpret and apply this information.
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