C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

The MTR Corporation operates a predominantly rail based transportation system in Hong Kong, comprising domestic and cross-boundary services including a High Speed Rail service (connecting Hong Kong with the 29,000 km high speed rail network in the Mainland of China), a dedicated high-speed Airport Express Railway (the only rail system connecting to and from the Hong Kong International Airport) and a light rail system, which in total includes 13 railway networks, with total route length 271 kilometers, serving all 18 districts in Hong Kong. Our network is one of the most intensively used in the world, known for its reliability, safety and efficiency. We also provide intercity services to and from the Mainland of China as well as bus operation in Hong Kong offering convenient feeder services. Leveraging our railway assets and expertise, the Corporation has moved forward with adjacent property and railway-related businesses, including rental of station retail space, advertising in trains and stations, telecommunications, rail consultancy, cable car operations and the Octopus Smart-card payments system. On the property side, we develop residential and commercial properties in conjunction with property developers. We hold investment properties, principally shopping malls and offices, and manage our properties and those of others. Our investment portfolio primarily includes shopping malls and 18 office floors of the Two International Finance Centre (IFC) office tower in Hong Kong. As at 31 December 2021, we managed more than 114,000 residential units, 14 shopping malls, and approximately 20,000 residential units and 2 shopping malls are under development in Hong Kong. Bringing expertise in railway development and property management to the Mainland of China and international market is a core component of the Corporation's strategy for continued growth. We invest in urban rail networks as well as property development projects in the Mainland of China and participate in "asset-light" operating concessions in the United Kingdom, Sweden, Australia and Macau. We will focus on successfully delivering our newly awarded businesses and continue prudently to pursue new railway and rail-related business opportunities that will generate incremental benefits to our shareholders.

Key achievements in 2021 included:
- Establishment of 3 Social and Environmental Objectives, 10 Commitments and 30+ KPIs (including our commitment to setting Science-based Targets for 2030 with an aim of achieving carbon neutrality by 2050) and
- Full opening of Tuen Ma Line (TML) on 27 June 2021 - with a route length of 56km and serving 27 stations, the TML consists of six interchange stations connecting to the East Rail Line, Kwun Tong Line, Tung Chung Line and Tsuen Wan Line, allowing passengers to travel around the city more conveniently. The TML also extends the railway network to Kowloon City with new stations at Sung Wong Toi and To Kwa Wan, bringing convenient, efficient, environmentally friendly and comfortable railway service to local residents.

In this CDP, we cover the Corporation's principal activities in Hong Kong during 2021, however, the emissions data reported in this survey also covers our global operations when asked. The detailed information for our subsidiaries can be found in our Sustainability Website and 2021Sustainability Report.

Sustainability Website: https://www.mtr.com.hk/sustainability/en/home.php

2021 Sustainability Report: https://www.mtr.com.hk/sustainability/2021/en/pdf/Sustainability_Report_EN.pdf

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1 2021	December 31 2021	Yes	3 years

C0.3

(C0.3) Select the countries/areas in which you operate.
Hong Kong SAR, China

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.
HKD

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Operational control

C-TO0.7/C-TS0.7

(C-TO0.7/C-TS0.7) For which transport modes will you be providing data?

Rail

C0.8

(C0.8) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?

Indicate whether you are able to provide a unique identifier for your organization	Provide your unique identifier
Yes, an ISIN code	HK0066009694

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Board Chair	The Chairman of the Corporation chairs the Board-level Environmental & Social Responsibility (E&SR) Committee (formerly known as Corporate Responsibility Committee) which holds the ultimate responsibility for climate-related issues of the Corporation. Climate-related issues are discussed in the E&SR Committee meeting and the Chairman guides the E&SR Committee to provide strategic guidance to address climate-related issues for the Corporation and review the climate-related best practices and performance. In addition, the Board approved the new Corporate Strategy in June 2020 introducing clearly defined social objectives, to set out the direction of our future development. In March 2022, the Board has endorsed to set science-based targets for our railway and property businesses in Hong Kong for 2030 with the longer-term goal of achieving carbon neutrality by 2050.
Board-level committee	Chaired by the Chairman of the Corporation, the Board-level E&SRC Committee meets at least twice a year to review and monitor corporate-wide implementation of the Corporate Responsibility Policy and related sustainability initiatives, including responses to climate change. The E&SR Committee formulates strategic direction to address climate-related issues for the Corporation after taking relevant climate risks and opportunities into consideration. The E&SR Committee will also be responsible for tracking performance against the Corporation's environmental and social key performance indicators (KPIs) and reporting to the MTR Board on these issues including the KPI on setting science-based targets.
Chief Executive Officer (CEO)	CEO sits on the E&SR Committee to review and monitor corporate-wide implementation of the Environmental & Social Objectives and related sustainability initiatives, including responses to climate change. As a member of the Board-level E&SR Committee, CEO provides insights to formulate strategic direction to address climate-related issues for the Corporation after taking relevant climate risks and opportunities into consideration as well as the performance of GHG reduction. The progress of KPIs developed under the 3 Environmental and Social Objectives will be regularly reported to CEO.
Other C-Suite Officer	Legal & Governance Director (L&GD) sits on the Board-level E&SR Committee chaired by the Chairman of the Corporation. The Board E&SR Committee meets at least twice a year specifically to review and monitor corporate-wide implementation of the Environmental and Social Objectives and related sustainability initiatives, including responses to climate change. As a member of the Board-level E&SR Committee, L&GD provides insights to formulate strategic direction to address climate-related issues for the Corporation after taking relevant climate risks and opportunities into consideration. L&GD also chairs an Environmental and Social Responsibility Steering Committee (E&SR Steering Committee), responsible for driving and reviewing the implementation of sustainability initiatives across all MTR divisions, including responses to climate change and the progress of KPIs developed under the 3 Environmental and Social Objectives. In addition, L&GD oversees the overall progress of GHG reduction in meeting the science-based targets by 2030 and achieving carbon neutrality by 2050.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Scope of board-level oversight	Please explain
Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	<Not Applicable>	The overall management of the Corporation's business is vested in the Board. The Board focuses on matters affecting the Corporation's overall strategic policies, corporate governance, finances and shareholders. In June 2020, the Board approved the visionary new Corporate Strategy introducing clearly defined social objectives to support our future growth and deliver shareholder and stakeholder value by emphasising innovation and sustainability. With the purpose to "keep cities moving", our Corporate Strategy defines a more fit-for-future organisation. Our new Corporate Strategy also sees the embedding of MTR's Environmental and Social Objectives into our operation and management approaches. Reducing GHG emissions is one of the 3 key defined Environmental and Social Objectives. Our aspiration is to Keep Cities Moving Sustainably. By committing to managing our business sustainably with best-in-class governance, we aim to help individuals and communities thrive, while contributing to the fight against climate change. In addition, the Board endorsed the setting of science-based targets for our railway and property businesses in Hong Kong for 2030 with the longer-term goal of achieving carbon neutrality by 2050. The Board integrates climate-related issues into our governance through a number of mechanisms. For instance, with the assistance of the Board-level Audit & Risk Committee, the Board oversees the Corporation's Enterprise Risk Management (ERM) Framework, top risks and emerging risks, including risks related to climate change. Climate risks are incorporated into our ERM Framework which integrates direct physical risks and other indirect risks into our strategic planning and cascades these concerns into departments within railway operations, property development, investment and management facilities that identify and manage relevant risks at the asset-level. The Board-level AUdit & Risk Committee is responsible for reviewing the Corporation's ERM framework, guidelines, policy and procedures for risk assessment and risk management; reviewing the Corporation's top risks and key emerging risks and the controls in place to mitigate such risks; monitoring the Corporation's risk profile; conducting 'deep dive' reviews on selected key risk areas; reviewing the effectiveness of the ERM function; and reviewing the Corporation's crisis management arrangements. This demonstrates how the Board integrates climate risks into our governance through reviewing and guiding risk management policies. The Board-level E&SR Committee meets at least twice a year specifically to review and monitor corporate-wide implementation of Environmental and Social Objectives and related sustainability initiatives, including responses to climate change. Through the E&SR Committee, the Board reviews and guides corporate strategy to address climate risks as well as monitors and oversees progress against carbon reduction targets and climate-related issues.

C1.1d

(C1.1d) Does your organization have at least one board member with competence on climate-related issues?

	Board member(s) have competence on climate-related issues	Criteria used to assess competence of board member(s) on climate-related issues	Primary reason for no board-level competence on climate-related issues	Explain why your organization does not have at least one board member with competence on climate-related issues and any plans to address board-level competence in the future
Row 1	Yes	1) solid and strong experience from energy and utilities sector and is familiar with climate change issues and GHG emissions 2) experience in green finance	<Not Applicable>	<Not Applicable>

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	Half-yearly
Other committee, please specify (Executive Committee)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	Half-yearly
Other committee, please specify (Environmental and Social Responsibility Steering Committee (E&SR Steering Committee))	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	Half-yearly
Other committee, please specify (Enterprise Risk Committee)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	Half-yearly
Other, please specify (Legal and Governance Director)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	Half-yearly
Other, please specify (Head of Sustainability)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	Half-yearly

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

Under the Corporate Strategy, the Corporation has reinforced its focus on environmental and social responsibility, developing three new Environmental and Social Objectives and has committed to embedding Environmental, Social and Governance (ESG) principles into its businesses and operations with the aim of creating value for all stakeholders. The CEO has the overall responsibilities on ESG and climate-related issues. CEO leads the Executive Committee to review and endorse top ESG risks (including climate risks) and the control measures quarterly; and the corporate climate change risks map annually as well as evaluate the effectiveness of mitigation measures in addressing climate risks. CEO also sits on the Board-level E&SR Committee to facilitate board members to review and monitor corporate-wide implementation of sustainability initiatives, including responses to climate change and GHG reduction.

The Executive Committee is delegated to handle day-to-day management of the Corporation's business. With the support of the Enterprise Risk Committee (ERC), the Executive Committee is overall accountable for the ERM policy, the Climate Change Strategy and system implementation and continuous improvement including assessing and monitoring climate risks. The Executive Committee will review and endorse top risks (including climate risks) and the control measures quarterly and the climate change risks map annually as well as evaluate the effectiveness of mitigation measures in addressing climate risks.

The Environmental & Social Responsibility Steering Committee (E&SR Steering Committee) is tasked with providing directions and guidance on ESG issues at operational levels, and monitoring progress of programmes for efficacy in achieving the stated Environmental and Social Objectives and GHG targets including climate change. The Chairman of the E&SR Steering Committee will report corporate-wide ESG issues including climate-related issues to the Board-level E&SR Committee.

The ERC is responsible for reviewing the Corporation's tops risks and key emerging risks (including climate risks) annually. The ERC reviews top 30 and emerging risks & opportunities every quarter. The chairman of the ERC will report the top risks to the Executive Committee and the Audit & Risk Committee on a quarterly basis and to the Board on a six-monthly basis. Climate change risks map at corporate level is reported to the ERC and the Executive Committee annually by the Head of Sustainability and the Chairman of the ERC respectively. The ERC has initiated a review on mitigation measures regarding climate risks across different divisions and hubs of the Corporation for sharing and supporting the development of the corporate Climate Change Strategy.

Legal & Governance Director (L&GD) chairs the E&SR Steering Committee and is a member of the Executive Directorate and the Board-level E&SR Committee . L&GD leads the E&SR Steering Committee to provide directions and guidance on ESG issues at operational levels, and to monitor progress of programmes for efficacy in achieving stated Environmental and Social Objectives and GHG targets including climate change.

L&GD also chairs the ERC which is responsible for reviewing the Corporation's tops risks and key emerging risks (including climate risks) annually; leads the ERC to review top 30 and emerging risks & opportunities every quarter; and reports the top risks to the Executive Committee and the Audit & Risk Committee on a quarterly basis and to the Board on a six-monthly basis. Climate change risks map at corporate level is reported to the Executive Committee annually. Legal & Governance Director has led the ERC to initiate a review on mitigation measures regarding climate risks across different divisions and hubs of MTRC for sharing and supporting the development of the corporate Climate Change Strategy.

The Environmental & Social Responsibility Department coordinates among business units to ensure activities are consistent with the overall Climate Change Strategy and align with the Environmental and Social Objectives. The Head of Sustainability is responsible for updating and reporting the climate change risks map at corporate level to the ERC annually as well as monitoring and formulating necessary responses regarding climate-related issues for the Corporation including new emerging trends and requirements on climate disclosures and GHG reduction such as recommendations from TCFD and requirements of the Science Based Targets initiative. The Head of Sustainability is also responsible for developing the Climate Change Strategy, reviewing climate risk mitigation measures and formulating a long-term decarbonisation roadmap for the Corporation.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	We have identified our climate-related risks under our ERM Framework stating the possible impacts on our operations and the associated mitigation actions. Climate-related risks may affect our operations and thus hinder us from achieving the targets stipulated in our Operating Agreement with the Hong Kong SAR Government and our own Customer Service Pledges, which are directly linked to the performance of the corporate executive team and will be reflected in their annual pay review and the Discretionary Award.

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Corporate executive team	Monetary reward	Other (please specify) (Environmental and Social Objectives)	We have identified our climate-related risks under our ERM Framework stating the possible impacts on our operations and the associated mitigation actions. Climate-related risks may affect our operations and thus hinder us to achieve the targets stipulated in our Operating Agreement with the Hong Kong SAR Government and our own Customer Service Pledges, which are directly linked to the performance of the corporate executive team and will be reflected in their annual pay review and the Discretionary Award. In June 2020, the Board approved the visionary new Corporate Strategy introducing clearly defined social objectives to support our future growth and deliver shareholder and stakeholder value by emphasising innovation and sustainability. With the purpose to "keep cities moving", our Corporate Strategy defines a more fit-for-future organisation. Our new Corporate Strategy also sees the embedding of MTR's Environmental and Social Objectives into our operation and management approaches. Reducing GHG emissions is one of the 3 Environmental and Social Objectives. By committing to managing our business sustainably with best-in-class governance, we aim to help individuals and communities thrive, while contributing to the fight against climate change. In addition, the Board endorsed the setting of science-based targets for our railway and property businesses in Hong Kong for 2030 with the longer-term goal of achieving carbon neutrality by 2050.
Chief Executive Officer (CEO)	Monetary reward	Other (please specify) (Environmental and Social Objectives)	We have identified our climate-related risks under our ERM Framework stating the possible impacts on our operations and the associated mitigation actions. Climate-related risks may affect our operations and thus hinder us to achieve the targets stipulated in our Operating Agreement with the Hong Kong SAR Government and our own Customer Service Pledges, which are directly linked to the performance of the CEO and will be reflected in his annual pay review and the Discretionary Award. In addition, CEO has the overall responsibilities on ESG and climate-related issues.
Other C-Suite Officer	Monetary reward	Other (please specify) (Environmental and Social Objectives)	We have identified our climate-related risks under our ERM Framework stating the possible impacts on our operations and the associated mitigation actions. Climate-related risks may affect our operations and thus hinder us to achieve the targets stipulated in our Operating Agreement with the Hong Kong SAR Government and our own Customer Service Pledges, which are directly linked to the performance of all the C-Suite Officer and will be reflected in their annual pay review and the Discretionary Award.
Other, please specify (Head of Sustainability)	Monetary reward	Other (please specify) (Environmental and Social Objectives)	The Head of Sustainability is tasked with formulating a Climate Change Strategy and a long-term decarbonisation roadmap for the Corporation to manage climate risks. Timely completion and effective launch of the strategy and the roadmap are the major responsibilities of the Head of Sustainability, which are directly linked to her performance and will be reflected in her annual pay review and the Discretionary Award. She is also responsible for driving the implementation of GHG reduction initiatives to meet the SBT and achieve carbon neutrality.
Procurement manager	Monetary reward	Supply chain engagement	The Corporation has maintained a Supplier Code of Practice which requires all our suppliers to comply with applicable laws and regulations, including environmental regulations. We also survey our suppliers periodically to collect information about the status of their policies, initiatives and monitoring systems relating to sustainability (also including environmental protection). The procurement manager is responsible for ensuring suppliers' understanding and monitoring their compliance with our sustainability requirements. The effectiveness of supply chain engagement is linked to the performance of all procurement managers and will be reflected in their annual pay review and the Discretionary Award.
Business unit manager	Monetary reward	Other (please specify) (Environmental and Social Objectives)	We have identified our climate-related risks under our ERM Framework stating the possible impacts on our operations and the associated mitigation actions. Climate-related risks may affect our operations and thus hinder us to achieve the targets stipulated in our Operating Agreement with the Hong Kong SAR Government and our own Customer Service Pledges, which are directly linked to the performance of all the business unit managers and will be reflected in their annual pay review and the Discretionary Award. All managers are also responsible to drive the GHG reduction within their units.
All employees	Monetary reward	Other (please specify) (Environmental and Social Objectives)	We have identified our climate-related risks under our ERM Framework stating the possible impacts on our operations and the associated mitigation actions. Climate-related risks may affect our operations and thus hinder us from achieving the targets stipulated in our Operating Agreement with the Hong Kong SAR Government and our own Customer Service Pledges, which are directly linked to the performance of all employees and will be reflected in their annual pay review and the Discretionary Award.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	1	5	The Corporation takes proactive measures to identify, evaluate and manage significant risks, including climate risks, arising from its recurrent and growth business and from the constantly changing business environment. Each risk is evaluated on the basis of the likelihood of the identified risk and the consequence of the risk event, taking into consideration the control measures in place. Broadly speaking, we have categorised the likelihood and our response plan into short-term (within 1-5 years), medium-term (6-10 years) and long-term (11-50 years).
Medium-term	6	10	The Corporation takes proactive measures to identify, evaluate and manage significant risks, including climate risks, arising from its recurrent and growth business and from the constantly changing business environment. Each risk is evaluated on the basis of the likelihood of the identified risk and the consequence of the risk event, taking into consideration the control measures in place. Broadly speaking, we have categorised the likelihood and our response plan into short-term (within 1-5 years), medium-term (6-10 years) and long-term (11-50 years).
Long-term	11	50	The Corporation takes proactive measures to identify, evaluate and manage significant risks, including climate risks, arising from its recurrent and growth business and from the constantly changing business environment. Each risk is evaluated on the basis of the likelihood of the identified risk and the consequence of the risk event, taking into consideration the control measures in place. Broadly speaking, we have categorised the likelihood and our response plan into short-term (within 1-5 years), medium-term (6-10 years) and long-term (11-50 years).

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

A risk is defined as substantive financial or strategic impact if it will lead to Government suspension of our Hong Kong franchises and taking over our administration (please see below for details for our relationship with the Hong Kong SAR Government). A risk matrix is used to determine risk ratings (E1-E4), with E1 being a very high risk and E4 being a low risk. The risk ratings reflect the required management attention and risk treatment effort, indicating the priorities for further action plans. The highest category of risks, "E1", is subject to the Board, the Audit & Risk Committee and the Executive Committee oversight. Our ERM framework defines the financial implications of a risk event into 4 categories: 1) HK$10M – 300M as “significant consequence”, 2) >HK300M – HK$1B as “major consequence”, 3) >HK$1B – HK$10B as “critical consequence”, and 4) >HK$10B as “catastrophic consequence”. Depending on the likelihood of the identified risk, the financial implication of a risk event in monetary terms >HK$300M may be classified as a risk rating of E1 (if it is very likely to happen), which is considered as substantive. Note that the revenue generated from Hong Kong transport operations in 2021 is HK$13,177 million.

Note: The HKSAR Government owns around 75% of the Corporation. Despite its majority ownership, the Corporation is independently managed on commercial principles. Under the Mass Transit Railway Ordinance (Cap. 556) the Corporation is granted the franchise to operate the HK railway network. However, the Chief Executive in Council may order the franchise be suspended if there is or is likely to be a substantial breakdown in the operation of the railway.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered
Direct operations
Upstream
Downstream

Risk management process
Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment
More than once a year

Time horizon(s) covered
Short-term
Medium-term
Long-term

Description of process
MTR's Enterprise Risk Management (ERM) framework provides a clear and holistic view of the significant safety, business, finance, legal/regulatory and reputation/political risks that the Corporation faces. It covers issues in social, environmental and economic areas, including climate risks. The ERM framework provides a simple and effective management process to identify and review risks across all business units and corporate functions of the Corporation (including its direction operations and both upstream and downstream activities); prioritise resources to manage risks; give management a clear view of the significant risks facing by the Corporation; and support decision making and project execution for better business performance. The Corporation takes proactive measures to identify, evaluate and manage significant risks, including climate risks, arising from its recurrent and growth business and from the constantly changing business environment.

Each risk is evaluated on the basis of the likelihood of the identified risk and the consequence of the risk event by considering factors such as penalty due to failure to meet contract agreement, taking into consideration the control measures in place. A risk matrix is used to determine risk ratings E1-E4 . The risk ratings reflect the required management attention and risk treatment effort, indicating the priorities for further action plans. The highest category of risks, "E1", is subject to the Board, the Audit & Risk Committee and the Executive Committee (EC) oversight. Opportunities are assessed and prioritised based on the return on investment and payback periods and pursued where appropriate.

The Enterprise Risk Committee (ERC), EC and the Board-level Audit & Risk Committee review the enterprises risk profile and brainstorm emerging risks half-yearly/quarterly to ensure that key risks and those cutting across different areas of the business are captured. Climate change risks are monitored, reviewed and updated annually through our ERM Framework. We identify and review risks to our business units regularly and prioritise resources to mitigate and manage any emergent and significant risks. Divisional representatives report climate risks to the ERC which is responsible for reviewing the Corporation’s top risks and key emerging risks (including climate risks) annually. The Chairman of the ERC will report the top risks to the EC and the board-level Audit & Risk Committee on a quarterly basis and to the Board on a six-monthly basis. Climate change risks map at corporate level is reported to the ERC and the EC annually by the Head of Sustainability and the Chairman of the ERC respectively.

We also identify and assess climate risks as part of our materiality assessment during our sustainability reporting process for public disclosure and continuous improvement.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	The Corporation is committed to complying with all the relevant legislative requirements. We have identified "regulatory pressure" as one of our climate risks under our Enterprise Risk Management framework (please refer to C2.2 above for details), which include, for instance, compliance with the mandatory disclosure of sustainability issues under the listing rules in Hong Kong. In addition, the Hong Kong Exchanges and Clearing Ltd is reviewing its ESG reporting framework to further align with TCFD recommendations. In December 2020, the Green and Sustainable Finance Cross-Agency Steering Group announced that TCFD-aligned climate-related disclosures will be mandatory across relevant sectors no later than 2025. Non-compliance with the ESG Reporting Guide constitutes a breach of the Listing Rules, which may result in investigations or regulatory responses such as disciplinary actions or issuance of warning or caution letters by the Stock Exchange, depending on the facts and circumstances.
Emerging regulation	Relevant, always included	The Corporation is committed to complying with all the legislative requirements. We have identified "regulatory pressure" as one of our climate risks under our Enterprise Risk Management Framework (please refer to C2.2 above for details), which include, for instance, more stringent requirements from the government on resilience of new infrastructures (especially buildings such as stations and commercial buildings) to climate change, which could lead to increase in capex and programme delay of new railway expansion projects. For example, the HKSAR government released the Hong Kong's Climate Action Plan 2050 in Oct 2021, setting out the vision of "Zero-carbon Emissions·Liveable City·Sustainable Development", and outlining the strategies and targets for combating climate change and achieving carbon neutrality before2050. As electricity generation is a key contributor to the overall carbon emissions in Hong Kong, key actions are to cease using coal for daily electricity generation; increase the share of renewable energy in the fuel mix for electricity generation to 7.5 per cent to 10 per cent by 2035, and to 15 per cent subsequently; and try out the use of new energy and strengthen co-operation with neighbouring regions to achieve the long-term target of net-zero electricity generation before 2050. It is expected that the above initiatives would increase our electricity cost as our railway systems are predominantly electrically-powered. In addition, the HKSAR Government would tighten the Building (Energy Efficiency) Regulation to continuously improve the energy efficiency standards of buildings which would impact the design of the E&M systems for our new development projects.
Technology	Relevant, always included	We have considered climate-risk associated with technology under our Enterprise Risk Management Framework (please refer to C2.2 above for details). The Corporation provides public transport (metros and light rail) that has a high passenger capacity. This offsets the largely fossil based road transportation modes such as buses and reduces the need for private cars and taxis. Our railway powered by electricity has provided a low carbon transportation service that contributes to emission avoidance. We keep track of technological advancement in all areas of railway operations and initiate upgrade to our system to continuously improve and maintain a high service level and efficiency. These upgrades involve capital investment and require careful planning in order to avoid service interruption which may negatively impact the Corporation's reputation. For example, the Corporation is currently replacing its existing signalling systems for seven urban lines at a total cost of HK$3.3 billion. Upon completion of the signalling system replacement project, overall passenger capacity will be increased by 10%. As the new system has less equipment along the track area, it is expected that there will be fewer equipment faults and recovery time during incidents can be shortened. However, switch-over to the new signalling system requires completion of substantial drill and reliability tests which may cause service interruption.
Legal	Relevant, always included	The Corporation is committed to complying with all the legislative requirements. We have identified "regulatory pressure" as one of our climate risks under our Enterprise Risk Management Framework (please refer to C2.2 above for details) to avoid climate-related litigation claims due to breaching of relevant legislation. For instance, we have included compliance with the mandatory Building Energy Code (Buildings Energy Efficiency Ordinance), which is a local regulation, in our list of climate risk. We also track local and international policy developments related to climate change. An update is regularly reported to the Environmental & Social Steering Committee and Enterprise Risk Committee. However, we do not foresee any significant climate-related litigation claims in short term.
Market	Relevant, not included	The Corporation provides low-carbon mass transport that has a high capacity, and reduces the need for the largely fossil based road transportation mode such as buses, private cars and taxis. Our trains are fully electrified and has a higher capacity than road vehicles, we provide low carbon transportation service that contributes to avoid emission. In addition, we plan to further reduce our carbon footprint by setting science-based targets for 2030. We are in discussion with the HKSAR Government on the development and implementation of 7 new rail projects under the Railway Development Strategy 2014 for the coming decade. The HKSAR Government has invited MTR to proceed with detailed planning and design of the Tung Chung Line Extension, Tuen Mun South Extension, Kwu Tung Station for Phase 1 of the Northern Link, and Hung Shui Kiu Station projects. The Tung Chung Line Extension project comprises three components: i) a new intermediate Tung Chung East Station between the Sunny Bay Station and Tung Chung Station, ii) an extension of the existing Tung Chung Line to a new terminal station at Tung Chung West, and iii) the Airport Railway Extended Overrun Tunnel (Remaining Section). The Tuen Mun South Extension is a 2.4-km extension of the West Rail from the existing Tuen Mun Station to a new terminus at Tuen Mun South, via a proposed intermediate station between Tuen Mun Station and new Tuen Mun South Station. The first phase of the Northern Link project will involve the construction of a new Kwu Tung Station. The second phase will be a railway line about 10.7 km long linking Kam Sheung Road Station on the Tuen Ma Line and the new Kwu Tung Station, via three intermediate stations in San Tin, Ngau Tam Mei and Au Tau. Construction of the first phase is expected to commence in 2023 and is scheduled to be completed in 2027. HKSAR Government has stated clearly in its Climate Action Plan 2050 that our railway system will continue to serve as the backbone for the local public transport system as part of the key decarbonisation strategies. We therefore consider market as an opportunity rather than risk as there will be higher demand for our low carbon services from our customers. We are also working on initial design and feasibility study of developing Tuen Mun South Station and Hung Shui Kiu Station as carbon neutral stations.
Reputation	Relevant, always included	The Corporation has identified "reputational impact" as one of our climate risks under our Enterprise Risk Management Framework (please refer to C2.2 above for details), which include, for instance, dissatisfaction and criticism from green groups on our carbon reduction efforts against their expectations, or Legislative Council hearings due to increasing disclosure and transparency on climate related information. Failure to maintain a reputation for addressing climate change challenges may result in increased stakeholder concern or negative stakeholder feedback which could impact our social licence to operate and working relations with HKSAR Government to obtain approval on our new railway projects.
Acute physical	Relevant, always included	According to the Hong Kong Observatory, extreme precipitation events have become more frequent in Hong Kong. The Corporation has conducted climate impact assessments on our operations. We have identified "changes in rainfall pattern - excessively heavy rain and flooding" as one of our climate risks under our Enterprise Risk Management Framework (please refer to C2.2 above for details), which may cause, for instance flooding in stations. In addition, extensive road blockage due to serious flooding would disrupt public road transport which would lead to a surge in demand for our services causing overcrowding in our stations which in turn would impact our service quality.
Chronic physical	Relevant, always included	According to the Hong Kong Observatory, there was an increase in average temperature of 0.31 degree Celsius per decade during 1992-2021 in Hong Kong. The Corporation has conducted climate impact assessments on our operations. We have identified "higher ambient temperature" as one of our climate risks under our Enterprise Risk Management Framework (please refer to C2.2 above for details), which may cause, for instance, increase in electricity use for the provision of air conditioning for passengers/customers, track equipment failure (such as track deformation or defects due to expansion of steel track under extreme heatwave along the open section of the East Rail Line of route length of 45.8 km) leading to service suspension and heat stroke of staff working outdoor.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation	Carbon pricing mechanisms

Primary potential financial impact
Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
The Chief Executive of the HKSAR pledged in her Policy Address 2020 that HKSAR will strive to achieve carbon neutrality before 2050 and released the Hong Kong's Climate Action Plan 2050 in Oct 2021 which sets out 4-pronged strategy to cut HK's carbon emissions and to achieve the reduction goal. According to the latest GHG inventory for Hong Kong released in June 2022, electricity generation continued to be the major source of emissions (amounting to 60.4% of the total emissions). Therefore, decarbonising the energy sector is the top priority which fossil fuels should be phase out in electricity generation and more natural gas will be needed as a transition fuel in the coming decade.

To achieve the goal of carbon neutrality before 2050, MTR may face the following risks:
(i) higher electricity tariff from the power companies (there are only 2 power companies in Hong Kong) due to carbon levy or other related charges for more low carbon fuel sources; and
(ii) possible energy efficiency programmes for railway operations including buses, company fleet, new rolling stock, LED lighting, etc., such as the mandatory Building Energy Code (Buildings Energy Efficiency Ordinance).

Our fully electrified rail network consumes a significant amount of electricity generated from both non-renewable and renewable fuel sources. As purchased electricity represents our largest carbon footprint as well as non-staff operating cost, we have concentrated our efforts on reducing energy consumption and improving energy efficiency in our rail and property operations. In 2021, our expenses on energy and utilities were HK$1,801 million. Given that utilities constitute 10-15% of our transport operation costs, any increase in electricity tariff will have major financial implication to our bottom line due to higher electricity costs or other costs passed down through the supply chain.

Time horizon
Medium-term

Likelihood
More likely than not

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
18010000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
We have established an Enterprise Risk Matrix to assess risk level of each identified risk by considering its likelihood of occurrence and consequence in monetary terms. Our ERM Framework defines the financial implications of a risk event into 4 categories: 1) HK$10M – 300M as “significant consequence”, 2) >HK300M – HK$1B as “major consequence”, 3) >HK$1B – HK$10B as “critical consequence”, and 4) >HK$10B as “catastrophic consequence”. Risk 1 falls within the realm of “significant consequence” under the Matrix, which is equivalent to HK$10M – 300M.

Given that utilities constitute 10-15% of our transport operation costs, there will be major financial implication on energy consumption. Our expenses on energy and utilities relating to Hong Kong transport operations were HK$1,801M in 2021 (i.e. around 13.6 % of expenses relating to Hong Kong transport operations).Assuming there will be a 1% increase in our expenses on energy and utilities in Hong Kong transport operations due to the rising trend of mean temperatures, the financial impact will be HK$18.01M.

Cost of response to risk
1127000000

Description of response and explanation of cost calculation
Recognising the extent of our portfolio and impact, the Corporation takes an active approach in adopting more stringent energy efficiency requirements beyond compliance. For existing infrastructure, we continue to put forward asset replacement/upgrade with more energy efficient products. These include but not limited to lighting in stations, trains and advertising panels; and environmental control systems to manage energy efficiency in stations, etc.

We also adopt energy storage solution for the regenerative braking system in the trains of our new lines and have invested HK$19 million on the energy storage devices. The energy storage devices were installed at two locations – Tsuen Wan Depot and Kowloon Ventilation Building. The regenerative energy obtained from the braking of Electric Multiple Units (EMU) is stored in the storage devices and then back-fed to the power line for use by EMUs during acceleration. The energy consumption is estimated to be reduced by approximately 600 MWh per year.

Furthermore, we are installing Station Energy Saving Inverter at Hong Kong University Station ad Lai King Traction Substation (Project Sum = HK$8M). The systems can capture total estimated average of 1,700kWh of regenerative energy per day, which may be converted to low-voltage AC electricity to power station facilities such as lighting, escalators and lifts. The installation is scheduled for completion by end 2022.

Our on-going energy saving efforts include, for example:
(i) Exhaust fans are used to create negative pressure in the station, which draws in cool ambient air through station entrances to reduce the overall cooling demand.

(ii) Screen doors are installed to lessen the piston effect whereby moving trains pull cooled air into the tunnel and push hot air from the tunnel into the station, which in turn minimises the cooling volume on platforms.
(iii) Chillers have been replaced in stations until 2023, which can reduce our electricity consumption by up to 30% from 2017 levels.

In addition, we have invested HK$1.1 billion for the replacement of 150+ chillers in phases.

Total = HK$1.1 billion (chiller replacement) + HK$19 million (energy storage devices) + HK$8 million (Station Energy Saving Inverter) = HK$1.127 billion.

Comment

Identifier
Risk 2

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver

Chronic physical	Changing temperature (air, freshwater, marine water)

Primary potential financial impact
Increased indirect (operating) costs

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
According to the Hong Kong Observatory, there was an increase in average temperature of 0.31 degree Celsius per decade during 1992-2021 in Hong Kong. Higher ambient temperature and more hot days/heat waves could impact our businesses in a number of ways: (i) increase demand on air-conditioning in our railway system leading to more loading on ventilation and cooling assets and in turn to higher electricity consumption; (ii) induce track deformation or defects leading to service suspension (i.e. the 45.8km km of the East Rail Line is mostly open section at grade which is susceptible to the consequences of heat waves); and (iii) impact on staff well-being, especially those working outdoor such as station attendant.

Time horizon
Medium-term

Likelihood
Likely

Magnitude of impact
Low

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
149780000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
We have established an Enterprise Risk Matrix to assess risk level of each identified risk by considering its likelihood of occurrence and consequence in monetary terms. Our ERM Framework defines the financial implications of a risk event into 4 categories: 1) HK$10M – 300M as “significant consequence”, 2) >HK300M – HK$1B as “major consequence”, 3) >HK$1B – HK$10B as “critical consequence”, and 4) >HK$10B as “catastrophic consequence”. Risk 2 falls within the realm of “significant consequence” under the Matrix, which is equivalent to HK$10M – 300M. Specifically,

- there will be major financial implication on energy consumption, higher capacity of electrical and mechanical systems, particularly the Heat, Ventilation and Air-condition (HVAC) leading to increased cost and higher need and frequency of maintenance. Our expenses on energy and utilities relating to Hong Kong transport operations were HK$1,801M in 2021. Assuming there will be a 1% increase in our expenses on energy and utilities in Hong Kong transport operations due to the rising trend of mean temperatures, the financial impact will be HK$18.01M.

- track deformation or defects may lead to service suspension (the open section of the East Rail Line with route length of 45.8km is more susceptible to the consequences of heat waves). The revenue from our Hong Kong transport operations was HK$13,177M in 2021. Assuming there will be a 1% decrease in revenue from Hong Kong transport operations due to service disruption caused by track deformation, the financial impact will be HK$131.77M

- relating to staff, the increased temperature could reduce their productivity on site, or impacts their health adversely due to heat stress.

- based on the above estimation, the potential financial implication will be HK$18.01M + HK$131.77 = HK$149.78M .

Cost of response to risk
11000000000

Description of response and explanation of cost calculation
Situation:

According to the Hong Kong Observatory, there was an increase in average temperature of 0.31 degree Celsius per decade during 1992-2021 in Hong Kong. We expect the trend will continue for the short- to mid-term leading to increase demand on air-conditioning in our railway system leading to more loading on ventilation and cooling assets and in turn to higher electricity consumption.

Task needs to be done:

In response to climate change, we have developed a Climate Change Strategy following a 3-pronged approach. We have concentrated our efforts to provide a low-carbon transport network, improve energy efficiency and strengthen climate adaptation and resilience measures in our operations. Under this specific situation, we need to identify and implement energy efficiency measures to minimise the financial impact caused by the increased expenses on energy and utilities.

Actions taken in 2021:

(i) review of the capacity of E&M equipment, in particular the HVAC systems, at stations regularly or on an on-demand basis, as well as the capacity of power supply and consumption;
(ii) replacement of a total of 150+ chillers in phases with better Coefficient of performance in stations/depots from year 2017 to 2022/23 (about half of the air conditioning systems in our Hong Kong's network);
(iii) adoption of winter free cooling mode (i.e. using ambient air for station cooling and exhaust fans operate while chillers and intake fans are off-run);
(iv) provision of platform screen doors in underground stations to prevent loss of air-conditioning to trackways and thereby energy wastage;
(v) adoption of high-efficiency air-conditioning system (i.e. water-cooled air-conditioning system) where practicable for new MTR stations; and
(vi) monitoring of power consumption due to hotter days and driving day-to-day energy saving measures;

Results:

2021 Progress: 121 chillers have been replaced (around 78% of the replacement works)
Total Investment Amount: HK$1.1 billion for the replacement of 150+ chillers in phases. The fee includes 2 components and has been estimated by adding the 1) consultancy fee for feasibility studies and design works and 2) contractor fee for the projects carried out in different phases.

Benefit: The operating efficiency and performance of the new chillers is better than the existing chillers, the energy consumption is expected to be reduced by 30.4 GWh when completed.

Comment
The manpower and capital expenditures for the above management methods are hard to estimate as they are part of our overall strategy and budget.

Identifier
Risk 3

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver

Acute physical	Cyclone, hurricane, typhoon

Primary potential financial impact
Increased indirect (operating) costs

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
According to the Hong Kong Observatory, extreme precipitation and super typhoon events have become more frequent in Hong Kong. Changes in rainfall pattern and intensity brought by super typhoon, especially excessively heavy rain and flooding could impact our operations in a number of ways:
(i) lead to flooding in stations (especially in underground stations), tunnel and at at-grade tracks (i.e. the 45.8 km of the East Rail Line is mostly open section at grade) resulting in service suspension and loss of revenue; and also incur costs on repairing or replacing equipment affected by flooding;
(ii) reduce visibility and increase risk of collision of fleets/between pedestrian/road vehicles leading to service suspension and loss of revenue;
(iii) limit construction activities on site, leading to potential programme delay and increased project costs due to extension of time due to inclement weather; and
(iv) expose underground car park and plant rooms to flooding risk that will incur costs on repairing or replacing equipment affected by flooding.

Time horizon
Short-term

Likelihood
More likely than not

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
131770000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
We have established an Enterprise Risk Matrix to assess risk level of each identified risk by considering its likelihood of occurrence and consequence in monetary terms. Our ERM Framework defines the financial implications of a risk event into 4 categories: 1) HK$10M – 300M as “significant consequence”, 2) >HK300M – HK$1B as “major consequence”, 3) >HK$1B – HK$10B as “critical consequence”, and 4) >HK$10B as “catastrophic consequence”. Risk 3 falls within the realm of “significant consequence” under the Matrix, which is equivalent to HK$10M – 300M.

Extreme rainfall events could lead to suspension of the railway operation (resulting in reduction of fare revenue), construction programme delay and increased maintenance. In 2021, the fare revenue from our Hong Kong transport operations was HK$13,177M. Assuming there will be a 1% decrease in revenue from Hong Kong transport operations due to service disruption caused by flooding, the financial impact will be HK$131.77M.

Cost of response to risk
10800000000

Description of response and explanation of cost calculation
We have already included flooding handling procedures and foggy weather handling procedures in our Standing Operations Procedures Manual. On-going actions are carrying out to tackle extreme rainfall events in short to medium term:
(i) carrying out regular maintenance;
(ii) regular review of flooding protection measures; and
(iii) on-going improvement works for at-grade stations and critical equipment rooms.

Our railway infrastructure is constructed with appropriate flood protection e.g. the entrances/exits of most MTR stations are by design at least 450mm above street level and equipped with 1.2m high flood boards, floodgate at interface with the sea and waterproof doors at underground entrances/exits connecting the stations and other facilities as needed. The location of the plant rooms is carefully planned so that they would be least affected in the event of excessive rainfall. We have also set up Customer Service Rapid Response Unit (CSRRU) and Customer Service Support Team to support daily railway operation and offer help during service failure.

On construction sites, floodgates are constructed around openings to the underground to prevent flooding while pump facilities are on standby to tackle inundation. Meanwhile, the construction programme is also planned so that weather-sensitive works would be completed in dry seasons (such as delivery of oversized construction equipment such as the tunnel boring machines for the tunneling works between Exhibition Station and Admiralty Station).

In 2021, MTR invested a total of more than HK$10.8 billion to maintain, upgrade or replace the Company's Hong Kong railway assets.

Comment

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?
Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier
Opp1

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Markets

Primary climate-related opportunity driver
Access to new markets

Primary potential financial impact
Increased diversification of financial assets

Company-specific description
In 2017, the Hong Kong SAR Government announced to promote the development of green finance in Hong Kong and to issue a green bond in the financial year 2018/19. The promotion of green bonds by the Government will play an important role in establishing Hong Kong as an international green finance hub and expanding the local bond market. This will encourage more issuers to arrange financing for their green projects through the capital markets and attract more stakeholders to look into the new investment opportunities.

The Corporation established our Green Bond Framework and issued our first Green Bond in 2016. The green bond issuances have allowed us to tap into a new and fast-growing bond investor base and hence expanded and diversified our funding sources. They have provided similar cost effective financing as traditional bonds for our environmentally friendly services and network enhancements, primarily in relation to mitigating climate change.

Building upon our 2016 Green Bond Framework, the Corporation established a Green Finance Framework in 2018 to expand the scope of green finance to include green loans and other green credit facilities. In 2020, the Green Finance Framework has been further expanded to a Sustainable Finance Framework to cover eligible projects to enhance both green (added a new category of renewable energy) and social performance.

Time horizon
Medium-term

Likelihood
Virtually certain

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
26075000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
At the end of 2021, MTR's sustainable finance portfolio consisted of fifteen bonds in four different currencies and three HKD & one EUR loans. The green finance proceeds

partially funded 12 of our green projects including Kwun Tong Line Extension , South Island Line, Replacement of first Generation M-trains, Replacement of Rail Power Line, Air Cooled Chiller Replacement, Trackside Energy Storage, Regenerative Station Energy Saving Inverter System, Carbon Neutral Station Design for Tuen Mun South and Hung Shui Kiu Stations, Battery Locomotives Acquisition, Lok Ma Chau Wetland, etc. Total amount financed by green bond proceeds for the green projects is HK$26,075 million. All the relevant figures have been independently assured by the Hong Kong Quality Assurance Agency.

Cost to realize opportunity
0

Strategy to realize opportunity and explanation of cost calculation
Situation:

In 2017, the HKSAR Government announced to promote the development of green finance in Hong Kong and to issue a green bond in the financial year 2018/19. The promotion of green bonds by the Government has played an important role in establishing HKSAR as an international green finance hub and expanding the local bond market. This encourages more issuers to arrange financing for their green projects through the capital markets and attracted more stakeholders to look into the new investment opportunities.

Task need to be Done:

We set up a Green Bond Framework in 2016 in alignment with the Green Bond Principles issued by the International Capital Market Association to integrate environmental, social and corporate governance into our financing and decision-making processes. In order to realise the opportunity of the emerging marketing of diversified green finance products in HKSAR, we need to expand our green bond framework to cover other forms of green finance, factoring in components recommended in the Green Loan Principles issued by the Asia Pacific Loan Market Association.

Actions Taken:

Building upon our 2016 Green Bond Framework, the Corporation established a Green Finance Framework in 2018 to expand the scope of green finance to include green loans and other green credit facilities. In 2020, we put in place a Sustainable Finance Framework to cover a wider range of financing transactions where the proceeds are used for furthering the development of sustainable urban infrastructure in support of the UN Sustainable Development Goals. The Framework sets out how the Corporation uses the proceeds of green finance to invest in projects and facilities that will result in enhanced service levels and environmental performance over the longer term. The arrangement of Sustainable Finance is an integral part of MTR's financing strategy and reflects our commitment to sustainable development.

Results:

At the end of 2021, MTR's sustainable finance portfolio consisted of 15 bonds in 4 different currencies and 3 HKD & 1 EUR loans. The Corporation's Project portfolio funded by the green bond proceeds was expanded to include 12 projects (HK$26,075 million).

Cost:

Manpower resources for the issuance of green bonds have been absorbed by relevant functions. No additional headcount has been deployed. The cost of issuing green bonds is therefore considered insignificant.

Comment

Identifier
Opp2

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Products and services

Primary climate-related opportunity driver
Other, please specify (Increased revenue through demand for lower carbon products and services)

Primary potential financial impact
Increased revenues resulting from increased demand for products and services

Company-specific description
In 2014, the HKSAR Government issued the Railway Development Strategy 2014 (RDS 2014) and plans to further expand the railway network up to 2030+ by including 7 new railway lines, extensions and stations (referred to as RDS 1-7 below). In Oct 2021, the Hong Kong Government published Hong Kong's Climate Action Plan 2050, which commended our rail network is the backbone of Hong Kong's low-carbon public transport network and will be continuously encouraged to grow. In 2021, the Company made progress on a number of projects recommended under the RDS 2014 framework for the future development of the Hong Kong railway network.

In December 2021, the Tung Chung Line Extension (RDS 1) became the first railway project under RDS 2014 to be gazetted under the Railways Ordinance. After receiving Government's invitation to proceed with detailed planning and design in April 2020, preliminary design commenced in June 2020. Construction is expected to commence in 2023 and be completed in 2029.

Following Government's invitation to proceed with the detailed planning and design for the Tuen Mun South Extension (RDS 2) in May 2020, detailed planning and design commenced in the fourth quarter of 2020. Construction is targeted to commence in 2023 and be completed in 2030.

After receiving Government's invitation to proceed with detailed planning and design in December 2020, we awarded the consultancy for the detailed planning and design of Kwu Tung Station (one of the stations under RDS 3) on the East Rail Line in April 2021, with construction targeted to commence in 2023 for completion in 2027. The preliminary design consultancy for the Northern Link Main Line and associated stations (RDS 3) was awarded in July 2021, with construction targeted to commence in 2025 for completion in 2034.

We were invited by Government to proceed with detailed planning and design for the Hung Shui Kiu Station (RDS 4) in May 2021, and we awarded the preliminary design consultancy for the project in October 2021. Construction is targeted to commence in 2024 for completion in 2030.

We are working closely with Government to address technical challenges regarding the East Kowloon Line (RDS 5) and North Island Line (RDS 6). We are also working with Government on the South Island Line (West) (RDS 7), a proposal for which was submitted in December 2020.

Time horizon

Medium-term

Likelihood
Very likely

Magnitude of impact
High

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
11067000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The detailed financial implications depend on the context and scale of the projects and on the agreed terms of projects to be built and operated. Nevertheless, the launch of new rail projects has critical financial significance to the Corporation. In 2021, the revenue generated from domestic service of Hong Kong transport operations is HK$11,067 million which is derived from the annual patronage for domestic service (1,421.7 millions) in 2021 and the average fare for domestic service (HK$7.64). Domestic service covers the following rail lines: Kwun Tong, Tsuen Wan, Island, South Island, Tung Chung, Tseung Kwan O, Disneyland Resort, East Rail (excluding Cross-boundary Service), and Tuen Ma lines.

Cost to realize opportunity
30100000000

Strategy to realize opportunity and explanation of cost calculation
In Hong Kong, the Corporation supports the Transport and Housing Bureau in the process of delivering the Railway Development Strategy 2014 (RDS 2014), providing technical expertise in terms of development new railway lines and their connections to the existing network. In the meantime, we continue to open new lines such as the East Rail Line cross-harbour extension and enhance our services within Hong Kong to demonstrate our competence as we pursue these new opportunities.

Seven new railway projects have been proposed under the RDS 2014. We are now proceeding the detailed planning and design for 4 of these projects, namely the Tuen Mun South (TMS) Extension, the Northern Link (and Kwu Tung Station), the Tung Chung Line (TCL) Extension, and the Hung Shui Kiu Station. We also submitted a project proposal for the South Island Line (West) in December 2020. During the year, we continued to work with Government to address technical challenges on the East Kowloon Line and North Island Line projects.

The economic benefits accrued to transport infrastructure is generally measured in terms of time saving to road users. It is estimated that the TMS Extension will save the public a cumulative total of about 300 million hours over 50 years of operation. The economic benefits, including the said time saving, operating cost savings of other public transport vehicles and cost savings due to reduction in accidents, of the TMS Extension are estimated to be about $28 billion in 2015 prices. It is estimated that the TCL Extension will save the public a cumulative total of about 792 million hours over 50 years of operation. The economic benefits, including time saving, public transport vehicle operating cost savings, and accident cost savings over 50 years of operation, of the TCL Extension are estimated to be about $61.4 billion in 2016 prices
Based on the HKSAR Government information, the estimated capital cost of the Tung Chung Line Extension and Tuen Mun South Extension is about HK$18.7 billion and HK$11.4 billion.

Total cost = HK$18.7 billion + HK$11.4 billion = HK$30.1 billion

Comment

C3. Business Strategy

C3.1

(C3.1) Does your organization's strategy include a transition plan that aligns with a 1.5°C world?

Row 1

Transition plan

No, but our strategy has been influenced by climate-related risks and opportunities, and we are developing a transition plan within two years

Publicly available transition plan

<Not Applicable>

Mechanism by which feedback is collected from shareholders on your transition plan

<Not Applicable>

Description of feedback mechanism

<Not Applicable>

Frequency of feedback collection

<Not Applicable>

Attach any relevant documents which detail your transition plan (optional)

<Not Applicable>

Explain why your organization does not have a transition plan that aligns with a 1.5°C world and any plans to develop one in the future

Recognising the climate imperative for businesses, we recently completed a carbon reduction study that takes into account a comprehensive range of factors including the latest climate science, technology trends, Hong Kong's Climate Action Plan 2050, the risks and opportunities for our business, and the views of key internal and external stakeholders. Following this study, we will be setting science-based reduction targets for 2030 with the longer-term goal of achieving carbon neutrality by 2050.

These targets will cover the scope 1 and scope 2 emissions from our Hong Kong operations as well as scope 3 emissions and will be achieved by implementing a range of energy saving and carbon reduction initiatives, such as investing in the latest technologies, adopting innovative ways to enhance work efficiency, and partnering with key stakeholders including the electricity suppliers in Hong Kong, in a concerted effort to reduce carbon emissions.

In July 2022, we have submitted our commitment letter to SBTi for our near-term targets. We will arrange our target validation with SBTi shortly.

Explain why climate-related risks and opportunities have not influenced your strategy

<Not Applicable>

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

	Use of climate-related scenario analysis to inform strategy	Primary reason why your organization does not use climate-related scenario analysis to inform its strategy	Explain why your organization does not use climate-related scenario analysis to inform its strategy and any plans to use it in the future
Row 1	Yes, qualitative, but we plan to add quantitative in the next two years	<Not Applicable>	<Not Applicable>

C3.2a

(C3.2a) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenario	Scenario analysis coverage	Temperature alignment of scenario	Parameters, assumptions, analytical choices
Physical climate scenarios: RCP 8.5	Country/area	<Not Applicable>	Parameters assessed - drought stress, fire, heat stress, precipitation stress, river flood, sea level rise, and tropical cyclone.
Physical climate scenarios: RCP 4.5	Country/area	<Not Applicable>	Parameters assessed - drought stress, fire, heat stress, precipitation stress, river flood, sea level rise, and tropical cyclone.
Physical climate scenarios: RCP 2.6	Country/area	<Not Applicable>	Parameters assessed - drought stress, fire, heat stress, precipitation stress, river flood, sea level rise, and tropical cyclone.

C3.2b

(C3.2b) Provide details of the focal questions your organization seeks to address by using climate-related scenario analysis, and summarize the results with respect to these questions.

Row 1

Focal questions

High-level climate diagnostic study on our railway and property assets in Hong Kong to assess their exposures to climate-related physical risks under different time horizons and climate scenarios based on the selected Representative Concentration Pathways

Results of the climate-related scenario analysis with respect to the focal questions

The Study will be completed in 2022. It will help us identify critical exposed assets at risk, which enables us to plan for a more in-depth scenario analysis where appropriate.

C3.3

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	One of the most substantive business decisions integrating climate-related issues into our business strategy is the establishment of our Green Finance Framework and Sustainable Finance Framework covering green bonds, green loans and other green credit facilities, providing funding to environmental projects and network enhancements to support the growing demand for low-carbon mass transport services as reported in C2.4a above. At the end of 2021, MTR's sustainable finance portfolio consisted of 15 bonds in 4 different currencies, 3 HKD and 1 EUR green loans. In 2021 six bonds in the portfolio (three in HKD, two CNY and one USD, totaling HK$ 2.2 billion equivalent) matured. Six new bonds and one new loan totaling HK$ 4.8 billion equivalent were arranged to fund new projects and to replace the matured financing. The aggregated outstanding sustainable finance for the Group reached HK$ 26.1 billion, representing more than half the outstanding debt of the Group, demonstrating the green nature of the Group's businesses. Background In 2017, the HKSAR Government announced to promote the development of green finance in Hong Kong and to issue a green bond in the financial year 2018/19. The promotion of green bonds by the Government has played an important role in establishing HKSAR as an international green finance hub and expanding the local bond market . This encourages more issuers to arrange financing for their green projects through the capital markets and attract more stakeholders to look into the new investment opportunities. We set up a Green Bond Framework in 2016. In order to realise the opportunity of the emerging marketing of diversified green finance products, we need to expand our green bond framework to cover other forms of green finance. The Corporation established a Green Finance Framework in 2018 to expand the scope of green finance to include green loans and other green credit facilities. In 2020, we put in place a Sustainable Finance Framework to cover a wider range of financing transactions where the proceeds are used for furthering the development of sustainable urban infrastructure in support of the UNSDG. The Framework sets out how the Corporation uses the proceeds of green finance to invest in projects and facilities that will result in enhanced service levels and environmental performance over the longer term.
Supply chain and/or value chain	Yes	Around 75% of our total energy use attributes to the operation of our railway networks. In view of our business expansion, increase in train frequency to alleviate overcrowding in trains and provision of a comfortable riding environment, there will be corresponding rise in electricity consumption that needs to be managed proactively. The HKSAR government has devised a long-term decarbonisation strategy to combat Climate Change. As electricity generation is a key contributor to the overall carbon emissions in Hong Kong, one key action is to phase down the use of coal gradually and increase the use of more natural gas and/or non-fossil fuel sources for electricity generation. In view of the above, we expect our expenditure in electricity will continue to rise in short to medium term as defined in C2.1a above which would impact our operations. We have integrated climate change considerations into our business strategy to ensure that climate risks are thoroughly considered and incorporated in our planning, design and operations. We published our Climate Change Strategy in April 2020 presenting our 3-pronged strategy to address climate change. One of the measures under the Climate Change Strategy to address the risk related to the procurement of electricity is to explore the possibility of adopting more renewable energy (RE) where feasible. For example, the Feed-in Tariff (FiT) and Renewable Energy Certificates (RECs) under the new Scheme of Control Agreement between the two power companies in Hong Kong and the HKSAR Government have provided further opportunities in moving towards low-carbon operations through the adoption of RE and purchasing RECs. Increasing the generation of RE is a key component of addressing the global climate challenge. Following the successful installation of our 189-panel solar PV system at MTR Hung Hom Building in 2019, we installed another PV system comprising 296 solar panels at our Headquarters in 2020. In Jan 2021, we continued the Phase 1 Solar Facilities project in Hin Keng Station (HIK). The solar system is of the capacity of 60kW We have further identified suitable locations for the installation of more solar panel systems at our premises. Our target is to increase our generating capacity of renewable energy to 1 million kWh by 2023.
Investment in R&D	Yes	Effectiveness and Innovation is one of the four key focus areas of our Corporate Cultures for excellence and growth. We strive to be innovative in operating our system and managing our assets in order to fulfil our obligations in sustainability for medium to long term. Our regenerative braking system is an example of our willingness to apply innovative technologies to our operations in order to reduce the energy cost as identified as one of the climate-related risk in 2.3a above (installation of Station Energy Saving Inverter at Hong Kong University Station and Lai King Traction Substation). In Hong Kong, we have adopted the regenerative braking technology to convert kinetic energy produced during braking into electrical energy which is then fed back into the power supply network for use by other trains through the overhead power system. We invested around HK$20 million for the installation of trackside energy storage devices at Tsuen Wan Depot and Kowloon Ventilation Building. The energy saving recorded in 2017 and 2018 was around 600MWh per year. To expand our usage of regenerative braking energy, we have commenced the installation works of two Station Energy Saving Inverter systems at Lai King Traction Substation at Airport Express and Tung Chung Line and at HKU Station on the Island Line. The systems can capture total estimated average of 1,700kWh of regenerative energy per day, which may be converted to low-voltage AC electricity to power station facilities such as lighting, escalators and lifts. The installation is scheduled for completion by end 2022. At Light Rail operations in Hong Kong, we also installed solar panels in one of our new generation Light Rail Vehicles to provide electricity for the in-compartment lighting system in 2020. We will review the effectiveness of this trial and consider possible expansion of the initiative in our light rail network in the coming 1-3 years.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Operations	Yes	We recognise the importance of combating climate change and commit to integrating low-carbon measures into our policies, strategies and planning as well as strengthen our resilience and adaption to climate-related risks. We understand there are growing interests from stakeholders that our decarbonisation roadmap should align with the Paris Agreement and the increasing expectations from investors for low carbon products/services. In addition, the Chief Executive of the HKSAR pledged in her Policy Address 2020 that HKSAR will strive to achieve carbon neutrality before 2050. The Environment Bureau released the Hong Kong's Climate Action Plan 2050 in Oct 2021 which sets out 4-pronged strategy to cut HK's carbon emissions and to achieve the reduction goal. Failure to develop suitable carbon reduction targets may result in increased concern and negative feedback from stakeholder especially our institutional investors. Recently completed a carbon reduction study that takes into account a comprehensive range of factors including the latest climate science, technology trends, Hong Kong's Climate Action Plan 2050, the risks and opportunities for our business, and the views of key internal and external stakeholders. The Study aims to develop a long-term decarbonisation roadmap for the operation and development of our railway and property businesses in Hong Kong through analysing our carbon footprint, reviewing feasible technical solutions and industry best practices around the world, and assessing their applicability to our operation. Following the study, we will be setting science-based reduction targets for the operation and development of our railway network and property portfolio in Hong Kong for 2030 with the longer-term goal of achieving carbon neutrality by 2050, which aligns with the HKSAR Government's pledge in the Hong Kong's Climate Action Plan 2050. We will implement a range of energy saving and carbon reduction initiatives, such as investing in the latest technologies, adopting innovative ways to enhance energy efficiency, and partnering with key stakeholders including the electricity suppliers in HKSAR and tertiary institutions, to reduce our Scope 1, 2 & 3 emissions in line with the Paris Agreement. In July 2022, we have submitted our commitment letter to SBTi for our near-term targets. We will arrange our target validation with SBTi shortly.

C3.4

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Direct costs Access to capital	1. Access to Capital - Green Finance In 2017, the Hong Kong SAR Government announced to promote the development of green finance in Hong Kong and to issue a green bond in the financial year 2018/19. The promotion of green bonds by the Government has played an important role in establishing Hong Kong as an international green finance hub and expanding the local bond market. This also encourages more issuers to arrange financing for their green projects through the capital markets and attract more stakeholders to look into the new investment opportunities. The Corporation established our Green Bond Framework and issued our first Green Bond in 2016. The green bond issuances have allowed us to tap into a new and fast-growing bond investor base and hence expanded and diversified our funding sources. They have provided similar cost effective financing as traditional bonds for our environmentally friendly services and network enhancements, primarily in relation to mitigating climate change. Building upon our 2016 Green Bond Framework, the Corporation established a Green Finance Framework in 2018 to expand the scope of green finance to include green loans and other green credit facilities. In 2020, we have further expanded the Green Finance Framework to a Sustainable Finance Framework to fund both environmental (added a new category of renewable energy) and social projects. At the end of 2021, MTR's sustainable finance portfolio consisted of 15 bonds in 4 different currencies, 3 HKD and 1 EUR green loans. In 2021 six bonds in the portfolio (three in HKD, two CNY and one USD, totaling HK$ 2.2 billion equivalent) matured. Six new bonds and one new loan totaling HK$ 4.8 billion equivalent were arranged to fund new projects and to replace the matured financing. The aggregated outstanding sustainable finance for the Group reached HK$ 26.1 billion, representing more than half the outstanding debt of the Group, demonstrating the green nature of the Group's businesses. 2. Installation of Solar PV System to Support Local Development of Renewable Energy Around 75% of our total energy use attributes to the operation of our railway networks. In view of our business expansion, increase in train frequency to alleviate overcrowding in trains and provision of a comfortable riding environment, there will be corresponding rise in electricity consumption that needs to be managed proactively. The HKSAR government has devised a long-term decarbonisation strategy to combat Climate Change. As electricity generation is a key contributor to the overall carbon emissions in Hong Kong, one key action is to phase down the use of coal gradually and increase the use of more natural gas and/or non-fossil fuel sources for electricity generation. In view of the above, we expect our expenditure in electricity will continue to rise in short to medium term. We have integrated climate change considerations into our business strategy to ensure that climate risks are thoroughly considered and incorporated in our planning, design and operations. We published our Climate Change Strategy in April 2020 presenting our 3-pronged strategy to address climate change. One of the measures under the Climate Change Strategy to address the risk related to the procurement of electricity is to explore the possibility of adopting more renewable energy (RE) where feasible. For example, the Feed-in Tariff (FiT) and Renewable Energy Certificates (RECs) under the new Scheme of Control Agreement between the two power companies in Hong Kong and the HKSAR Government have provided further opportunities in moving towards low-carbon operations through the adoption of RE and purchasing RECs. Increasing the generation of RE is a key component of addressing the global climate challenge. Following the successful installation of our 189-panel solar PV system at MTR Hung Hom Building in 2019, we installed another PV system comprising 296 solar panels at our Headquarters in 2020. In Jan 2021, we continued the Phase 1 Solar Facilities project in Hin Keng Station (HIK). The solar system is of the capacity of 60kW. We have further identified suitable locations for the installation of more solar panel systems at our premises. Our target is to increase our generating capacity of renewable energy to 1 million kWh by 2023.

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Absolute target

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number
Abs 1

Year target was set
2013

Target coverage
Country/region

Scope(s)
Scope 2

Scope 2 accounting method
Market-based

Scope 3 category(ies)
<Not Applicable>

Base year
2013

Base year Scope 1 emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 2 emissions covered by target (metric tons CO2e)

Base year Scope 3 emissions covered by target (metric tons CO2e)
<Not Applicable>

Total base year emissions covered by target in all selected Scopes (metric tons CO2e)
73954

Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1
<Not Applicable>

Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2

Base year Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)
<Not Applicable>

Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes
100

Target year
2023

Targeted reduction from base year (%)
12

Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]
65079.52

Scope 1 emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 2 emissions in reporting year covered by target (metric tons CO2e)

Scope 3 emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)
65079.52

% of target achieved relative to base year [auto-calculated]
100

Target status in reporting year
Achieved

Is this a science-based target?
No, but we anticipate setting one in the next 2 years

Target ambition
<Not Applicable>

Please explain target coverage and identify any exclusions
In 2013, we set a target to reduce energy use of our investment properties portfolio by 12% by 2023, compared to 2013 level. The base year emissions are converted based on the energy consumption of base year 2013 and emission factor of that specific year. We achieved our target of a 12% reduction of energy used in our investment property portfolio (with 2013 as baseline) in 2019, four years ahead of our target year by 2023.

Plan for achieving target, and progress made to the end of the reporting year
<Not Applicable>

List the emissions reduction initiatives which contributed most to achieving this target
Upgrade and regular maintenance of the air conditioning system and the lighting system.

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?
Target(s) to increase low-carbon energy consumption or production

C4.2a

(C4.2a) Provide details of your target(s) to increase low-carbon energy consumption or production.

Target reference number
Low 1

Year target was set
2019

Target coverage
Country/region

Target type: energy carrier
Electricity

Target type: activity
Production

Target type: energy source
Renewable energy source(s) only

Base year
2018

Consumption or production of selected energy carrier in base year (MWh)
0

% share of low-carbon or renewable energy in base year
0

Target year
2023

% share of low-carbon or renewable energy in target year
0.1

% share of low-carbon or renewable energy in reporting year
0.02

% of target achieved relative to base year [auto-calculated]
20

Target status in reporting year
Underway

Is this target part of an emissions target?
We did not have renewable energy system in 2018. To support the development of renewable energy in Hong Kong, we installed a solar PV system with a capacity of 58kW at our Hung Hom office in building in 2019. Following the successful trial, we installed a PV system comprising of 296 panels with the capacity of 93kW which exceeded our planned target of 40kW at our Headquarters Building in 2020. We continued the Phase 1 Solar Facilities project in Hin Keng Station with the contract awarded in January 2021. The solar system is of the capacity of 60kW.

We have developed a KPI on clean energy generation. Our target is to increase our generating capacity of renewable energy to 1 million kWh by 2023. This target will support and align with our near term SBT targets.

Is this target part of an overarching initiative?
Other, please specify (clean energy generation)

Please explain target coverage and identify any exclusions
We did not have renewable energy system in 2018. To support the development of renewable energy in Hong Kong, we installed a solar PV system with a capacity of 58kW at our Hung Hom office in building in 2019. Following the successful trial, we installed a PV system comprising 296 panels with the capacity of 93kW which exceeded our planned target of 40kW at our Headquarters Building in 2020. We continued the Phase 1 Solar Facilities project in Hin Keng Station with the contract awarded in January 2021. The solar system is of the capacity of 60kW. We have developed a KPI on clean energy generation and our target is to increase our generating capacity of renewable energy to 1 million kWh by 2023.

Plan for achieving target, and progress made to the end of the reporting year
We continued the Phase 1 Solar Facilities project in Hin Keng Station with the contract awarded in January 2021. Hardware installation of flexible solar PV panels, traditional mono at cladding, solar glass and the associated induction fan at platform levels and solar pavement were completed. The solar system is of the capacity of 60kW. Testing and commissioning and grid connection are under arrangement. We have further identified suitable locations for the installation of more solar panel systems at our premises. In August 2021, we have received formal approval from relevant government department for moving forward two pilot projects at Tai Wai Deport and Tuen Mun Deport and tendering for the installation works is in progress now. Our next phase will cover Pat Heung Depot, Chai Wan Depot, Sunny Bay Station and Siu Hong Station for the roll out of more solar energy projects, with contract awarded in end of December 2021. Our target is to increase our generating capacity of renewable energy to 1 million kWh by 2023.

List the actions which contributed most to achieving this target
<Not Applicable>

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	15	74348
To be implemented*	0	0
Implementation commenced*	1	318
Implemented*	4	18274
Not to be implemented	0	0

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Other, please specify	Other, please specify (Procurement of 13 battery locomotives to replace 8 diesel locomotives and 5 old model battery locomotives)

Estimated annual CO2e savings (metric tonnes CO2e)

974

Scope(s) or Scope 3 category(ies) where emissions savings occur

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

0

Investment required (unit currency – as specified in C0.4)

265000000

Payback period

No payback

Estimated lifetime of the initiative

>30 years

Comment

The operating efficiency and performance of the new electric-battery locomotives will be an improvement over the existing diesel and battery locomotives.

On average, each locomotive is active 8 hours / day
For diesel locomotive, approximately 51 litres of diesel is consumed each hour.
Diesel consumption per day: 8 x 51L= 408L
Total CO2e emission per year = 2.61 * 365 * 408 = 388.7 tonnes

Electric-Battery Locomotive (old model)
electricity consumption = 1,408 kWh / day
CO2e emission factors of 0.55kgCO2e/kWh
Total CO2e emission per year = 365 * 1,408 * 0.55 = 282.7 tonnes

Electric-Battery Locomotive (new model)
electricity consumption = 1,360 kWh / day
Total CO2e emission per year = 365 * 1,360 * 0.55 = 273.0 tonnes

Total CO2e emission reduction per year for 13 locomotive replacements = 8 * (388.7 – 273.0) + 5 * (282.7 – 273.0) = 974.1 metric tonnes

Initiative category & Initiative type

Energy efficiency in buildings	Heating, Ventilation and Air Conditioning (HVAC)

Estimated annual CO2e savings (metric tonnes CO2e)

13100

Scope(s) or Scope 3 category(ies) where emissions savings occur

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
30400000

Investment required (unit currency – as specified in C0.4)
1100000000

Payback period
>25 years

Estimated lifetime of the initiative
>30 years

Comment
A total of 154 chillers at 38 MTR stations and four railway depots will be replaced with more advanced and environmentally friendly systems by 2023. The new station chillers will provide a more comfortable station environment for passengers, with enhanced energy efficiency using variable-frequency drive inverter technology that could adjust the power output based on the actual temperature detected.

The operating efficiency and performance of the new chillers will be an improvement over the existing chillers. Total number of chillers needed is reduced to 133 chillers. Total energy consumption is expected to be reduced by 30.4 GWh when completed:
Old chillers total energy consumption per annum: 92.1 GWh
New chillers total energy consumption per annum: 61.7 GWh
Estimated energy conserved per annum: 30.4 GWh

As of December 2021, a total of 121 chillers have been replaced. Computation of savings in energy based on specification numbers is at approximately 23.9 GWh per year (121/154 * 30.4GWh).

CO2e emission factors of 0.55kgCO2e/kWh
Estimated energy saving in 2021 = 23.9 GWh
CO2 saving in 2021 = 23,900,000 kWh x 0.55kgCO2e/kWh = 13,100 metric ton CO2e

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Initiative category & Initiative type

Other, please specify	Other, please specify (Replacement of HV and LV rail power line and addition of power convertors to recycle traction power)

Estimated annual CO2e savings (metric tonnes CO2e)
1800

Scope(s) or Scope 3 category(ies) where emissions savings occur
Scope 2 (market-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
3300000

Investment required (unit currency – as specified in C0.4)
4900000000

Payback period
No payback

Estimated lifetime of the initiative
21-30 years

Comment
The new power converters and higher efficiency transformers provide the following expected benefits.
Power Converter savings: 1.7GWh / year
Transformer savings: 1.6GWh / year

Applying average market-based emission factors of 0.55kgCO2e/kWh for HKSAR, the estimated annual CO2e saving is around 1,800 tonnes of CO2e.

Initiative category & Initiative type

Low-carbon energy generation	Other, please specify (Regenerative braking energy)

Estimated annual CO2e savings (metric tonnes CO2e)
2400

Scope(s) or Scope 3 category(ies) where emissions savings occur
Scope 2 (market-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
4300000

Investment required (unit currency – as specified in C0.4)
98000000

Payback period
21-25 years

Estimated lifetime of the initiative
21-30 years

Comment
R-IPM installed in trains allow a train to increase the regenerative energy (electricity generated from the braking system) ratio from 36% to 41%. The regenerative energy is fed back into the power supply network for usage by the train or other trains that run on the network.
The energy recycled back to the network that are utilized will increase to 35.7 GWh from 31.4 GWh per annum with a net savings of 4.3 GWh.

Applying average market-based emission factors of 0.55kgCO2e/kWh for HKSAR, the estimated annual CO2e saving is around 2,400 tonnes of CO2e.

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	Since 2010, the Corporation has been the first company involved in property development in Hong Kong (under our Rail + Property business model) to implement voluntary environmental standards in a systematic way with a commitment that a number of our new residential property developments would achieve as a minimum the Hong Kong BEAM Plus Gold certification to improve building energy efficiency. In 2022, we have set a KPI for our future new stations aiming to attain BEAM Plus Gold or above certification.
Dedicated budget for energy efficiency	The Corporation has an annual dedicated budget to explore and trial with energy efficiency initiatives.
Financial optimization calculations	For station energy efficiency retrofit projects, a pre-approved maximum budget and financial criteria had been set prior to the procurement process, so as to achieve a reasonable return on investment period.
Other (Green Finance)	All our new railways are required to incorporate specific design standards for energy efficiency based on life-cycle cost and carbon footprint assessment of the rail lines, considering both construction and operation phases. The Corporation established Green Bond Framework and issued the first Green Bond in 2016 to fund our environmentally friendly Projects and network enhancements. Expanding on the foundation of our Green Bond Framework, we established a Green Finance Framework in 2018 to cover other forms of green financing. By the end of 2019, we had issued a total of 9 green bonds and 2 green loans, partially funded 5 of our projects. In 2020, we have further expanded the Green Finance Framework to a Sustainable Finance Framework to fund both environmental (added a new category of renewable energy) and social projects. In 2020, we successfully issued a US$1.2 billion green bond- the largest single tranche green bond for corporates in Asia Pacific. At the end of 2020, MTR's sustainable finance portfolio consisted of fifteen bonds in four different currencies and three HKD green loans. The green finance proceeds partially funded twelve of our green projects including Air Cooled Chiller Replacement, Trackside Energy Storage, Regenerative Station Energy Saving Inverter System, Carbon Neutral Station Design for future stations, Battery Locomotives, and etc. Total amount financed by green bond proceeds for the green projects is HK$23,420 million. In 2021 six bonds in the portfolio (three in HKD, two in CNY and one in USD, totaling HK$ 2.2 billion equivalent) matured. Six new bonds and one new loan totaling HK$ 4.8 billion equivalent were arranged in the same year to replace the matured financing and fund new projects. The aggregated outstanding sustainable finance for the Group reached HK$ 26.1 billion equivalent, with sustainable bonds totalling HK$21.8 billion (equivalent) representing more than half the outstanding debt securities of the Group, demonstrating the green nature of the Group's businesses.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products?
Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products.

Level of aggregation
Product or service

Taxonomy used to classify product(s) or service(s) as low-carbon
No taxonomy used to classify product(s) or service(s) as low carbon

Type of product(s) or service(s)

Rail	Other, please specify (sustainable and low-carbon mass transport services)

Description of product(s) or service(s)
We provide sustainable and low-carbon mass transit services as all our trains are fully electrified. The fuel mix of electricity generated by the local power companies to power our trains : 48% natural gas, 36% nuclear, 1% renewable energy and 15% coal.
Ref:
https://www.clp.com.hk/en/about-clp/power-generation

Have you estimated the avoided emissions of this low-carbon product(s) or service(s)
Yes

Methodology used to calculate avoided emissions
Other, please specify (Assume any usage of the lines as an incremental usage as the train trips would not have happened without the lines.)

Life cycle stage(s) covered for the low-carbon product(s) or services(s)
Use stage

Functional unit used
For estimation of the GHG emission avoidance, we assume any usage of the lines (i.e. passengers that used any one of the stations along the lines) as an incremental usage as the train trips would not have happened without the lines. i.e. passengers would have taken additional trip on a bus/car from end station, or passengers would have taken outright the full trip on bus/car.

Reference product/service or baseline scenario used
reduced transportation trip on bus/car

Life cycle stage(s) covered for the reference product/service or baseline scenario
Use stage

Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario
41900

Explain your calculation of avoided emissions, including any assumptions
The average travelling distance of each passenger was 10.5km in 2021. Based on the number of passengers for Kwun Tong Line Extension (Project #A) and South Island Line (East) (Project #B)in 2021, the corresponding avoidance of GHG emissions are computed as follows:

Annual GHG Emissions Avoided = (Emission Factor for MTRC – Emission Factor for Local Bus) * Annual Passenger number * Average Passenger Distance
Estimation is based on 2 new rail projects funded by the Sustainable Finance:

Based upon the above methodology, our estimation is summarised below:
Annual GHG Emissions Avoided from Project #A is 21,200 t CO2e
Annual GHG Emissions Avoided from Project #B is 20,700 t CO2e
Total Estimated avoided emissions = 21,200 + 20,700 = 41,900 tonnes CO2e

Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year
27.9

C5. Emissions methodology

C5.1

(C5.1) Is this your first year of reporting emissions data to CDP?
No

C5.1a

(C5.1a) Has your organization undergone any structural changes in the reporting year, or are any previous structural changes being accounted for in this disclosure of emissions data?

Row 1

Has there been a structural change?
No

Name of organization(s) acquired, divested from, or merged with
<Not Applicable>

Details of structural change(s), including completion dates
<Not Applicable>

C5.1b

(C5.1b) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?

	Change(s) in methodology, boundary, and/or reporting year definition?	Details of methodology, boundary, and/or reporting year definition change(s)
Row 1	No	<Not Applicable>

C5.2

(C5.2) Provide your base year and base year emissions.

Scope 1

Base year start
January 1 2008

Base year end
December 31 2008

Base year emissions (metric tons CO2e)
21775

Comment

Scope 2 (location-based)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment
According to GHG Protocol, a location-based method reflects the average emissions intensity of grids on which energy consumption occurs (using mostly grid-average emission factor data). A market-based method reflects emissions from electricity that companies have purposefully chosen (or their lack of choice).

Based on the above, all scope 2 emissions have been reported using market-based emission factors.

Scope 2 (market-based)

Base year start
January 1 2008

Base year end
December 31 2008

Base year emissions (metric tons CO2e)
1066179

Comment

Scope 3 category 1: Purchased goods and services

Base year start
January 1 2020

Base year end
December 31 2020

Base year emissions (metric tons CO2e)
1359

Comment

Scope 3 category 2: Capital goods

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment
N/A

Scope 3 category 3: Fuel-and-energy-related activities (not included in Scope 1 or 2)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment
N/A

Scope 3 category 4: Upstream transportation and distribution

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment
N/A

Scope 3 category 5: Waste generated in operations

Base year start
January 1 2008

Base year end
December 31 2008

Base year emissions (metric tons CO2e)
8068

Comment

Scope 3 category 6: Business travel

Base year start
January 1 2008

Base year end
December 31 2008

Base year emissions (metric tons CO2e)
1129

Comment

Scope 3 category 7: Employee commuting

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment
N/A

Scope 3 category 8: Upstream leased assets

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment
N/A

Scope 3 category 9: Downstream transportation and distribution

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment
N/A

Scope 3 category 10: Processing of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment
N/A

Scope 3 category 11: Use of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment
N/A

Scope 3 category 12: End of life treatment of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment
N/A

Scope 3 category 13: Downstream leased assets

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment
N/A

Scope 3 category 14: Franchises

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment
N/A

Scope 3 category 15: Investments

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
608949

Comment
N/A

Scope 3: Other (upstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment
N/A

Scope 3: Other (downstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment
N/A

C5.3

(C5.3) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
Other, please specify (Guidelines to Account for and Report on Greenhouse Gas Emissions and Removals for Buildings (Commercial, Residential or Institutional Purposes) in Hong Kong (2010 Edition) by EMSD and EPD, HKSAR Government)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)
40611

Start date
January 1 2021

End date
December 31 2021

Comment

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)
40949

Start date
January 1 2020

End date
December 31 2020

Comment

Past year 2

Gross global Scope 1 emissions (metric tons CO2e)
46134

Start date
January 1 2019

End date
December 31 2019

Comment

Past year 3

Gross global Scope 1 emissions (metric tons CO2e)
44102

Start date
January 1 2018

End date
December 31 2018

Comment

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based
We are not reporting a Scope 2, location-based figure

Scope 2, market-based
We are reporting a Scope 2, market-based figure

Comment
In Hong Kong, our energy suppliers are restricted to two vertically integrated power companies that are regulated by the Government under a Scheme of Control Agreement (SCA) that is valid until 2033. Market-based emissions are calculated based on the emission factors provided by the two power companies (CLP and HEC) in their annual sustainability reports.

Emission Factor of CLP: The GHG intensity of the electricity sold in 2021 was 0.39 kgCO2e/kWh (please refer to P.79 of the following report
Ref: https://www.clpgroup.com/content/dam/clp-group/channels/sustainability/document/sustainability-report/2021/CLP_Sustainability_Report_2021_en.pdf.coredownload.pdf

Emission Factor of HEC: The GHG intensity of the electricity sold in 2021 was 0.71 kgCO2e/kWh
Ref: https://www.hkelectric.com/en/customer-services/carbon-calculator#:~:text=The%20amount%20of%20carbon%20emissions,up%20to%20the%20nearest%20kg

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based
<Not Applicable>

Scope 2, market-based (if applicable)
1035654

Start date
January 1 2021

End date
December 31 2021

Comment

Past year 1

Scope 2, location-based
<Not Applicable>

Scope 2, market-based (if applicable)
976574

Start date
January 1 2020

End date
December 31 2020

Comment

Past year 2

Scope 2, location-based
<Not Applicable>

Scope 2, market-based (if applicable)
1332512

Start date
January 1 2019

End date
December 31 2019

Comment

Past year 3

Scope 2, location-based
<Not Applicable>

Scope 2, market-based (if applicable)
1262450

Start date
January 1 2018

End date
December 31 2018

Comment

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?
No

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
1411

Emissions calculation methodology
Average product method

Percentage of emissions calculated using data obtained from suppliers or value chain partners
10

Please explain
It is estimated less than 10% emissions data was obtained from suppliers due to the complexity of goods we purchased to support our rail operations.

Capital goods

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Due to businesses operation, we purchase a large amount of goods for railway operations, new lines construction and services, etc. but the embodied carbon is unavailable

Currently, we are using proxy data to calculate our Scope 3 emissions on this category. We plan to develop a calculation methodology to estimate the embodied carbon emissions from our construction materials.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
All relevant fuel and energy-related emissions have been included in Scopes 1 and 2.

Upstream transportation and distribution

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
The main upstream transport impact of the MTR Corporation is from transport of construction materials and equipment for our railway construction projects. A study in 2012 revealed that the contribution of this is minor compared to the life cycle emission from operation. Hence, it is excluded from our assessments.

Waste generated in operations

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
1569

Emissions calculation methodology
Other, please specify

Percentage of emissions calculated using data obtained from suppliers or value chain partners
100

Please explain
Emissions from general waste disposal for railway operations and extension projects are calculated according to the latest Guidance for Voluntary Greenhouse Gas Reporting - 2016: Using Data and Methods from the 2014 Calendar Year published by the New Zealand Ministry for the Environment in 2016.

Business travel

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
137

Emissions calculation methodology
Other, please specify

Percentage of emissions calculated using data obtained from suppliers or value chain partners
100

Please explain
Emissions from staff business travel are calculated according to 2016 Government GHG Conversion Factors for Company Reporting: Methodology Paper for Emission Factors published by the Department for Business, Energy & Industrial Strategy of UK.

Employee commuting

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Majority of staff commute via our railway network (all our staff can enjoy free travel on our rail network). A small percentage of staff is provided with corporate cars consuming diesel or unleaded petrol. However, they have already been included in the Corporation's Scope 1 and 2 emissions.

Upstream leased assets

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
The leased railway assets from Kowloon-Canton Railway Corporation under the merger agreement in 2008 have been included in Scope 1 and 2 as direct emissions of the Corporation.

Background Note: MTR Corporation Ltd is a merger of 2 railway companies in 2008 - the Kowloon-Canton Railway Corporation (KCRC) and the Mass Transit Railway (MTR).

Downstream transportation and distribution

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Manufacturing and sale of products are not the primary business of the Corporation

Processing of sold products

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Manufacturing and sale of products are not the primary business of the Corporation

Use of sold products

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Manufacturing and sale of products are not the primary business of the Corporation

End of life treatment of sold products

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Manufacturing and sale of products are not the primary business of the Corporation

Downstream leased assets

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Emissions from the leased kiosks in stations, advertising panels, and common areas in properties have been calculated and included into the Corporation's Scope 2 emissions. Breakdowns are not provided separately.

Franchises

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
680628

Emissions calculation methodology
Other, please specify (Our primary reference document for GHG calculations is “Guidelines to Account for and Report on Greenhouse Gas Emissions and Removals for Buildings (Commercial, Residential or Institutional Purposes) in Hong Kong (February 2010)")

Percentage of emissions calculated using data obtained from suppliers or value chain partners
100

Please explain
Emissions from our majority owned subsidiaries in the Mainland of China and overseas are reported separately under the Performance Metrics in our Sustainability Report 2021.
(https://www.mtr.com.hk/sustainability/2021/en/pdf/Sustainability_Report_EN.pdf).

Total Scopes 1+2 emissions in Mainland of China in 2021: 136,870 ton CO2e
Total Scopes 1+2 emissions in Australia in 2021: 518,233 ton CO2e
Total Scopes 1+2 emissions in UK in 2021: 24,364 ton CO2e
Total Scopes 1+2 emissions in Sweden in 2021: 1,161 ton CO2e

TOTAL Emissions = 680,628

Investments

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
680628

Emissions calculation methodology
Other, please specify (Our primary reference document for GHG calculations is “Guidelines to Account for and Report on Greenhouse Gas Emissions and Removals for Buildings (Commercial, Residential or Institutional Purposes) in Hong Kong (February 2010)”)

Percentage of emissions calculated using data obtained from suppliers or value chain partners
100

Please explain
Emissions from our majority owned subsidiaries in the Mainland of China and overseas are reported separately under the Performance Metrics in our Sustainability Report 2021.
(https://www.mtr.com.hk/sustainability/2021/en/pdf/Sustainability_Report_EN.pdf).

Total Scopes 1+2 emissions in Mainland of China in 2021: 136,870 ton CO2e
Total Scopes 1+2 emissions in Australia in 2021: 518,233 ton CO2e
Total Scopes 1+2 emissions in UK in 2021: 24,364 ton CO2e
Total Scopes 1+2 emissions in Sweden in 2021: 1,161 ton CO2e

TOTAL Emissions = 680,628

Other (upstream)

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
808

Emissions calculation methodology
Other, please specify (Emissions from water consumption and sewage treatment are calculated based on the most recent available annual report of Hong Kong Water Supplies Department (WSD) and sustainability report of Hong Kong Drainage Services Department (DSD))

Percentage of emissions calculated using data obtained from suppliers or value chain partners
100

Please explain

Other (downstream)

Evaluation status
Not relevant, explanation provided

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Manufacturing and sale of products are not the primary business of the Corporation

C6.5a

(C6.5a) Disclose or restate your Scope 3 emissions data for previous years.

Past year 1

Start date
January 1 2020

End date
December 31 2020

Scope 3: Purchased goods and services (metric tons CO2e)
1359

Scope 3: Capital goods (metric tons CO2e)

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

Scope 3: Upstream transportation and distribution (metric tons CO2e)

Scope 3: Waste generated in operations (metric tons CO2e)
5731

Scope 3: Business travel (metric tons CO2e)
386

Scope 3: Employee commuting (metric tons CO2e)

Scope 3: Upstream leased assets (metric tons CO2e)

Scope 3: Downstream transportation and distribution (metric tons CO2e)

Scope 3: Processing of sold products (metric tons CO2e)

Scope 3: Use of sold products (metric tons CO2e)

Scope 3: End of life treatment of sold products (metric tons CO2e)

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)
575489

Scope 3: Investments (metric tons CO2e)
575489

Scope 3: Other (upstream) (metric tons CO2e)

Scope 3: Other (downstream) (metric tons CO2e)

Comment

Past year 2

Start date
January 1 2019

End date
December 31 2019

Scope 3: Purchased goods and services (metric tons CO2e)
308

Scope 3: Capital goods (metric tons CO2e)

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

Scope 3: Upstream transportation and distribution (metric tons CO2e)

Scope 3: Waste generated in operations (metric tons CO2e)
6440

Scope 3: Business travel (metric tons CO2e)
1913

Scope 3: Employee commuting (metric tons CO2e)

Scope 3: Upstream leased assets (metric tons CO2e)

Scope 3: Downstream transportation and distribution (metric tons CO2e)

Scope 3: Processing of sold products (metric tons CO2e)

Scope 3: Use of sold products (metric tons CO2e)

Scope 3: End of life treatment of sold products (metric tons CO2e)

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)
608949

Scope 3: Investments (metric tons CO2e)
608949

Scope 3: Other (upstream) (metric tons CO2e)

Scope 3: Other (downstream) (metric tons CO2e)

Comment

Past year 3

Start date
January 1 2018

End date
December 31 2018

Scope 3: Purchased goods and services (metric tons CO2e)
395

Scope 3: Capital goods (metric tons CO2e)

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

Scope 3: Upstream transportation and distribution (metric tons CO2e)

Scope 3: Waste generated in operations (metric tons CO2e)
11634

Scope 3: Business travel (metric tons CO2e)
539

Scope 3: Employee commuting (metric tons CO2e)

Scope 3: Upstream leased assets (metric tons CO2e)

Scope 3: Downstream transportation and distribution (metric tons CO2e)

Scope 3: Processing of sold products (metric tons CO2e)

Scope 3: Use of sold products (metric tons CO2e)

Scope 3: End of life treatment of sold products (metric tons CO2e)

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)
610580

Scope 3: Investments (metric tons CO2e)
610580

Scope 3: Other (upstream) (metric tons CO2e)

Scope 3: Other (downstream) (metric tons CO2e)

Comment

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?
No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure
0.0000228

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
1076265

Metric denominator
unit total revenue

Metric denominator: Unit total
47202000000

Scope 2 figure used
Market-based

% change from previous year
4.6

Direction of change
Decreased

Reason for change
Although higher patronage led to increase in Scope 1+2 emissions (increased by 5.77% in 2021 as compared to 2020) from our operations, it also resulted in higher revenue (increased by 10.96% in 2021 as compared to 2020).

C-TS6.15

(C-TS6.15) What are your primary intensity (activity-based) metrics that are appropriate to your emissions from transport activities in Scope 1, 2, and 3?

Rail

Scopes used for calculation of intensities
Report Scope 1 + 2 + 3 (category 4)

Intensity figure
0.0000582

Metric numerator: emissions in metric tons CO2e
868815

Metric denominator: unit
p.km

Metric denominator: unit total
14927416469

% change from previous year
-15.6

Please explain any exclusions in your coverage of transport emissions in selected category, and reasons for change in emissions intensity.
No exclusion.

There was slight increase in absolute Scope 1-3 emissions, however, there was improvement in pkm due to increased containment of COVID-19, higher vaccination levels and the relaxation of certain anti-pandemic measures, leading to improved overall results compared to 2020.

ALL

Scopes used for calculation of intensities
Report Scope 1 + 2 + 3 (category 4)

Intensity figure
0.0000723

Metric numerator: emissions in metric tons CO2e
1079402

Metric denominator: unit
p.km

Metric denominator: unit total
14927416469

% change from previous year
-14.9

Please explain any exclusions in your coverage of transport emissions in selected category, and reasons for change in emissions intensity.
No exclusion.

There was slight increase in absolute Scope 1-3 emissions, however, there was improvement in pkm due to increased containment of COVID-19, higher vaccination levels and the relaxation of certain anti-pandemic measures, leading to improved overall results compared to 2020.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?
Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	40314.17	IPCC Second Assessment Report (SAR - 50 year)
CH4	12.09	IPCC Second Assessment Report (SAR - 50 year)
N2O	284.41	IPCC Second Assessment Report (SAR - 50 year)

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Hong Kong SAR, China	40610.67

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By business division
By activity

C7.3a

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric ton CO2e)
Corporate functions and main office buildings	3474
Transport operations	30775
Network expansion	161
Properties and other businesses	6201

C7.3c

(C7.3c) Break down your total gross global Scope 1 emissions by business activity.

Activity	Scope 1 emissions (metric tons CO2e)
Fuel - rail operations and maintenance, in-house support and network expansion	5708.17
Fuel - feeder bus services	15158.65
Fuel - property business	180.09
Refrigerants - transport operations and in-house support	13543.23
Refrigerants - property business	6020.53

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions , metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (midstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	34410.05	<Not Applicable>	

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Hong Kong SAR, China	0	1035654

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By business division

C7.6a

(C7.6a) Break down your total gross global Scope 2 emissions by business division.

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Corporate Functions and Main Office Buildings	0	10787
Transport Operations	0	837531
Network Expansion	0	646
Properties and Other Businesses	0	186689

C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (midstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (downstream)	<Not Applicable>	<Not Applicable>	<Not Applicable>
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	0	837531	

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Increased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption		<Not Applicable>		
Other emissions reduction activities	10000	Decreased		Implementation of on-going carbon reduction initiatives such as chiller replacement, energy saving inverters, replacement of diesel loco led to an estimated saving of around 10,000 tCO2e
Divestment		<Not Applicable>		
Acquisitions		<Not Applicable>		
Mergers		<Not Applicable>		
Change in output	58742	Increased	5.8	Total patronage for MTR rail and bus services increased by 23.3% to 1,616.3 million compared to 1,310.8 million in 2020. This was primarily the result of higher patronage for passenger services following improvements in the pandemic situation as a result of the rollout of vaccination programme, relaxation of social distancing and other anti-pandemic measures, and the return of workers and students to offices and schools, respectively. In addition, the market-based emission factor of electricity purchased was increased from 0.37 kg CO2e/kWh in 2020 to 0.39 kg CO2e/kWh in 2021.
Change in methodology		<Not Applicable>		
Change in boundary		<Not Applicable>		
Change in physical operating conditions		<Not Applicable>		
Unidentified		<Not Applicable>		
Other		<Not Applicable>		

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Market-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 10% but less than or equal to 15%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	LHV (lower heating value)	0	84974	84974
Consumption of purchased or acquired electricity	<Not Applicable>	0	1967125	1967125
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	0	2052099	2052099

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	No
Consumption of fuel for the generation of heat	No
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Sustainable biomass

Heating value
Unable to confirm heating value

Total fuel MWh consumed by the organization
0

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
<Not Applicable>

MWh fuel consumed for self-generation of steam
<Not Applicable>

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration
<Not Applicable>

Comment
N/A

Other biomass

Heating value
Unable to confirm heating value

Total fuel MWh consumed by the organization
0

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
<Not Applicable>

MWh fuel consumed for self-generation of steam
<Not Applicable>

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration
<Not Applicable>

Comment
N/A

Other renewable fuels (e.g. renewable hydrogen)

Heating value
Unable to confirm heating value

Total fuel MWh consumed by the organization
0

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
<Not Applicable>

MWh fuel consumed for self-generation of steam
<Not Applicable>

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration
<Not Applicable>

Comment
N/A

Coal

Heating value
Unable to confirm heating value

Total fuel MWh consumed by the organization
0

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
<Not Applicable>

MWh fuel consumed for self-generation of steam
<Not Applicable>

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration
<Not Applicable>

Comment
N/A

Oil

Heating value
Unable to confirm heating value

Total fuel MWh consumed by the organization
0

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
<Not Applicable>

MWh fuel consumed for self-generation of steam
<Not Applicable>

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration
<Not Applicable>

Comment
N/A

Gas

Heating value
Unable to confirm heating value

Total fuel MWh consumed by the organization
0

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
<Not Applicable>

MWh fuel consumed for self-generation of steam
<Not Applicable>

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration
<Not Applicable>

Comment
N/A

Other non-renewable fuels (e.g. non-renewable hydrogen)

Heating value
Unable to confirm heating value

Total fuel MWh consumed by the organization
0

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
<Not Applicable>

MWh fuel consumed for self-generation of steam
<Not Applicable>

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration
<Not Applicable>

Comment
N/A

Total fuel

Heating value
LHV

Total fuel MWh consumed by the organization
84974

MWh fuel consumed for self-generation of electricity
<Not Applicable>

MWh fuel consumed for self-generation of heat
<Not Applicable>

MWh fuel consumed for self-generation of steam
<Not Applicable>

MWh fuel consumed for self-generation of cooling
<Not Applicable>

MWh fuel consumed for self- cogeneration or self-trigeneration
<Not Applicable>

Comment

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	151	0	151	0
Heat	0	0	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero or near-zero emission factor in the market-based Scope 2 figure reported in C6.3.

Sourcing method
None (no active purchases of low-carbon electricity, heat, steam or cooling)

Energy carrier
<Not Applicable>

Low-carbon technology type
<Not Applicable>

Country/area of low-carbon energy consumption
<Not Applicable>

Tracking instrument used
<Not Applicable>

Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)
<Not Applicable>

Country/area of origin (generation) of the low-carbon energy or energy attribute
<Not Applicable>

Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)
<Not Applicable>

Comment

C-TS8.2f

(C-TS8.2f) Provide details on the average emission factor used for all transport movements per mode that directly source energy from the grid.

Category	Emission factor unit	Average emission factor: unit value	Comment
Rail	gCO2e/kWh	390	Based on the sustainability report of CLP (One of the 2 power companies in HK), the emission factor is 0.39 kgCO2e/kWh (p.79 of the report) https://www.clpgroup.com/content/dam/clp-group/channels/sustainability/document/sustainability-report/2021/CLP_Sustainability_Report_2021_en.pdf.coredownload.pdf
Rail	gCO2e/kWh	710	https://www.hkelectric.com/en/customer-services/carbon-calculator#:~:text=The%20amount%20of%20carbon%20emissions,up%20to%20the%20nearest%20kg.

C8.2g

(C8.2g) Provide a breakdown of your non-fuel energy consumption by country.

Country/area
Hong Kong SAR, China

Consumption of electricity (MWh)
1967125

Consumption of heat, steam, and cooling (MWh)
0

Total non-fuel energy consumption (MWh) [Auto-calculated]
1967125

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

C-TS8.5

(C-TS8.5) Provide any efficiency metrics that are appropriate for your organization's transport products and/or services.

Activity
Rail

Metric figure
0.101

Metric numerator
Other, please specify (kWh)

Metric denominator
Other, please specify (passenger-km)

Metric numerator: Unit total
1503677000

Metric denominator: Unit total
14927416469

% change from last year
-18.2

Please explain
Total patronage for MTR rail and bus services increased by 23.3% to 1,616.3 million compared to 1,310.8 million in 2020. This was primarily the result of higher patronage for passenger services following improvements in the pandemic situation as a result of the rollout of vaccination programme, relaxation of social distancing and other anti-pandemic measures, and the return of workers and students to offices and schools, respectively. However, the ELEC consumption for our railway network only increased by 1.32% to 1,503,677MWh compared to 1,484,030 MWh in 2020.

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

C-TO9.3/C-TS9.3

(C-TO9.3/C-TS9.3) Provide tracking metrics for the implementation of low-carbon transport technology over the reporting year.

Activity
Rail

Metric
Fleet adoption

Technology
Other, please specify (Procurement of 13 battery operated locomotives to replace eight diesel and five old battery locomotives)

Metric figure
13

Metric unit
Other, please specify (unit)

Explanation

Activity
Rail

Metric
Other, please specify (Regenerative Braking Energy)

Technology
Other, please specify (Regenerative braking energy)

Metric figure
579

Metric unit
Other, please specify (MWh)

Explanation
To expand our usage of regenerative braking energy, we have commenced the installation works of two Station Energy Saving Inverter systems at Lai King Traction Substation at Airport Express and Tung Chung Line and at HKU Station on the Island Line. The systems can capture total estimated average of 1,700kWh of regenerative energy per day, which may be converted to low-voltage AC electricity to power station facilities such as lighting, escalators and lifts. The installation is scheduled for completion by end 2022. The estimated annual saving is around 579 MWh.

Activity
Rail

Metric
Other, please specify (Replacement of first generation Metro Cammell EMU Trains)

Technology
Other, please specify (Replacement of first generation trains)

Metric figure
93

Metric unit
Other, please specify (unit)

Explanation
As part of MTR's long-term asset renewal strategy, 93 eight-car trains were procured to replace some of the first-generation M-trains, which have been in service for decades on Tsuen Wan Line, Kwun Tong Line, Island Line and Tseung Kwan O Line.

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	

C-TO9.6a/C-TS9.6a

(C-TO9.6a/C-TS9.6a) Provide details of your organization's investments in low-carbon R&D for transport-related activities over the last three years.

Activity
Rail

Technology area
Smart systems

Stage of development in the reporting year
Large scale commercial deployment

Average % of total R&D investment over the last 3 years
≤20%

R&D investment figure in the reporting year (optional)

Comment
Application of big data analytic would help analyse historic data to optimise building system, enhance predictive maintenance and thus improve overall energy efficiency. The establishment of the Data Studio is a major milestone in MTR's digital transformation journey and it indicates the Corporation has entered a new era of Smart Maintenance to improve safety, reliability and efficiency. The Data Studio has been established as a centralised hub for collecting, integrating and analysing different asset data from railway systems, asset condition monitoring applications, and maintenance activities. When comparing the actual energy performance of the proposed AI system using data-driven machine learning models and numerical optimisation with the rule-based control optimisation in a conventional building management system, the results from the site trial revealed the proposed AI system achieves better energy efficiency with annual energy savings of approximately 8.7%.

Activity
Rail

Technology area
Infrastructure

Stage of development in the reporting year
Pilot demonstration

Average % of total R&D investment over the last 3 years
≤20%

R&D investment figure in the reporting year (optional)

Comment
In Hong Kong, we have adopted regenerative braking technology to convert kinetic energy produced during train braking to electrical energy which is then fed back into the power supply network for use by other trains through the overhead power system. Super-capacitor energy storage devices were also installed on the South Island Line (East) to make better use of the surplus energy produced from regenerative braking. To expand our usage of regenerative braking energy, we have commenced the installation works of two Station Energy Saving Inverter systems at Lai King Traction Substation at Airport Express and Tung Chung Line and at HKU Station on the Island Line. The systems can capture total estimated average of 1,700kWh of regenerative energy per day, which may be converted to low-voltage AC electricity to power station facilities such as lighting, escalators and lifts. The installation is scheduled for completion by end 2022.

Activity
Rail

Technology area
Other, please specify (AI)

Stage of development in the reporting year
Pilot demonstration

Average % of total R&D investment over the last 3 years
≤20%

R&D investment figure in the reporting year (optional)

Comment
Chillers account for up to 40% of total station energy consumption in the Hong Kong Mass Transit Railway (MTR) system. As part of green railway initiatives, a site trial was conducted to apply a fully automated AI system to control a chiller plant in order to optimise energy performance in real time while maintaining a level of passenger comfort that suits each station's environment. Through the predictive power of the AI system, the plant power's consumption and cooling demands can be forecasted based on actual chiller, station, and weather conditions, all of which vary over time. The optimal operational settings can then be determined using an optimisation model for real-time chiller plant control, including staging, sequencing, chilled water supply temperature set-point, etc. This paper presents the formulation of an AI system using data-driven machine learning models and numerical optimisation, and the comparison of the actual energy performance of the proposed system against rule-based control optimisation in a conventional building management system (BMS) through the site trial. The results revealed the proposed AI system achieves better energy efficiency with annual energy savings of approximately 8.7%.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Limited assurance

Attach the statement
Performance_Metrics_EN_2021.pdf

Page/ section reference
pp.2-5

Relevant standard
ISAE3000

Proportion of reported emissions verified (%)
100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach
Scope 2 market-based

Verification or assurance cycle in place
Annual process

Status in the current reporting year
Complete

Type of verification or assurance
Limited assurance

Attach the statement
Performance_Metrics_EN_2021.pdf

Page/ section reference
pp.2-5

Relevant standard
ISAE3000

Proportion of reported emissions verified (%)
100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category
Scope 3: Purchased goods and services
Scope 3: Employee commuting

Verification or assurance cycle in place
Please select

Status in the current reporting year
Complete

Type of verification or assurance
Limited assurance

Attach the statement
Performance_Metrics_EN_2021.pdf

Page/section reference
pp.2-5

Relevant standard
ISAE3000

Proportion of reported emissions verified (%)
100

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?
Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C6. Emissions data	Year on year change in emissions (Scope 1 and 2)	International Standard on Assurance Engagements 3000 and the International Standard on Assurance Engagements 3410	Relevant data has been assured annually as part of the independent assurance exercise of our Sustainability Report.
C6. Emissions data	Year on year change in emissions (Scope 3)	International Standard on Assurance Engagements 3000 and the International Standard on Assurance Engagements 3410	Relevant data has been assured annually as part of the independent assurance exercise of our Sustainability Report.
C6. Emissions data	Other, please specify (waste data)	International Standard on Assurance Engagements 3000 and the International Standard on Assurance Engagements 3410	Relevant data has been assured annually as part of the independent assurance exercise of our Sustainability Report.

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?
No, and we do not anticipate being regulated in the next three years

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?
No

C11.3

(C11.3) Does your organization use an internal price on carbon?
No, and we do not currently anticipate doing so in the next two years

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers
Yes, our customers/clients
Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement
Engagement & incentivization (changing supplier behavior)

Details of engagement
Run an engagement campaign to educate suppliers about climate change
Other, please specify (Compliance to Supplier Code of Practice)

% of suppliers by number
100

% total procurement spend (direct and indirect)
100

% of supplier-related Scope 3 emissions as reported in C6.5

Rationale for the coverage of your engagement
We have taken a holistic approach to identify and evaluate our supply chain-related risks through our Enterprise Risk Management framework. As part of this approach, the Corporation continues to monitor the implementation of environmental protection initiatives across our entire supply chain. Internally, we have several procurement-related policies and guidelines, including our Green Procurement Policy, which provides our employees engaged in procurement activities with guiding principles when making sustainable procurement decisions and further promotes green initiatives in the supply chain. Furthermore, in addition to looking inward at our own internal procedures, the Corporation also applies stringent requirements in our supply chain through our Supplier Code of Practice to ensure high standards for human and labour rights, supply chain management, and ethical business practices are met.

Impact of engagement, including measures of success
Aspiring to exercise responsible and sustainable practices beyond compliance, we maintain bilateral and constructive dialogue with our diverse suppliers. We invite them to participate in forums, seminars and site visits to benchmark their performance and share best practices. Our procurement teams also pay visits to suppliers' facilities to foster a culture of cooperation and mutual support. We believe engagement helps us in our quest for continuous improvement and encourages collaboration. As such, we conduct periodic supplier surveys with the goal of understanding how suppliers align with our Supplier Code of Practice and to assess the maturity of their sustainability policies, initiatives and monitoring systems in six areas including ethical standards, human and labour rights, environmental protection, consumer protection, supply chain management and conflicts of interest.

Extending our sustainability considerations beyond the Corporation, our suppliers are also encouraged to explore and implement environmental practices within their operations. The Supplier Code of Practice serves as a behavioural framework to guide suppliers on ethical standards, human and labour rights, environmental protection, and supply chain management. Full compliance is a prerequisite to collaborative supply chain relationships with the Corporation.

We set a target in 2021 that 50+ key suppliers shall attend training sessions on ESG best practices in 2022. We will review the effectiveness of this target and consider possible expansion of the target to cover more suppliers in future.

Comment

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement & Details of engagement

Education/information sharing	Run an engagement campaign to educate customers about the climate change impacts of (using) your products, goods, and/or services

% of customers by number
100

% of customer - related Scope 3 emissions as reported in C6.5
0

Please explain the rationale for selecting this group of customers and scope of engagement
We engage our customers direct through innovation and technologies via our mobile app "MTR Mobile" which reaches over 1.23 million active users every month. With the objectives of raising public awareness towards green transport, we launched a “Carbon Footprint Challenge” from August 2020 to September 2021 to encourage MTR Mobile registered users to achieve savings on carbon emissions by taking MTR rides and earn extra MTR Points as reward. More than 145,000 registered users participated in the Challenges, saving over 61,000 tonnes of carbon emissions, equivalent to the amount of carbon dioxide removed by over 2.6 million trees in a year.

We have set up a facebook account (with over 240,000 followers) to engage our customers. Promotional messages in relation to sustainability initiatives including climate change will be conveyed to our customers via the mobile app and social media regularly.

In addition, we have engaged our customers through the traditional channels. We consider all our customers/tenants can contribute to carbon reduction, we therefore engage all of them to align with our commitment to the environment and climate change mitigation/adaptation

Impact of engagement, including measures of success
The impact of this engagement has been strongly positive. The success of this engagement programme was measured by the number of passengers participating in the programme, taking MTR trains instead of driving private cars. More than 145,000 registered users participated in the Challenges, saving over 61,000 tonnes of carbon emissions, equivalent to the amount of carbon dioxide removed by over 2.6 million trees in a year.

Type of engagement & Details of engagement

Collaboration & innovation	Other, please specify (Developing an one-stop green lifestyle reward app to engage our customers for behavioural changes)

% of customers by number
100

% of customer - related Scope 3 emissions as reported in C6.5
0

Please explain the rationale for selecting this group of customers and scope of engagement
We consider all our customers can contribute to carbon reduction and make a positive change, we therefore engage all of them for a greener lifestyle. Carbon Wallet, a one-stop green lifestyle reward app, was introduced in March 2021 to encourage the public to adopt a low carbon lifestyle. The app promotes carbon reduction actions across four lifestyle categories: recycling, dining, shopping and mobility. Through practising carbonconscious behaviour, users can earn points based on the carbon emissions saved, which may in turn be redeemed for green products and services from our participating partners. The app also provides an interactive map which allows users to find the nearest recycling point, drinking water stations (including those installed at MTR stations), and vegetarian restaurants. The number of downloads has reached over 20,000 since the launch of Carbon Wallet. In 2021, Carbon Wallet partnered with more than 20 sustainable businesses, vegetarian restaurants, cafés and green groups to promote carbon reduction actions. Overall, users have submitted more than 40,000 recycling records in total. Combining all green actions captured in the app, our community saved 30,000kg CO2e, which is equivalent to the amount of carbon dioxide emitted by around 110 households’ electricity consumption in a month in Hong Kong. Carbon Wallet will continue to expand its ecosystem and coorganise campaigns with partners to engage our staff and the public to practice low-carbon lifestyle in their daily lives.

Impact of engagement, including measures of success
The impact of this engagement has been strongly positive. The success of this engagement programme was measured by the number of recycling records captured via the app. Overall, users have submitted more than 40,000 recycling records in total. Combining all green actions captured in the app, our community saved 30,000kg CO2e, which is equivalent to the amount of carbon dioxide emitted by around 110 households’ electricity consumption in a month in Hong Kong.

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

Effectiveness and Innovation is one of the four key focus areas of our Corporate Cultures for excellence and growth. We strive to be innovative in operating our system and managing our assets in order to enhance our performance including sustainability.

In 2021, we joined hands with Carbonless Asia, a growing innovation and investment platform, to organise the “MTR x Carbonless Asia Challenge 2021” to identify novel and scalable data-driven decarbonisation solutions for our systems and operations around the globe in order to enhance our operation efficiency and services for our customers in the value chain. The challenge topic “Carbon Reduction for MTR’s Daily Operations” attracted 142 teams from 23 countries to create tailor-made and innovative proposals for MTR. After months of intense screening and evaluation, a winning team has been selected to further discuss potential collaboration opportunities with MTR. A closing ceremony was organised in December 2021, with all the short-listed start-ups joining together for experience sharing.

C12.2

(C12.2) Do your suppliers have to meet climate-related requirements as part of your organization’s purchasing process?
No, but we plan to introduce climate-related requirements within the next two years

C12.3

(C12.3) Does your organization engage in activities that could either directly or indirectly influence policy, law, or regulation that may impact the climate?

Row 1

Direct or indirect engagement that could influence policy, law, or regulation that may impact the climate

Yes, we engage directly with policy makers
Yes, we engage indirectly through trade associations
Yes, we engage indirectly by funding other organizations whose activities may influence policy, law, or regulation that may significantly impact the climate

Does your organization have a public commitment or position statement to conduct your engagement activities in line with the goals of the Paris Agreement?

No, but we plan to have one in the next two years

Attach commitment or position statement(s)

<Not Applicable>

Describe the process(es) your organization has in place to ensure that your engagement activities are consistent with your overall climate change strategy

The Corporation is well aware of the threat of climate change and the importance of reducing its carbon output. Recently, we completed a comprehensive carbon reduction study that would help us set science-based reduction targets for 2030 with an aim at achieving carbon neutrality by 2050. We aim to meet these targets via several initiatives, such as investing in the latest green technologies, adopting innovations that enhance work efficiency, and partnering with key stakeholders, particularly Hong Kong's electricity suppliers. We engaged a wide range of stakeholders both internally and externally throughout the carbon reduction study to develop our carbon reduction targets to combat climate change.

We will continue to engage our stakeholders that could either directly or indirectly influence policy, law, or regulation that may impact the climate.

Primary reason for not engaging in activities that could directly or indirectly influence policy, law, or regulation that may impact the climate

<Not Applicable>

Explain why your organization does not engage in activities that could directly or indirectly influence policy, law, or regulation that may impact the climate

<Not Applicable>

C12.3a

(C12.3a) On what policy, law, or regulation that may impact the climate has your organization been engaging directly with policy makers in the reporting year?

Focus of policy, law, or regulation that may impact the climate

Adaptation and/or resilience to climate change

Specify the policy, law, or regulation on which your organization is engaging with policy makers

Hong Kong's Climate Action Plan 2050, setting out the vision of "Zero-carbon Emissions, Liveable City, Sustainable Development", and outlining the strategies and targets for combating climate change and achieving carbon neutrality in response to the Paris Agreement

Policy, law, or regulation geographic coverage

National

Country/region the policy, law, or regulation applies to

Hong Kong SAR, China

Your organization's position on the policy, law, or regulation

Support with no exceptions

Description of engagement with policy makers

We have engaged the law makers regularly via the Subcommittee on Matters Relating to Railways under the Legislative Council which covers the new railway development projects including low carbon station design.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation

<Not Applicable>

Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

C12.3b

(C12.3b) Provide details of the trade associations your organization engages with which are likely to take a position on any policy, law or regulation that may impact the climate.

Trade association

Other, please specify (International Association of Public Transport)

Is your organization's position on climate change consistent with theirs?

Consistent

Has your organization influenced, or is your organization attempting to influence their position?

We publicly promote their current position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)

UITP acknowledges that addressing the issue of climate change is a key topic for all, and for transport in particular. At present carbon dioxide from transport is growing despite improvements in technology and fuels due to the sheer increase of a number of trips made. As mobility continues to be a fundamental necessity of the 21st century

living, public transport is vital for future development and the sector is making significant efforts to ensure that it is able to help ensure citizens today enjoy high quality of life in a safe and healthy environment. The UITP Charter on Sustainable Development thus launched in 2003 is to increase awareness within the sector, to take decisions understanding the impact and determining a good balance in terms of social justice, environmental protection and economic sense.

UITP has formed a Working Group on Climate Change under its Sustainable Development Committee to raise members' awareness and preparedness in relation to climate change mitigation, adaptation and resilience.

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)

Describe the aim of your organization's funding
<Not Applicable>

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?
Yes, we have evaluated, and it is aligned

Trade association
Other, please specify (Hong Kong Green Building Council)

Is your organization's position on climate change consistent with theirs?
Consistent

Has your organization influenced, or is your organization attempting to influence their position?
We publicly promote their current position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)
HKGBC is a non-profit, member led organisation established in 2009, which strives to promote the standards and development of sustainable buildings in Hong Kong. It aims to raise green building awareness by engaging the public, the industry and the government, and to develop practical solutions for Hong Kong's unique, subtropical built environment of high-rise, high density urban area, leading Hong Kong to a world's exemplar of green building development.

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)

Describe the aim of your organization's funding
<Not Applicable>

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?
Yes, we have evaluated, and it is aligned

Trade association
Other, please specify (Hong Kong Construction Industry Council)

Is your organization's position on climate change consistent with theirs?
Consistent

Has your organization influenced, or is your organization attempting to influence their position?
We publicly promote their current position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)
One of the objectives of the CIC is to promote good practices in the construction industry in relation to environmental protection, sustainable construction and other areas conducive to improving construction quality. As buildings are the major contributor to greenhouse gas (GHG) emissions in Hong Kong, they pose both challenges and opportunities for reduction of GHG emission. In this respect, the CIC sees itself as having a significant role to play. One of its latest initiatives is to set up an embodied carbon database for construction materials commonly used in Hong Kong.

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)

Describe the aim of your organization's funding
<Not Applicable>

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?
Yes, we have evaluated, and it is aligned

Trade association
Other, please specify (Business Environment Council)

Is your organization's position on climate change consistent with theirs?
Consistent

Has your organization influenced, or is your organization attempting to influence their position?
We publicly promote their current position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)
BEC is an independent, charitable membership organisation. One of BEC's focuses is climate change and Climate Change Business Forum (CCBF) has been formed. Business leaders collaborate together to tackle climate change and set up CCBF advisory group. On this platform, BEC explores opportunities and risks of climate change, discusses policies and regulations to convey to government, funds research and shares best practices with greater business community.

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)

Describe the aim of your organization's funding
<Not Applicable>

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?
Yes, we have evaluated, and it is aligned

C12.3c

(C12.3c) Provide details of the funding you provided to other organizations in the reporting year whose activities could influence policy, law, or regulation that may impact the climate.

Type of organization
Non-Governmental Organization (NGO) or charitable organization

State the organization to which you provided funding
Business Environment Council

Funding figure your organization provided to this organization in the reporting year (currency as selected in C0.4)
25000

Describe the aim of this funding and how it could influence policy, law or regulation that may impact the climate
BEC is an independent, charitable membership organisation. One of BEC's focuses is climate change and Climate Change Business Forum (CCBF) has been formed. Business leaders collaborate together to tackle climate change and set up CCBF advisory group. On this platform, BEC explores opportunities and risks of climate change, discusses policies and regulations to convey to government, funds research and shares best practices with greater business community.

Have you evaluated whether this funding is aligned with the goals of the Paris Agreement?
Yes, we have evaluated, and it is aligned

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication
In voluntary sustainability report

Status
Complete

Attach the document
Sustainability_Report_EN_2021.pdf
Performance_Metrics_EN_2021.pdf

Page/Section reference
climate change and GHG emissions performance - Sustainability Report 2021 (pp. 47-56)
TCFD - Sustainability Report 2021 (pp. 57-60)
GHG emissions performance - Performance Metrics (pp.7, 17, 22, 27)

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

C15. Biodiversity

C15.1

(C15.1) Is there board-level oversight and/or executive management-level responsibility for biodiversity-related issues within your organization?

	Board-level oversight and/or executive management-level responsibility for biodiversity-related issues	Description of oversight and objectives relating to biodiversity	Scope of board-level oversight
Row 1	Yes, both board-level oversight and executive management-level responsibility	To conserve natural habitats and nurture biodiversity, we take great care to implement our Corporate Responsibility Policy particularly in ecologically sensitive areas. We strictly adhere to relevant environmental legislations and requirements and avoid and minimise adverse impacts on ecology and biodiversity relating to our operations and new development projects. There are 3 levels to ensure consistency with our Corporate Responsibility Policy. 1. Oversight from the Board is exercised through the Board-level Environmental & Social Responsibility ("E&SR") Committee (formerly known as the Corporate Responsibility Steering Committee). The E&SRC Committee has the mandate to monitor and implement the Corporate Responsibility Policy, identify emerging issues and provide regular updates for the Board. 2. The E&SR Committee is supported by the E&SR Steering Committee, which is chaired by the Legal and Governance Director, a member of the Executive Directorate reporting directly to the Chief Executive Officer. Sustainability and corporate responsibility issues are discussed at the E&SR Steering Committee under the guidance of the Executive Directorate. The E&SR Steering Committee is also responsible for developing and implementing sustainability initiatives (including biodiversity) for the Corporation and the respective units and functions that members represent. 3. E&SR Department coordinates among different business units and corporate functions to ensure activities are consistent with the Corporate Responsibility Policy.	<Not Applicable>

C15.2

(C15.2) Has your organization made a public commitment and/or endorsed any initiatives related to biodiversity?

	Indicate whether your organization made a public commitment or endorsed any initiatives related to biodiversity	Biodiversity-related public commitments	Initiatives endorsed
Row 1	Yes, we have made public commitments and publicly endorsed initiatives related to biodiversity	Other, please specify (biodiversity preservation for Lok Ma Chau Wetland which is managed by the Corporation)	SDG Other, please specify (biodiversity preservation which included 32 hectares enhanced wetland habitats and ongoing ecological monitoring, is an example of our commitment to conserving the natural habitat)

C15.3

(C15.3) Does your organization assess the impact of its value chain on biodiversity?

	Does your organization assess the impact of its value chain on biodiversity?	Portfolio
Row 1	Yes, we assess impacts on biodiversity in both our upstream and downstream value chain	<Not Applicable>

C15.4

(C15.4) What actions has your organization taken in the reporting year to progress your biodiversity-related commitments?

	Have you taken any actions in the reporting period to progress your biodiversity-related commitments?	Type of action taken to progress biodiversity- related commitments
Row 1	Yes, we are taking actions to progress our biodiversity-related commitments	Other, please specify (biodiversity preservation for Lok Ma Chau Wetland which is managed by the Corporation in accordance with the Habitat Creation and Management Plan (HCMP))

C15.5

(C15.5) Does your organization use biodiversity indicators to monitor performance across its activities?

	Does your organization use indicators to monitor biodiversity performance?	Indicators used to monitor biodiversity performance
Row 1	Yes, we use indicators	Other, please specify (Lok Ma Chau Habitat Creation and Management Plan)

C15.6

(C15.6) Have you published information about your organization's response to biodiversity-related issues for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Report type	Content elements	Attach the document and indicate where in the document the relevant biodiversity information is located
Other, please specify (In our Sustainability Report and on the Lok Ma Chau wetland website)	Content of biodiversity-related policies or commitments	https://www.mtr.com.hk/en/corporate/sustainability/environmental_reporting_lmc.html https://www.mtr.com.hk/archive/corporate/en/env_report/hcmp201910.pdf https://www.youtube.com/watch?v=DCPDTrpZ0Rs hcmp201910.pdf

C16. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C16.1

(C16.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Legal and Governance Director	Other, please specify (C-suite officer)

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I understand that my response will be shared with all requesting stakeholders	Response permission
Please select your submission options	Yes	Public

Please confirm below

I have read and accept the applicable Terms