Welcome to your CDP Climate Change Questionnaire 2020

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 262.6 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. With the Shatin to Central Link to be completed in 2022, our MTR network in Hong Kong will add another 17 km route length. 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 2019, we managed more than 104,000 residential units and more than 772,000 square metres of commercial space 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 and Australia. 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. In this CDP, we cover the Corporation's principal activities in Hong Kong during 2019, 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 2019 Sustainability Report.

Sustainability Website: https://www.mtr.com.hk/sustainability/2019rpt/en/home.php

2019 Sustainability Report: https://www.mtr.com.hk/sustainability/2019rpt/en/pdf/MTR_Full2019_Eng.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
Reporting year	January 1, 2019	December 31, 2019	No

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

China, Hong Kong Special Administrative Region

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

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 Corporate Responsibility (CoR) Committee which holds the ultimate responsibility for climate-related issues of the Corporation. Climate-related issues are discussed in the CoR Committee meeting and the Chairman guides the CoR Committee to provide strategic guidance to address climate-related issues for the Corporation and review the climate-related best practices and performance.
Board-level committee	The Board-level Corporate Responsibility (CoR) Committee was established in 2008, chaired by the Chairman of the Corporation. The Board CoR 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 CoR Committee formulates strategic direction to address climate-related issues for the Corporation after taking relevant climate risks and opportunities into consideration. The existing energy reduction target for our rail operations in Hong Kong will expire by end of 2020 (reduce 21% of electricity consumed per passenger-kilometre by 2020 in our heavy rail network compared with 2008 level). The Members of CoR Committee have supported the need to set up new carbon reduction targets for 2030 & beyond and endorsed greenhouse gas emissions as one of the three new social objectives and core priorities for the Corporation to engage its stakeholders for the next 10-15 years. The new social objectives will be shared with our stakeholders through the Announcement of Annual Results 2020 and the Sustainability Report 2020 which will be held/published around March and April 2021 respectively.

Chief Executive Officer (CEO)	CEO sits on the Board-level Corporate Responsibility (CoR) Committee to review and monitor corporate-wide implementation of the Corporate Responsibility Policy and related sustainability initiatives, including responses to climate change. As a member of the Board-level CoR 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.
Other C-Suite Officer	Corporate Affairs Director (CAD) and Human Resources Director (HAD) sit on the Board-level Corporate Responsibility (CoR) Committee chaired by the Chairman of the Corporation. The Board CoR Committee meets at least twice a year specifically to review and monitor corporate-wide implementation of the CoR Policy and related sustainability initiatives, including responses to climate change. As the members of the Board-level CoR Committee, both directors provide insights to formulate strategic direction to address climate-related issues for the Corporation after taking relevant climate risks and opportunities into consideration. CAD also chairs a CoR Steering Committee (CoRSC), responsible for driving and reviewing the implementation of sustainability initiatives across all MTR divisions, including responses to climate change. HRD, Legal & European Business Director and Engineering Director, are also members of the CoRSC. The existing energy reduction target for our rail operations in Hong Kong will expire by end of 2020 (reduce 21% of electricity consumed per passenger-kilometre by 2020 in our heavy rail network compared with 2008 level). CAD allocated budget and resources to engage a consultant to set up new carbon reduction targets for 2030 and beyond. CoRSC will oversee and steer the consultancy study to develop new carbon reduction targets.

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	Please explain

Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies 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	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. The Board integrates climate-related issues into our governance through a number of mechanisms. For instance, with the assistance of the Board-level 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 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 CoR Committee meets at least twice a year specifically to review and monitor corporate-wide implementation of Corporate Responsibility Policy and related sustainability initiatives, including responses to climate change. Through the CoR Committee, the Board reviews and guides corporate strategy to address climate risks as well as monitors and oversees progress against goals and targets on climate-related issues.

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)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	Half-yearly
Other committee, please specify Executive Committee	Both assessing and managing climate-related risks and opportunities	Half-yearly
Other committee, please specify Corporate Responsibility Steering Committee (CoRSC)	Both assessing and managing climate-related risks and opportunities	Half-yearly
Other committee, please specify Enterprise Risk Committee	Both assessing and managing climate-related risks and opportunities	Half-yearly
Other, please specify Corporate Affairs Director (CAD)	Both assessing and managing climate-related risks and opportunities	Half-yearly
Other, please specify Legal & European Business Director (L&EBD)	Both assessing and managing climate-related risks and opportunities	Half-yearly
Other, please specify Head of Sustainability	Both assessing and managing climate-related risks and opportunities	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).

The CEO has the overall responsibilities on climate-related issues as the Corporation considers these issues are of strategic importance to our operations and development. CEO leads the Executive Committee to review and endorse top 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 Corporate Responsibility (CoR) Committee to facilitate board members to review and monitor corporate-wide implementation of sustainability initiatives, including responses to climate change.

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 Corporate Responsibility Steering Committee (CoRSC) is tasked with providing directions and guidance on CoR issues at operational levels, and monitoring progress of programmes for efficacy in achieving stated objectives and targets including climate change. For example, the CoRSC has reviewed the progress of our energy reduction targets to reduce greenhouse gas (GHG) emissions. As the energy reduction target for rail operations will be completed by 2020, the CoRSC has endorsed the need to set up new targets to demonstrate our commitment to reduce our carbon footprint. The Chairman of the CoRSC will report corporate-wide CoR issues including climate-related issues to the Board-level CoR 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 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. Recently, 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.
CAD chairs the CoRSC and is a member of the Executive Directorate and the Board-level CoR Committee. CAD leads the CoRSC to provide directions and guidance on CoR issues at operational levels, and to monitor progress of programmes for efficacy in achieving stated objectives and targets including climate change. For example, CAD reports corporate-wide CoR issues including climate-related issues to the Board-level CoR Committee. CAD leads the CoRSC to review the progress of our energy reduction targets to reduce GHG emissions and is now leading the efforts to develop the new carbon reduction targets and roadmap for 2030 and beyond.

L&EBD chairs the ERC which is responsible for reviewing the Corporation's tops risks and key emerging risks (including climate risks) annually. L&EBD leads the ERC to review top 30 and emerging risks & opportunities every quarter; and reports the top risks to the Executive Committee and the 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 by L&EBD. Recently, L&EBD has led the ERC to initiate 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.

The Head of Sustainability coordinates among business units to ensure activities are consistent with the overall Climate Change Strategy. 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 the Task Force on Climate-related Financial Disclosures and requirements of the Science Based Targets initiative. The Head of Sustainability is also responsible for developing Climate Change Strategy for the Corporation and reviewing climate risk mitigation measures and is currently leading a consultancy study to develop new carbon reduction targets and roadmap for 2030 and beyond.

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 inventivized	Comment
Corporate executive team	Monetary reward	Energy reduction target	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.
Chief Executive Officer (CEO)	Monetary reward	Energy reduction target	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.
Other C-Suite Officer	Monetary reward	Energy reduction project	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)	The Head of Sustainability is tasked with formulating a Climate Change Strategy for the Corporation to manage climate risks. Timely completion and effective launch of the strategy is one of the major responsibilities of the Head of Sustainability, which is directly linked to his.her performance and will

		Formulating Climate Change Strategy	be reflected in his/her annual pay review and the Discretionary Award. The Climate Change Strategy was officially launched in April 2020.
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	Energy reduction project	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 employees	Monetary reward	Efficiency project	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 categorized 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 categorized 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 categorized 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 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 2019 is HK$19,938 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

The Corporation'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 of the Corporation; 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 is classified as catastrophic with substantive financial impact if it will lead to Government suspension of our HK franchises and taking over our administration. 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 Risk Committee and the Executive Committee oversight. Opportunities are assessed and prioritised based on the return on investment and payback periods and pursued where appropriate.

The Enterprise Risk Committee (ERC), the Executive Committee and the Board-level Risk Committee review the Corporation's 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 Executive Committee and the board-level 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.

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

A Case Study on Climate-related Risks

Risk: We expect the expenses in utilities and energy will continue to increase in short- to medium- term due to 1) the HKSAR Government's requirements on power companies to transition to low-carbon electricity generation, 2) expansion of rail networks (construction of Tung Chung Line Extension Project and Tuen Mun South Extension Project is expected to commence in 2023) and 3) the higher demand of loading from the air-conditioning system due to rising temperature.
Potential Financial Impact: Expenses in energy and utilities relating to Hong Kong transport operations in 2019 was HK$1,841 million as compared to HK$1,670 million in 2018.
Approach: This risk was identified by the Operations Division under the ERM Framework. The identified risk is captured in the risk register for regular review and monitoring by the ERC. The risk is addressed by the following mitigation measure to lower the risk level below E1.
Mitigation Measure: One of our measures is to replace a total of 154 chillers at 38 MTR stations and four railway depots with more advanced and environmentally friendly systems by 2022 in 5 phases (about half of the A/C systems in our HK's network). The new station chillers will provide a more comfortable station environment for passengers, with enhanced energy efficiency using variable-frequency drive technology that could adjust the power output based on the actual temperature detected.
Overall Progress up to 2019: 61 chillers were replaced
Total Investment : HK$1.1 billion .
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.

A Case Study on Climate-related Opportunities

Opportunity: 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 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.

Approach: This opportunity is captured and managed by the relevant business unit (Finance Division) through the following strategy.
Strategy: 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.
Outcomes: At the end of 2019, the Corporation's green finance portfolio consisted of 9 bonds in 3 different currencies and 2 HKD green loans including the inaugural US$ green bond in 2016, 5 green bonds in 2017 and 3 green bonds and 1 green bilateral revolving credit facility in 2018 via private placement. In 2019, a 1-year HK$1 billion bilateral green loan was arranged. The green finance proceeds partially funded 5 of our green projects including Kwun Tong Line Extension , South Island Line , Air Cooled Chiller Replacement, Trackside Energy Storage and Lok Ma Chau Wetland. Total amount financed by green bond proceeds for the 5 projects is HK$12,325 million.

In August 2020, the Corporation issued the largest green bond (US$1.2 billion) offered in the Asia-Pacific region (excluding Japan). The issuance was oversubscribed with an order book of over US$3.75 billion

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 Building Energy Code (Buildings Energy Efficiency Ordinance) and mandatory disclosure of sustainability issues under the listing rules in Hong Kong.
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 is devising a long-term decarbonisation strategy for Hong Kong 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 natural gas and/or non-fossil fuel sources for electricity generation which would increase our electricity cost as all our rail lines are powered by electricity.
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. As a public transport service provider, our railway powered by electricity has a higher capacity than road vehicles. The railway service we provided is a low carbon product 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 disruption to service. For example, the Corporation is currently replacing the 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 disruption.
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 Corporate Responsibility Steering Committee and Enterprise Risk Committee. However, we do not foresee any significant climate-related litigation claims in short term.

Market	Not relevant, explanation provided	The Corporation provides public transport (metros and light rail) that has a high capacity, and reduces the need for the largely fossil based road transportation mode such as buses, private cars and taxis. As a public transport service provider, with our railway powered by electricity and has a higher capacity than road vehicles, the service we provided is a low carbon product that also contributes to avoid emission. With our extensive railway network, we achieve about 5.61 million passenger trips on a normal weekday in Hong Kong. The Corporation's overall share of the franchised public transport market in Hong Kong is about 50% in 2019. In addition, we are in discussion with the HKSAR Government on the development and implementation of 7 new rail projects under the Railway Development Strategy 2014. Recently, the HKSAR Government has invited MTR to proceed with detailed planning and design of the Tung Chung Line Extension and Tuen Mun South Extension projects and we have commenced procurement of the preliminary design. 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 latter facilitates an increase in the Tung Chung Line train frequency in the future. 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. Construction is expected to commence in 2023 for both projects. We therefore consider market as a climate-related opportunity rather than risk. Having said that, we shall incorporate design and operating features that are conducive to our climate change strategy in the planning stage of these new projects. Please refer to our press releases for details. https://www.mtr.com.hk/archive/corporate/en/press_release/PR-20-026-E.pdf https://www.mtr.com.hk/archive/corporate/en/press_release/PR-20-037-E.pdf
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.

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 0.21 degree Celsius per decade during 1990-2019 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 41.1 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

Chronic physical

Rising mean temperatures

Primary potential financial impact

Increased direct costs

Company-specific description

According to the Hong Kong Observatory, there was an increase in average temperature of 0.21 degree Celsius per decade during 1990-2019 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 41.12 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, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

10,000,000

Potential financial impact figure – maximum (currency)

300,000,000

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. 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$1,841M in 2019. 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$18.41M.

- track deformation or defects may lead to service suspension (the open section of the East Rail Line with route length of 41.1 km is more susceptible to the consequences of heat waves). The revenue from our Hong Kong transport operations was HK$19,938M in 2019. 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$199.38M

- 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$217.19M which falls within the range of HK$10M – HK$300M.

Cost of response to risk

1,100,000,000

Description of response and explanation of cost calculation

On-going actions have been carried out to tackle extreme temperature:
(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 chillers in phases with better Coefficient of performance in stations/depots from year 2017 to 2022;
(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;
(vi) monitoring of power consumption due to hotter days and driving day-to-day energy saving measures;
(vii) monitoring of health conditions of outdoor equipment regularly by respective maintenance departments;
(viii) issuance of guideline on working under hot weather by Safety and Quality Department; and
(ix) provision of water drinking and resting facilities on site as well as adjusted breaks on hot weather days.

Case Study:
Potential Financial Impact: Expenses in energy and utilities arising from Hong Kong transport operations in 2019 was HK$1,841 million and it is expected the expenses would continue to rise due to the use of clean and low carbon fuel by power companies, expansion of our rail networks and higher demand for cooling load due to rise in temperature.
Solution: One of our mitigation measures is to replace a total of 154 chillers at 38 MTR stations and four railway depots with more advanced and environmentally friendly systems by 2022 in 5 phases (about half of the air conditioning systems in our Hong Kong's network). The new station chillers will provide a more comfortable station environment for passengers, with enhanced energy efficiency using variable-frequency drive technology that could adjust the power output based on the actual temperature detected.
2019 Progress: Two out of five chiller replacement phases were completed up to 2019, with 61 chillers replaced.
Total Investment Amount: HK$1.1 billion for the replacement of 154 chillers in 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 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Acute physical

Increased severity and frequency of extreme weather events such as cyclones and floods

Primary potential financial impact

Increased indirect (operating) costs

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 41.12 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 (e.g. the ongoing Shatin to Central Link rail project), 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, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

10,000,000

Potential financial impact figure – maximum (currency)

300,000,000

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.

Extreme rainfall events could lead to suspension of the railway operation (resulting in reduction of fare revenue), construction programme delay and increased maintenance. In 2019, the fare revenue from our Hong Kong transport operations was HK$19,938M. 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$199.38M.

Cost of response to risk

9,800,000,000

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:
(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. flood boards at the entrance to stations, and floodgate at interface with the sea. 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 2019, over HK$9.8 billion was invested to maintain, upgrade and renew our Hong Kong railway assets.

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

Increased severity and frequency of extreme weather events such as cyclones and floods

Primary potential financial impact

Increased indirect (operating) costs

Company-specific description

It is anticipated that extreme weather events such as strong wind, extreme typhoons, hailstorm and storm surge would become more frequent in Hong Kong. Extreme weather events could destruct power cables and damage railway infrastructure, leading to service disruption and affecting passenger/customers and staff safety.

Extreme weather events may affect rail operations and infrastructures. These can be through any of the following means:

(i) trees or falling objects obstructing tracks or hitting staff (Our Tree Management Team monitors around 30,000 trees along the open sections of our rail lines in Hong Kong. The open section of the East Rail Line, with 41.1 km route length, is more susceptible to falling trees and objects during extreme weather events.);
(ii) damage on overhead lines or other equipment (especially in exposed section) leading to service disruption;
(iii) destruction of power cables leading to service disruption; and
(iv) increased deterioration of infrastructure or accelerated asset depreciation.

Time horizon

Short-term

Likelihood

About as likely as not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

10,000,000

Potential financial impact figure – maximum (currency)

300,000,000

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.

There will be major financial implications from disrupted services, the need of maintenance and repair, and additional manpower cost. In 2019, the revenue from our Hong Kong transport operations was HK$19,938 million. 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$199.38M.

Cost of response to risk

9,800,000,000

Description of response and explanation of cost calculation

Procedures dealing with super typhoon and possible situations during hailstorms have been developed and included in the Standing Operations Procedures Manual and reviewed periodically. These procedures help guide frontline staff in handling and responding to emergency situations, such as the procedure of dealing with super typhoon guiding staff in railway operations during extreme events.

Our Design Standard manual is also reviewed and updated regularly to reflect the changes in open standards relating to climate change. As our on-going efforts, the existing infrastructure is assessed, inspected and checked regularly to ensure their robustness against extreme events.

Over HK$9.8 billion was invested to maintain, upgrade and renew our Hong Kong railway assets in 2019.

- Upgrade of Signalling System: In 2019, work continued on the upgrade of our signalling system, which is necessary for increasing the frequency of our services to cope with the expected increasing demand for our low carbon transport services. The contract for the replacement of the signalling systems was awarded at about HK$3.3 billion in 2015.
- New Trains: For a total investment of HK$6 billion, we are purchasing 93 new, more comfortable 8-car trains to replace the existing trains on the Kwun Tong, Tsuen Wan, Island and Tseung Kwan O lines to improve the energy efficiency and performance of the old trains. In 2019, seven more trains were sent to Hong Kong. All new trains underwent rigorous testing and commissioning.
- New Light Rail Vehicles: We are replacing 30 light rail vehicles and purchasing 10 additional light rail vehicles at a total cost of HK$745 million to improve the energy efficiency and performance of the old trains and to cope with the expected increasing demand for our low carbon transport services. Testing and commissioning of the first two replacement light rail vehicles entered the final stages in 2019 and will be ready to enter passenger service starting in 2020. The 10 additional new light rail vehicles will be used to expand the size of the Light Rail fleet to 150 in 2023.
- Replacement of Air Conditioning Systems: In the first and second phases, the replacement of 61 chillers in 11 stations and four depots were completed with an expected annual energy saving of 30.4 GWh. The third phase of the project, which will take place from 2019 to 2020, covers 31 existing chillers for 10 stations and one depot.

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 4

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

Company-specific description

This risk related to general environmental regulations, including planning. This may include
(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; and
(ii) possible energy efficiency programmes for railway operations including buses, vehicle fleet, new rolling stock, LED lighting, etc., such as the mandatory Building Energy Code (Buildings Energy Efficiency Ordinance).

More stringent regulations and standards could introduce major unplanned investment to reduce energy consumption for railway assets. 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

About as likely as not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

10,000,000

Potential financial impact figure – maximum (currency)

300,000,000

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 4 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$1,841M in 2019 (i.e. around 14.8 % 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$18.41M.

Cost of response to risk

1,119,000,000

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.

We have set a target to reduce 21% the amount of electricity consumed per passenger-kilometer by 2020 compared to 2008 levels. As of 2019, a 12% reduction has been achieved. Our on-going 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 154 chillers in phases.

Total = HK$1.1 billion + HK$19 million = HK$1.119 billion.

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 6

Where in the value chain does the risk driver occur?

Upstream

Risk type & Primary climate-related risk driver

Chronic physical

Changes in precipitation patterns and extreme variability in weather patterns

Primary potential financial impact

Increased indirect (operating) costs

Company-specific description

Majority of our suppliers are from Asia (around 90%), with minority from Europe, North America and Oceania. Supply of critical items (such as our new trains) may be interrupted due to regional flooding and other extreme events (more frequent super typhoon) that affect the manufacturing process and shipment of these items.

Time horizon

Long-term

Likelihood

Unlikely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

10,000,000

Potential financial impact figure – maximum (currency)

300,000,000

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 6 falls within the realm of “significant consequence” under the Matrix, which is equivalent to HK$10M – 300M.

Our maintenance and repair operations would be adversely impacted if there is any interruption in our supply chain caused by climate change which may affect our normal train operations. Assuming there will be a 1% decrease in revenue from Hong Kong transport operations due to service disruption caused by insufficient parts for routine maintenance, the financial impact will be HK$199.38M.

Cost of response to risk

500,000

Description of response and explanation of cost calculation

Our on-going efforts are to maintain the materials and services procured for all divisions are general in nature with multiple sources available in the supply market. Risk mitigation measures are already in place such as keeping of safety stock for critical spares, diversification of suppliers, and alternative sourcing.

We have conducted a study to review our current approach to responsible procurement. The review covers studying and benchmarking our current approach and provision of improvement plans in relation to our procurement activities. A segmentation exercise (supplier mapping and risk assessment) has been conducted using ESG criteria, including climate change, to identify high risk suppliers and define the possible requirements and management actions that can strengthen our procurement practices. The study was completed in 2019.

The study involves insignificant internal manpower cost (as we are only responsible for managing the consultant and no additional headcount and resources are deployed) and input from service provider, which costs roughly about HK$500,000.

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 of both green (added a new category of renewable energy) and social objectives.

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)

12,325,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

At the end of 2019, the Corporation's green finance portfolio consisted of nine bonds in three different currencies and two HKD green loans including the inaugural US$ green bond in 2016, five green bonds in 2017 and three green bonds and one green bilateral revolving credit facility in 2018 via private placement. In 2019, a 1-year HK$1 billion bilateral green loan was arranged.

The green finance proceeds partially funded 5 of our green projects including Kwun Tong Line Extension (low carbon transport), South Island Line (low carbon transport), Air Cooled Chiller Replacement (energy efficiency), Trackside Energy Storage (energy efficiency) and Lok Ma Chau Wetland (biodiversity and conservation). Total amount financed by green bond proceeds for the 5 projects is HK$12,325 million. All the relevant figures have been independently assured by the Hong Kong Quality Assurance Agency.

Further details can be found in the latest report below:
https://www.mtr.com.hk/sustainability/2019rpt/en/pdf/MTR_GreenFinanceRpt2019_Eng.pdf

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

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. The Green Finance 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 (Eligible Investments) and the reporting thereon.

Apart from the 2 existing projects related to low carbon transport, the Corporation's Project portfolio funded by the green bond proceeds was expanded to include 2 projects in energy efficiency and one in biodiversity conservation in 2017.

The internal management cost to issue green bonds and green loans is insignificant as no additional headcount and resources were deployed.

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

This opportunity is related to emerging product efficiency regulations and standards.

Many governments are planning to improve, expand or build their own metro systems, as part of their commitment to a low carbon economy, such as on low carbon transportation. This provides opportunities, both inside or outside of Hong Kong, for new projects and for grooming technical expertise. In 2014, the Hong Kong SAR Government issued the Railway Development Strategy 2014 (RDS 2014) and plans to further expand the railway network up to 2031 by including seven new railway lines, extensions and stations. In 2017, the Hong Kong Government published Climate Action Plan 2030+, which commended our rail network is the backbone of Hong Kong's low-carbon public transport network and will be continuously encouraged to grow.

Under the RDS 2014, in addition to the three new projects noted in the Chief Executive’s 2019 Policy Address, we continued to work closely with Government on a number of other new projects. These included the East Kowloon Line and North Island Line, for which we provided the technical and financial information as requested. For the remaining two projects, namely Hung Shui Kiu Station and South Island Line (West), we were invited in 2019 to submit project proposals and are currently undertaking technical studies in preparation for submission of the proposals in 2020.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

100,000,000

Potential financial impact figure – maximum (currency)

12,714,000,000

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 2019, the revenue generated from domestic services of Hong Kong transport operations is HK$12,714 million.

Cost to realize opportunity

18,700,000,000

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, 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 Tuen Ma Line (Phase 1) and enhance our services within Hong Kong to demonstrate our competence as we pursue these new opportunities. Following the opening of Tuen Ma Line (Phase 1) in Feb 2020, our new railway project under construction is the remaining section of the Shatin to Central Link (SCL).

Seven new railway projects have been proposed under the RDS 2014. We are providing Government with further information to enable it to move ahead with our submitted proposals for five of these projects, namely the Tuen Mun South Extension, the Northern Link (and Kwu Tung Station), the East Kowloon Line, the Tung Chung West Extension (and Tung Chung East Station) and the North Island Line. We have already received invitation from Government to submit proposal for the remaining two projects, namely Hung Shui Kiu Station and South Island Line (West) and are currently undertaking technical studies in preparation for submission of the proposals in 2020.

Based on the HKSAR Government information (please refer to the fee estimation in the link below), the estimated capital cost of the Tung Chung Line Extension is about $18.7 billion.

https://www.legco.gov.hk/yr19-20/english/panels/tp/tp_rdp/papers/tp_rdp20200414cb4-438-3-e.pdf

Comment

The study costs associated with relevant activities and the cost of management for project development are significant.

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Other, please specify

Use of more energy efficient and renewable products

Primary potential financial impact

Other, please specify

Reduced operating costs (e.g. through efficiency gains and cost reductions)

Company-specific description

Increasing market trends for energy efficient products (e.g. LED lighting), renewable energy (RE) and advancement of their development leading to cheaper prices for better products, resulting in a wider adoption across our portfolio such as replacement with LED lighting in Hong Kong train fleet and stations.

The feed-in tariff scheme offered by the 2 power companies (please see below for more details about the scheme), which can reduce our electricity expenses, also incentivises adoption of renewable energy in our operations. After considering the land grant requirements, availability of space and surrounding environment, we installed a solar photovoltaic system comprising 189 solar panels at our Hung Hom office building with the system capacity of 58.6 kW as a pilot project in 2019. This system has an expected life span of around 15 years up to 2033. We are planning to install another solar system with the capacity of 40kW at MTR Headquarters Building which is expected to be completed by end of 2020 totalling our RE generation of capacity to around 100 kW. Depending on the outcome, we will continue to explore and identify other suitable and appropriate locations for installation of more RE systems in our premises.

Our expenses on energy and utilities relating to Hong Kong transport operations were HK$1,841M in 2019 (i.e. around 13.1% of expenses relating to Hong Kong transport operations).

Note: The Feed-in Tariff (FiT) Scheme is a new initiative to promote the development of renewable energy (RE) under the current Scheme of Control Agreements (SCAs), which were signed between the HKSAR Government and the respective two power companies in Hong Kong in April 2017 (there are only 2 power companies in Hong Kong). Under the scheme, RE generated by solar photovoltaic (PV) or wind systems installed at different premises can be sold to the respective power companies at a rate as high as about five times more than the normal electricity tariff rate.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

30,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The financial impact of cheaper energy efficient product is significant from a life-cycle perspective with a shorter payback period on investment and long-term benefits.

Feed-in-tariff offered by the two power companies also incentivises the adoption of renewable energy.

Upon completion of our comprehensive chiller replacement programme, the energy consumption is expected to be reduced by 30.4 GWh per year which is equivalent to the annual saving of utilities cost of around HK$30 million assuming the electricity tariff is HK$1 / kWh.

Cost to realize opportunity

1,100,000,000

Strategy to realize opportunity and explanation of cost calculation

Across our rail operations, the Corporation has been trying to adopt various initiatives such as replacement of LED lighting, installation of sun savers, and large-scale of station chiller replacement. The replacement of fluorescent lighting with LED lighting in Hong Kong train fleet has achieved significant progress and the replacement with LED lighting in stations is also ongoing. Major retrofitting plans with energy efficient equipment and plants are in phase, subject to the asset replacement cycle of each facility. The installation of energy efficient chillers has been starting from 2017 to replace a total of 154 chillers at 38 MTR stations and four railway depots by 2023, aiming to reduce electricity consumption

by up to 30% compared to 2017 level, with a total investment amount of HK$1.1 billion.

After considering the land grant requirements, availability of space and surrounding environment, we have installed solar photovoltaic systems at our Hung Hom office building with the system capacity of 58.6 kW which can last for around 15 years up to 2033. We are planning to install another solar system with the capacity of 40 kW at MTR Headquarters Building. The installation works are targeted to be completed by the end of 2020. The Corporation will continue to explore the possibility of adopting more renewable energy in suitable railway premises.

Comment

The cost implication of launching such project is significant and the Replacement of Air-cooled Chillers is partially funded by the Green Bonds and Loans.

Identifier

Opp4

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Shift in consumer preferences

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

This opportunity is related to change in mean (average) temperature.

The Corporation's businesses in Hong Kong are based on our proven “Rail plus Property” business model, under which we are engaged in the

provision of services on our rail network as well as station commercial activities, property rental and property developments over and adjacent to stations and depots. The “Rail plus Property” business model not only bridges the funding gap when building new rail lines but also promotes transport-oriented city development and integrated communities along the railway lines.

The hotter ambient temperature/heavier rain highlights the convenience and comfort of rail transport, especially when our stations and shopping malls are connected seamlessly with nearby communities in terms of residential/commercial development access (i.e. provision of a seamless and good quality pedestrian link network between railway stations and nearby developments). New pedestrian subways and station exits improve the accessibility of existing stations, thus extending the benefits of railway service to more members of the public. There have been increasing interests from other developments for connection to rail stations via pedestrian links (pedlinks). This enhances the walkability to rail stations and thus ridership of our railway network.

Example:
A brand new Carnarvon Road Subway and Entrance/Exit D3 at MTR Tsim Sha Tsui Station were open for public access by end of 2018. Connected to K11 Art Mall, the new pedestrian walkway and entrance provide members of the public with a convenient and weather-proof crossing underneath Carnarvon Road.

Time horizon

Long-term

Likelihood

Very likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

1,881,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

There will be financial benefits with the potential increase in patronage. It is difficult to quantify the benefits from the increasing number of visitors to shopping malls together with higher value of the development, but it is expected to be major. In the Mainland of China, for example, we are involved in two rail-related property developments involving the Longhua Line Depot in Shenzhen and another development site in Tianjin.

The revenue from Mainland China railway, property rental and property business businesses in 2019 was HK$1,881 million.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

The Corporation has an expertise in planning and constructing seamless connection between rail transport and its adjacent development with 40 years of experience in Rail plus Property business model. Our on-going efforts include:

For every MTR development, an in-house town planning and property development team works to ensure the greatest value to both commuters and the Corporation's financial return. The recent delivered railway extension projects - Kwun Tong Line Extension and South Island Line (East) - provide good examples of how we connect with local community that over 90 per cent of local residents have convenient access to the railway on foot through an integrated pedestrian network to our stations.

For development not belonging to MTR, there is also an increasing trend of connecting pedestrian subway links to existing MTR stations. The Corporation's planning team and construction team work closely with developers to explore and implement when there are opportunities.

Comment

For pedlink development, the cost impact is minor as in most cases the design and construction of the subway would be borne by the developer.

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?

Yes, and we have developed a low-carbon transition plan

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative, but we plan to add quantitative in the next two years

C3.1b

(C3.1b) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
Other, please specify In-house methodology	We have conducted the following scenario analysis: 1. It is anticipated that there will be higher ambient temperature and more hot days/heat waves in medium-term. We therefore conducted a scenario analysis on the impact of energy consumption of our rail operation against the rise in ambient temperature within 1-5 years. The rise in ambient temperature is classified as "likely" under our Enterprise Risk Matrix, in which the time horizon is defined as 1- 5 years. Based on previous meteorological and energy consumption data, we identified the energy consumption pattern in our Environmental Control System (ECS) and traction against the change in ambient temperature and

	estimated the potential increase in our ECS energy consumption and traction energy consumption for every 1 degree Celsius increase in ambient temperature. The result indicates that energy consumption of both ECS and traction will increase certain % for every 1 degree Celsius increase in ambient temperature. The result helps us better project our energy consumption pattern and define energy reduction measures and targets for rail operations. The Corporation has commenced a large scale chiller replacement programme to address this scenario to both improve energy efficiency of the air conditioning system and to enhance the comfort level for our stations. In addition, the Corporation has taken a wide range of actions to reduce energy consumption. We have set a target to reduce 21% the amount of electricity consumed per passenger-kilometer by 2020 compared to 2008 levels. As of 2019, 12% reduction has been achieved. As the reduction target for heavy rail operation will expire in 2020, the Corporation has kicked off the process to set new carbon reduction targets with reference to the result of the scenario analysis and taking into account the requirements of other international requirements such as Science Based Targets Initiative. 2. It is anticipated that there will be more frequent super typhoon to be approached Hong Kong. To protect our rail system, we have conducted a scenario analysis on the impact of typhoon on railway lines, especially on the East Rail Line which is more susceptible to the consequences of extreme weather (East Rail Line is mostly open section with a route length of 41.1 km and 11 out of its 15 stations are located in the suburban areas of the New Territories). Geographical wind simulation has been conducted to develop a Risk Map of the potential of severe winds along the railway with potential of falling trees locations identified. Wind speed and direction of previous typhoon such as Mangkhut, Haima and Usagi have been stimulated and analysed. The Risk Map helps us develop appropriate tree management strategy and allocate resources prior to super typhoon.

C3.1d

(C3.1d) 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	Green Finance Framework

		One of the most substantive business decisions integrating climate-related issues into our business strategy is the establishment of our Green Finance Framework. It covers green financing including green bonds, loans and other credit facilities, providing financing to environmental services and network enhancements especially low carbon and energy efficiency projects reflecting our commitment to the development of the sustainable finance market and our continued investment in sustainable and green businesses. According to the United Nations, increasing urbanisation will lead to 66% of the world's population living in urban areas by 2050, which will require creation of appropriate urban infrastructure such as public transport. With electrically-powered mass railway generally acknowledged as one of the most environmentally sustainable ways to transport the world's growing and urbanising populations, we, with our excellent track record, are well-placed to contribute and respond to these increasing requirements. In June 2018, we established a new Green Finance Framework, which builds on our previous Green Bond Framework to include more types of green financing, such as green loans and green credit facilities. The framework takes into account the recommendations of the Green Loan Principles issued by the Asia Pacific Loan Market Association in March 2018. With this framework in place, we are able to pursue sustainable public transport infrastructure projects, while demonstrating our support for green finance initiatives. By the end of 2019, we issued a total of 9 green bonds in 3 different currencies and 2 HK$ green loans. Total amount financed by green finance proceeds is HK$12,325 million. All the relevant figures have been independently assured by the Hong Kong Quality Assurance Agency. In 2020, we have further expanded the Green Finance Framework to a Sustainable Finance Framework to fund eligible projects in both environmental (added a new category of renewable energy) and social categories.

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. Our expenses in energy and utilities relating to Hong Kong transport operations increased from HK$1,670 million in 2018 to HK$1,841 million in 2019. 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. We installed a solar system comprising 189 solar panels at our Hung Hom office building with the system capacity of 58.6 kW in 2019. We are planning to install another solar system with the capacity of 40kW at MTR Headquarters Building. We will continue to identify suitable locations for installation of

		more solar system in our premises. Furthermore, we procured 58,000kWh REC in 2019 to support the local RE generation.
Investment in R&D	Yes	Effectiveness and Innovation is one of the 4 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 fulfill our obligations in sustainability. Our regenerative braking system is an example of our willingness to apply innovative technologies to our operations. 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. At Light Rail operations in Hong Kong, our innovative Integrated Speed and Position Supervision System was implemented so that the speed of light rail vehicles can be monitored in real time, further improving operational safety and energy efficiency. In line with our aspirations of our corporate culture, Effectiveness & Innovation, we held a 2-day crowdsourcing event “ID Pitch” in 2019 to gather ideas and initiatives for the improvement of our environmental performance . All employees were invited to submit their ideas on energy efficiency and waste reduction. The responses were overwhelming. By the end of the event, over 2,100 participants submitted over 1,200 ideas. A total of 134 outstanding ideas were awarded a “Spot Award”, of which 16 of the best ideas were selected for further evaluation by a panel of judges. After careful deliberation, two of the most outstanding ideas were selected for the “Best Idea Award” and advanced for feasibility evaluation for future implementation.
Operations	Yes	Comprehensive Chiller Replacement Programme

		We have integrated climate change considerations into our business strategy to ensure that climate change considerations are 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. Apart from adopting more RE and REC as detailed in "Product and Services" in C3.1d above, another key measure under the Climate Change Strategy is to enhance our energy efficiency. We have set a target of achieving a 21% reduction from 2008 levels in the electricity consumption per passenger-km in our heavy rail network by 2020. MTR is implementing a large scale programme to replace 154 chiller units (about half of total quantity) at 38 stations and 4 railway depots to improve our efficiency. The new chillers after the replacement proprramme will enable electricity saving by 20% to 30% and the energy consumption is expected to be reduced by 30.4 GWh when completed. By the end of 2019, a reduction of 12% in our electricity consumption per passenger-km as compared to the base year had been achieved. The replacement programme is carried out in five phases with target completion in 2022. In the first and second phases, the replacement of 61 chillers in 11 stations and four depots were completed. The third phase of the project, which will take place from 2019 to 2020, covers 31 existing chillers for 10 stations and one depot.

C3.1e

(C3.1e) 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. At the end of 2019, MTR's green finance portfolio consisted of nine bonds in three different currencies and two HKD green loans including the inaugural US$ green bond in 2016, five green bonds in 2017 and three green bonds and one green bilateral revolving credit facility in 2018 via private placement. In 2019, a 1-year HK$ 1 billion bilateral green load was arranged. The green finance proceeds partially funded 5 of our green projects including Kwun Tong Line Extension (low carbon transport), South Island Line (low carbon transport), Air Cooled Chiller Replacement (energy efficiency), Trackside Energy Storage (energy efficiency) and Lok Ma Chau Wetland (biodiversity and conservation). In 2019, HK$811 million was allocated to finance low carbon transport, HK$184 million was allocated to fund the air cooled chiller replacement works, and HK$5 million was allocated for the Lok Ma Chau Wetland. Total amount financed by green bond proceeds for the 5 projects is HK$12,325 million. All the relevant figures have been independently assured by the Hong Kong Quality Assurance Agency. 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.

		2. Installation of Renewable Energy 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 need 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. Our expenses in energy and utilities relating to Hong Kong transport operations increased from HK$1,670 million in 2018 to HK$1,841 million in 2019. 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. We installed a solar system comprising 189 solar panels at our Hung Hom office building with the system capacity of 58.6 kW in 2019. We are planning to install another solar system with the capacity of 40kW at MTR Headquarters Building in Kowloon Bay. We will continue to identify suitable locations for installation of more solar system in our premises. Furthermore, we procured 58,000 kWh REC in 2019 to support the development of RE in Hong Kong

C3.1f

(C3.1f) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

1. Management Structure

Sustainability is the ultimate goal of the Corporation, and Corporate Responsibility (CoR) is how we will work towards this. With the Board-level CoR Committee in place, the senior-level ownership is mandated to ensure CoR integration into overall business practices. The CoR Steering Committee, chaired by the Corporate Affairs Director, provides directions and guidance on CoR issues at operational levels, and monitors progress of programmes for efficacy in achieving stated objectives and targets. Climate change is a subject managed under this structure.

2. Guiding Policies

The CoR Policy ensures our long term business development has taken sustainability into consideration. To address climate change more specifically, we have expressed our commitment in our publicly disclosed Climate Change Statement. We take climate change into consideration through a risk-based approach, and recognise the necessity to act on the changing global physical and regulatory environments so that we continue to operate effectively and efficiently. We are committed to mitigating climate change by improving our low carbon transport and green lifestyle opportunities for our customers and communities, and also adapting to climate change in order to ensure safe, reliable and efficient delivery of our services well into the future.

3. Short-term strategy and outcomes

We focus on addressing climate change mitigation through electricity management. Energy and utilities are the largest expenses related to our Hong Kong operations apart from salary. Aggressive investment in energy optimisation has been integral to our business strategy for the past four decades. We are now at the stage in rail operations and property management business where improvement incremental, often involving the introduction of new technologies or processes as they become commercially available in the market including equipment upgrade. These are in place in all areas of our business, particularly in the operation of our railways and management of our properties. For example, in views of higher ambient temperature and more hot days due to climate change, we are carrying out a large-scale chiller replacement project to replace a total of 160 chillers at 38 MTR stations and 4 railway depots with more energy efficient model, to enhance our air-conditioning system and reduce electricity consumption.

One of the most substantive business decisions integrating climate-related issues into our business strategy is the establishment of our Green Finance Framework. It covers green financing including green bonds, loans and other credit facilities, providing financing to environmental services and network enhancements especially low carbon and energy efficiency projects. By the end of 2019, we had issued a total of 9 green bonds in 3 different currencies and concluded 2 HK$ green loans, partially funded 5 of our projects (including Kwun Tong Line Extension, South Island Line, Air Cooled Chiller Replacement, Trackside Energy Storage and Lok Ma Chau Wetland). Amount financed by green bond proceeds is HK$11,325 million.

We have set a target for railway operations to reduce our electricity use per passenger-km by 21% by 2020, compared to 2008 level. In 2019, we achieved a 12% reduction of electricity intensity in our heavy rail operations. For our commercial properties portfolio, we have set a target to reduce energy use by 12% by 2023. By 2019, we achieved a reduction of 12% with 2013 as baseline, meeting the 2023 target.

4. Long-term Strategy and Outcomes to Date

Our rail operation offers a low-carbon solution contributing to HK’s low-carbon economy. As we work on railway extension projects and start to look for new opportunities in network expansion, we seize the opportunity to secure a significant step towards the low carbon future. We have internally developed a protocol that predicts and assesses life cycle emissions of a railway project, at different stages during its delivery process. This enables the incorporation of or shift to low carbon design when the project is still fluid, at the early stage of project delivery.

As a long-term strategy to reduce greenhouse gas emissions, we incorporate green elements into our new building design and require our new residential property developments to achieve a minimum certification of BEAM Plus Gold. In 2018, Two iFc achieved the final Platinum rating under the BEAM Plus Existing Building scheme. To reduce energy consumption, our newly opened Hong Kong West Kowloon Station has made use of 4,000 undulating glass panels to allow abundant natural light thereby decreasing the need for artificial light during daytime and minimise heat transfer which will reduce the overall cooling demand.

The Corporation has signed on to the Hong Kong Energy Saving Charter. As part of the commitment, we are supporting the city's energy conservation efforts by maintaining an average indoor temperature to 24-26 degree Celsius, and wider adoption of energy saving LED lamps. We also pledged on Chartership on External Lighting to shorten operating hours of external lighting and reduce energy consumption and save electricity. Our Property Division has also signed to the World Business Council for Sustainable Development's Manifesto for Energy Efficiency in Buildings striving to improve energy performance of our commercial buildings.

5. Stakeholder Communication

The Corporation's sustainability strategy, including climate change, is integrated into the corporate governance structure. This strategy has allowed us to develop and sustain relationships with key stakeholders over an extended period of time. Through our annual Sustainability Report, we report our mitigation and adaptation initiatives to the public. We also proactively inform relevant stakeholders, including but not limited to government, investors and environmental NGOs through regular engagement. Our relationships and involvements in Hong Kong's organisations relating to climate change allow us to learn from best practices and stay abreast of recent policy developments. For example, we participated in the Government's engagement sessions on devising long-term decarbonisation strategy in Hong Kong in 2018. In terms of sustainability reporting, we are one of the pioneers in Hong Kong to provide corporate Environmental, Social and Governance information including climate change to our stakeholders. We have followed the Taskforce on Climate-related Financial Disclosures to disclose our climate-related information in our Sustainability Report.

Example:
The HKSAR Government published Climate Action Plan 2030+ in 2017, taking rail as the backbone of Hong Kong's low-carbon public transport network. We actively support the government's low-carbon policy and integrate it into our business objectives and strategy. Recently, we have commenced the detailed planning and design of 2 new rail lines. Construction is expected to commence in 2023 for both projects

C4. Targets and performance

C4.1

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

Both absolute and intensity targets

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) (or Scope 3 category)

Other, please specify

absolute reduction in electricity consumption for investment properties portfolio in Hong Kong

Base year

2013

Covered emissions in base year (metric tons CO2e)

73,954

Covered emissions in base year as % of total base year emissions in selected Scope(s) (or Scope 3 category)

100

Target year

2023

Targeted reduction from base year (%)

12

Covered emissions in target year (metric tons CO2e) [auto-calculated]

65,079.52

Covered emissions in reporting year (metric tons CO2e)

65,079.52

% of target achieved [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

Please explain (including target coverage)

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. By the end of 2019, we achieved a reduction of 12% compared with base year. Hong Kong companies are highly restricted in terms of carbon reduction as we do not have access to low carbon energy. Hong Kong has limited resources for development of large scale renewable energy and local energy production is largely fossil fuel based. The power grid is also not connected to other parts of the Mainland of China.

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Year target was set

2013

Target coverage

Other, please specify

Heavy Rail Operation in Hong Kong

Scope(s) (or Scope 3 category)

Scope 2 (market-based)

Intensity metric

Other, please specify

kWh per passenger km

Base year

2008

Intensity figure in base year (metric tons CO2e per unit of activity)

0.093

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure

100

Target year

2020

Targeted reduction from base year (%)

21

Intensity figure in target year (metric tons CO2e per unit of activity) [auto-calculated]

0.07347

% change anticipated in absolute Scope 1+2 emissions

% change anticipated in absolute Scope 3 emissions

Intensity figure in reporting year (metric tons CO2e per unit of activity)

0.082

% of target achieved [auto-calculated]

56.3236047107

Target status in reporting year

Underway

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Please explain (including target coverage)

The normalised baseline year emission covered by target is 0.093 KWh per passenger-km, while absolute emission of the base year is 827,732 metric tons CO2e.

In 2013, we set a target to reduce 21% the amount of electricity consumed per passenger-kilometer in our heavy rail network by 2020, compared to 2008 level, the first full year after the merger of the rail operations. By the end of 2019, the electricity consumed per passenger km was 0.082 kWh per passenger km and we achieved a reduction of 12% reduction of electricity intensity in our heavy rail operations, compared with base year 2008.

Based on our existing network, an electricity consumption target per passenger-km (KWh per pax-km) has been set. This measure is chosen as it reflects our efficiency in energy use for transit service provision more truthfully. In addition, due to the Scheme of Control in Hong Kong which places control of supply-side greenhouse gas (GHG) emissions into the remit of the two power companies, we have little influence over the carbon target of the electricity we purchase. Hence our carbon strategy translates almost exclusively to managing emissions incurred through our electricity demand.

It has been taken into consideration by the government's Hong Kong 2030 Vision and Strategy and the Second Railway Development Strategy that mass transit is much more carbon efficient than other forms of road transport that are driven by fossil fuel, and that one way for society to reduce its total carbon emission is to encourage a modal shift towards railway mass transit. Hence railway mass transit's absolute footprint should increase as a means to reduce total societal GHG emission. However we strive to reduce our electricity consumption per km travelled by our passengers through the energy reduction target.

It should also be noted that an increase in MTR's emissions does not automatically mean that it is a regressive performance. As an electricity-powered mass transport operator, we are offering a more environmentally friendly option through a shift away from traditional modes of largely fossil based road transport.

As the existing energy reduction target will expire by end of 2020, we have engaged a Consultant in setting mid- to long-term carbon reduction targets.

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

2018

Target coverage

Site/facility

Target type: absolute or intensity

Absolute

Target type: energy carrier

Electricity

Target type: activity

Production

Target type: energy source

Renewable energy source(s) only

Metric (target numerator if reporting an intensity target)

kWh

Target denominator (intensity targets only)

Base year

2018

Figure or percentage in base year

0

Target year

2020

Figure or percentage in target year

0

Figure or percentage in reporting year

98,000

% of target achieved [auto-calculated]

Target status in reporting year

Underway

Is this target part of an emissions target?

There was 0 production of renewable energy in our premises in 2018. We plan to install around 100 kW solar panels in the rooftop of our office buildings by 2021 as a trial through participating in the Feed-in Tariff scheme offered by the power company. Once the trial is proved to be successful, we will explore other possible locations to install more renewable energy systems in our premises.

Is this target part of an overarching initiative?

Other, please specify

To support the development of renewable energy in Hong Kong

Please explain (including target coverage)

There was 0 production of renewable energy in our premises in 2018. We plan to install around 100 kW solar panels in the rooftop of our office buildings by 2021 as a trial through participating in the Feed-in Tariff scheme offered by the power company. Once the trial is proved to be successful, we will explore other possible locations to install more renewable energy systems in our premises.

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	5	110
To be implemented*	24	2,014

Implementation commenced*	7	648
Implemented*	27	11,042
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

Energy efficiency in buildings

Heating, Ventilation and Air Conditioning (HVAC)

Estimated annual CO2e savings (metric tonnes CO2e)

3,600

Scope(s)

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

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

7,200,000

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

1,100,000,000

Payback period

>25 years

Estimated lifetime of the initiative

21-30 years

Comment

In 2019, 32 chillers were replaced as scheduled resulting in savings of 7.2 GWh which is equivalent to reduction in carbon emissions of 3,600 ton based on CLP's emission factor of 0.50 kgCO2e/kWh. Assuming the electricity cost is HK$1 / kWh, the annual saving of 7.2 GWh is equivalent = HK$7.2 million.

Upon completion of the whole project, the estimated saving is 30.4 GWh. Assuming the electricity cost is HK$1 / kWh, the annual saving of 30.4 GWh is equivalent = HK$30.4 million.

Payback period = 36 years.

Despite the long pay-back period, we have still implemented the programme with the financial support from the Green Bonds.

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.
Dedicated budget for energy efficiency	The Corporation has an Energy Management Working Group with 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 services 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.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Company-wide

Description of product/Group of products

The Corporation operates a predominantly electrically-powered mass railway system for Hong Kong. According to a series of research undertaken by the International Association of Public Transport (UITP) and the Community of Metros (CoMET), the metro is less carbon-intensive than other modes of transport. According to the Climate Action Plan 2030+ published by the HKSAR Government, MTR is an energy-

efficient mode of transport that the HKSAR Government seeks to increase the market share of public transport by extending the rail network and improving the quality of public transport services.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product and avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

In house methodology on avoided emissions

% revenue from low carbon product(s) in the reporting year

75

Comment

Emissions from our railway operations (scope 2) in 2019 were 1,091,724 tCO2e including new line testing and commissioning as well as operation supporting functions.

Assuming:
(a) The MTR system displaces passengers from using bus, the second most popular transport mode in Hong Kong; and
(b) MTR emission is half of that of buses on a per passenger-km basis (based on an internal study).

Emission avoided by third party from using the MTR system is approximately 1,091,724 tCO2e per year. This has been calculated based on the updated emission factors (kg CO2e/kWh) in 2019 from the two power companies that we purchased electricity from. This is a conservative estimate as moving a considerable number of people in alternative means would seriously over-congest the city, slowing traffic, leading to increased emissions, all of which are not taken into account of the estimation.

In 2019, we installed 189 solar panels at our Hung Hom office building with the capacity of 58.6 kW. Assuming the annual solar hours is 1,000 hr, the estimated amount of renewable energy generated from the Hung Hom system is around 58,000 kWh. We procured the same amount of Renewable Energy Certificates from the power company in 2019 to support RE development in Hong Kong.

As the existing energy reduction target will expire by end of 2020, we have engaged a Consultant in setting mid- to long-term carbon reduction

targets. and our appointed Consultant We will consider offsetting our carbon footprint through purchasing Certified Emission Reduction (CERs) or Emission Reduction Units (ERUs) within the framework of Clean Development Mechanism (CDM) or Joint Implementation (JI) United Nations Framework Convention on Climate Change (UNFCCC) as one of the options to achieve our long term carbon reduction targets.

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

January 1, 2008

Base year end

December 31, 2008

Base year emissions (metric tons CO2e)

21,775

Comment

Scope 2 (location-based)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 2 (market-based)

Base year start

January 1, 2008

Base year end

December 31, 2008

Base year emissions (metric tons CO2e)

1,066,179

Comment

C5.2

(C5.2) 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
Please refer to C5.2a below

C5.2a

(C5.2a) Provide details of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

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 Electrical and Mechanical Services Department and Environmental Protection Department, Hong Kong, which

specifies emission factors that are applicable in Hong Kong region where the Corporation mainly sits and indicates the detailed methodology in calculating emissions (scope 1 and 2). Please refer to hyperlink:

https://www.epd.gov.hk/epd/sites/default/files/epd/english/climate_change/files/Guidelines_English_2010.pdf

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)

46,134

Comment

Scope 1 emissions in 2019: 46,134 ton CO2e

C6.2

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

Row 1

Scope 2, location-based

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. These two companies provide electricity with different geographical coverage. Hence, location-based emissions is calculated based on the Guidelines to Account for and Report on Greenhouse Gas Emissions and Removals for Buildings (Commercial, Residential or Institutional Purposes) in Hong Kong and the 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 2019 was 0.50 kgCO2e/kWh
https://sustainability.clpgroup.com/en/2019/standard-esg-disclosures#climate-change/greenhouse-gas-emissions

Emission Factor of HEC: The GHG intensity of the electricity sold in 2019 was 0.81 kgCO2e/kWh
https://www.hkelectric.com/en/CorporateSocialResponsibility/CorporateSocialResponsibility_CDD/Documents/SR2019E_statisticstargets.pdf

C6.3

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

Reporting year

Scope 2, market-based (if applicable)

1,332,512

Comment

Scope 2 emissions in 2019: 1,332,512 ton CO2e

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

Metric tonnes CO2e

10,165

Emissions calculation methodology

Emissions from office paper use and disposal are calculated based on the "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 Electrical and Mechanical Services Department and Environmental Protection Department, Hong Kong".

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

10

Please explain

It is estimated that less than 10% emissions data was obtained from suppliers. We have engaged a Consultant to review our emissions data in our value chain.

Capital goods

Evaluation status

Relevant, not yet calculated

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. Hence, we have focused on office paper use in accordance with Hong Kong GHG reporting guideline

published by Electrical and Mechanical Services Department and Environmental Protection Department, as above.

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

Evaluation status

Not relevant, explanation provided

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

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

Metric tonnes CO2e

11,634

Emissions calculation methodology

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.

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

100

Please explain

Construction waste is our major waste type and the emissions data cover all construction waste in the reporting period.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

2,216

Emissions calculation methodology

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.

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

100

Please explain

The emissions data cover all business travel in the reporting period.

Employee commuting

Evaluation status

Not relevant, explanation provided

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

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

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

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

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

Please explain

Manufacturing and sale of products are not the primary business of the Corporation.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

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 this year. Breakdowns are not provided separately.

Franchises

Evaluation status

Relevant, calculated

Metric tonnes CO2e

608,949

Emissions calculation methodology

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)” published by the Hong Kong Environmental Protection Department and the Electrical and Mechanical Services Department.

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 2019.
(https://www.mtr.com.hk/sustainability/2019rpt/en/pdf/Performance_Metrics_EN.pdf).

Total Scopes 1+2 emissions in Mainland of China in 2019: 93,656 ton CO2e
Total Scopes 1+2 emissions in Australia in 2019: 495,565 ton CO2e
Total Scopes 1+2 emissions in UK in 2019: 18,9496 ton CO2e
Total Scopes 1+2 emissions in Sweden in 2019: 779 ton CO2e

TOTAL Emissions = 608,949

Investments

Evaluation status

Relevant, calculated

Metric tonnes CO2e

608,949

Emissions calculation methodology

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)” published by the Hong Kong Environmental Protection Department and the Electrical and Mechanical Services Department.

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 2019.
(https://www.mtr.com.hk/sustainability/2019rpt/en/pdf/Performance_Metrics_EN.pdf).

Total Scopes 1+2 emissions in Mainland of China in 2019: 93,656 ton CO2e
Total Scopes 1+2 emissions in Australia in 2019: 495,565 ton CO2e
Total Scopes 1+2 emissions in UK in 2019: 18,9496 ton CO2e
Total Scopes 1+2 emissions in Sweden in 2019: 779 ton CO2e

TOTAL Emissions = 608,949

Other (upstream)

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1,504

Emissions calculation methodology

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

Please explain

Manufacturing and sale of products are not the primary business of the Corporation.

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

0.00004125

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

1,378,646

Metric denominator

unit total revenue

Metric denominator: Unit total

33,419,000,000

Scope 2 figure used

Market-based

% change from previous year

4.2

Direction of change

Increased

Reason for change

The major reason for the change is due to an increase in emissions for the full year impact of the opening of High Speed Rail in September 2018 (the full year patronage for High Speed Rail in 2019 was 16,900,000).

Our total Scope 1 & 2 emissions in HK in 2019 and 2018 were 1,378,646 ton and 1,306,552 ton respectively (absolute emissions increased by 5.5%).
Our total revenue in HK in 2019 and 2018 was HK$33,419 million and HK$32,993 million respectively (revenue increased by 1.3%).

Emission intensity in 2019 was 4.125e-5 ton/HK$
Emission intensity in 2018 was 3.960e-5 ton/HK$

Emission intensity in 2019 was increased by 4.2% as compared to 2018.

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

0.000064

Metric numerator: emissions in metric tons CO2e

1,129,223

Metric denominator: unit

p.km

Metric denominator: unit total

17,675,082,000

% change from previous year

16

Please explain any exclusions in your coverage of transport emissions in selected category, and reasons for change in emissions intensity.

No exclusion

ALL

Scopes used for calculation of intensities

Report Scope 1 + 2 + 3 (category 4)

Intensity figure

0.000079

Metric numerator: emissions in metric tons CO2e

1,388,809

Metric denominator: unit

p.km

Metric denominator: unit total

17,675,082,000

% change from previous year

14

Please explain any exclusions in your coverage of transport emissions in selected category, and reasons for change in emissions intensity.

The major reasons for the change are due to 1) the drop in patronage in our Hong Kong transport operations (declined by 6.4% as compared to 2018) and 2) the full year impact of the opening of High Speed Rail in September 2018 (the full year patronage in 2019 was 16,900,000), despite we implemented various energy saving measures in 2019 (e.g. comprehensive chiller replacement programme in 2019).

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	45,837	IPCC Second Assessment Report (SAR - 50 year)
CH4	14	IPCC Second Assessment Report (SAR - 50 year)
N2O	283	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)
China, Hong Kong Special Administrative Region	46,134

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	3,844
Transport operations	43,414
Network expansion	123
Properties and other businesses	5,290

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	5,215
Fuel - feeder bus services	17,382
Fuel - property business	192
Refrigerants - transport operations and in-house support	18,247

Refrigerants - property business	5,099

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	Comment
Transport services activities	43,414	

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)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
China, Hong Kong Special Administrative Region		1,332,512		

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		13,328

Transport Operations		1,091,724
Network Expansion		1,070
Properties and Other Businesses		226,390

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
Transport services activities		1,091,724	

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	29	Increased		Procurement of Renewable Energy Certificate of 58,000kWh in 2019 and the emission factor is 0.5kgCO2e/kwh = 29 ton CO2e.
Other emissions reduction activities				

Divestment				
Acquisitions				
Mergers				
Change in output				
Change in methodology				
Change in boundary				
Change in physical operating conditions				
Unidentified				
Other				

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	No

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)		86,434	86,434
Consumption of purchased or acquired electricity			2,013,899	2,013,899
Total energy consumption			2,100,333	2,100,333

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.

Fuels (excluding feedstocks)

Diesel

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

83,588

Emission factor

2.62

Unit

kg CO2 per liter

Emissions factor source

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 Electrical and Mechanical Services Department and Environmental Protection Department, Hong Kong

Comment

Diesel consumption for stationary combustion sources: 2.62 kg CO2e per liter
Diesel consumption for mobile combustion sources (mobile machinery): 2.62 kg CO2e per liter
Diesel consumption for mobile combustion sources (public light bus): 2.77 kg CO2e per liter

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Fuels (excluding feedstocks)

Petrol

Heating value

LHV (lower heating value)

Total fuel MWh consumed by the organization

2,846

Emission factor

2.72

Unit

kg CO2 per liter

Emissions factor source

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 Electrical and Mechanical Services Department and Environmental Protection Department, Hong Kong

Comment

C8.2e

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

Sourcing method

Unbundled energy attribute certificates, Renewable Energy Certificates (RECs)

Low-carbon technology type

Solar

Country/region of consumption of low-carbon electricity, heat, steam or cooling

China, Hong Kong Special Administrative Region

MWh consumed accounted for at a zero emission factor

58

Comment

In 2019, we installed 189 solar panels at our Hung Hom office building with the capacity of 58.6 kW. Assuming the annual solar hours is 1,000 hr, the estimated amount of renewable energy generated from the Hung Hom system is around 58,000 kWh. We procured the same amount of RECs from the power company in 2019 to support RE development in Hong Kong.

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 emissio	Comment

		n factor: unit value	
Rail	gCO2e/kWh	500	Based on the sustainability report of CLP (One of the 2 power companies in HK), the emission factor is 0.50 kgCO2e/kWh https://sustainability.clpgroup.com/en/2019/standard-esg-disclosures#climate-change/greenhouse-gas-emissions
Rail	gCO2e/kWh	810	Based on the sustainability report of HEC (the other power companies in HK), the emission factor is 0.81 kgCO2e/kWh https://www.hkelectric.com/en/CorporateSocialResponsibility/CorporateSocialResponsibility_CDD/Documents/SR2019E_statisticstargets.pdf

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

0.0882

Metric numerator

Other, please specify

kWh

Metric denominator

Other, please specify

passenger-km

Metric numerator: Unit total

1,559,734,000

Metric denominator: Unit total

17,675,082,000

% change from last year

7.3

Please explain

We aim for a 21% reduction in the electricity consumed per passenger-kilometre by 2020 in our heavy rail network, compared with 2008 levels. Our electricity consumption for heavy rail operations in 2019 was decreased by 1.3% as compared to 2018. However, the passenger-km for heavy rail operation in 2019 was reduced by 7.3% thus leading to an overall increase in the intensity level due to drop in patronage because of the prolonged public order events in Hong Kong.

C9. Additional metrics

C9.1

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

Description

Energy usage

Metric value

0.02

Metric numerator

102,229,828 kWh

Metric denominator (intensity metric only)

HK$5,137,000,000

% change from previous year

4.3

Direction of change

Decreased

Please explain

The electricity consumption for our investment properties in 2019 and 2018 was 102,229,828 kWh and 105,222,713 kWh. The revenue from Hong Kong property rental and management businesses in 2019 and 2018 was HK$5,137,000,000 and HK$5,055,000,000 respectively. The reduction is partly due to the energy saving measures implemented in our investment properties and also the increase in revenue from Hong Kong rental and management business in 2019.

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

Other, please specify

Electricity consumption

Technology

Other, please specify

Energy saving measures

Metric figure

0.09

Metric unit

Other, please specify

kWh per passenger-km

Explanation

We aim for a 21% reduction in the electricity consumed per passenger-kilometre by 2020 in our heavy rail network, compared with 2008 levels. Our electricity consumption for heavy rail operations in 2019 was decreased by 1.3% as compared to 2018. However, the passenger-km for heavy rail operation in 2019 was reduced by 7.3% thus leading to an overall increase in the intensity level due to drop in patronage because of the prolonged public order events in Hong Kong.

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	Trackside Energy Storage Devices The energy storage devices were installed at two locations – Tsuen Wan Depot (TWD) and Kowloon Ventilation Building (KVB) for energy saving. 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 to be used by EMUs during acceleration. The energy consumption is estimated to be

		reduced by approximately 600MWh per year.

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 energy efficiency. On 20 January 2020, our CEO and members of the executive directorate officiated at the opening ceremony of the Data Studio which is located at Fo Tan Railway House. 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. It is a key enabler for Predictive and Prescriptive Maintenance and Maintenance

Optimisation. The Data Studio will assist in setting a world class standard for railway technology applications and enrich customer experience and service reliability through artificial intelligence and data analytics, paving the way towards round-the-clock smart monitoring system of railway facilities.

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_2019.pdf

Page/ section reference

pp2-5

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_2019.pdf

Page/ section reference

pp2-5

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: Employee commuting

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_2019.pdf

Page/section reference

pp.2-5

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

100

Scope 3 category

Scope 3: Purchased goods and services

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_2019.pdf

Page/section reference

pp2-5

Relevant standard

ISAE 3410

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 1
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 1

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 1

[1]Performance_Metrics_EN_2019.pdf

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?

Yes

C11.2a

(C11.2a) Provide details of the project-based carbon credits originated or purchased by your organization in the reporting period.

Credit origination or credit purchase

Credit purchase

Project type

Solar

Project identification

Local "Feed-in Tariff" Scheme developed under the Scheme of Control Agreement and recognised by the Hong Kong SAR Government.

Verified to which standard

Other, please specify

Verified by the"Feed-in Tariff" Scheme developed under the Scheme of Control Agreement and recognised by the Hong Kong SAR Government.

Number of credits (metric tonnes CO2e)

29

Number of credits (metric tonnes CO2e): Risk adjusted volume

29

Credits cancelled

Not relevant

Purpose, e.g. compliance

Voluntary Offsetting

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

C12.1a

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

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Other, please specify

Collect climate change and carbon information periodically from suppliers

% of suppliers by number

29

% total procurement spend (direct and indirect)

89

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

Rationale for the coverage of your engagement

We have about 2,000 active suppliers* based on historical data. We have selected key suppliers** for the engagement (through supplier survey to ensure compliance with our Supplier Code of Practice to support the responsible procurement process). The latest supplier survey was conducted in 2017. Questionnaire was sent to 803 key suppliers and 579 replies were received, i.e. the response rate is 72%. In terms of coverage, those 579 key suppliers constitute about 29% of our active suppliers in a year.
* Suppliers that received at least 1 order from us in a year, excluding those small value purchases, e.g. purchase via petty cash or Purchasing Card.
** Suppliers with accumulated order values over $1M (during January 2016 to May 2017) + suppliers registered on the Corporation's Registered Contractors List in 2017. However, it excludes spending for New Railway Project, as a practice, due to the cyclic nature of its spending.

Impact of engagement, including measures of success

We conduct surveys for our suppliers periodically to collect information about the status of their policies, initiatives and monitoring systems relating to environmental protection, like carbon emissions, energy, water, etc. Response rate and rate of supplies with implemented corporate policies are the criteria to measure the success of the survey. The survey in 2017 received information from 579 suppliers in response to our questionnaire. We use this information to understand how our suppliers are aligning with the Supplier Code of Practice and to identify areas for improvement and collaboration.

When compared the survey results in 2017 with the baseline in 2011, we have observed an overall increase in the proportion of suppliers indicating they have corporate policies, initiatives and monitoring systems in place to address sustainability issues including climate change.

Comment

C12.1b

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

Type of engagement

Collaboration & innovation

Details of engagement

Other, please specify

Use of our dedicated mobile app "MTR Mobile" and social media to engage our customers

% of customers by number

100

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

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 1.4 million active users every month. The app was developed 10 years ago and the latest version was released in May 2020 with a major revamp featuring a range of new and enhanced functions. In August 2020, we have launched a brand new Carbon Footprint Challenge in MTR Mobile to encourage our customers to take MTR trains, a low-carbon transport mode compared with road vehicles driven by fossil fuel. Saving in carbon emissions would be converted to MTR points for gift redemption. We have also shared low carbon tips with our customers through MTR Mobile.

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.

Please refer to the link below for more details about the MTR Mobile app and our facebook.
https://www.mtr.com.hk/mtrmobile/en
https://www.facebook.com/mtrhk/

In addition, we have engaged our customers through the traditional channels below:

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. In 2019, engagement activities include but not limited to: (a) We turn off the redundant escalators during non-peak hours in stations and shopping malls. (b) We invite tenants to join our food waste reduction pledge. We also organise regular environmental seminars to our building tenants and engage our mall tenants where relevant. (c) We are a signatory to the

Hong Kong Environment Bureau Charter on energy saving and external lighting of which we have made commitment to saving energy and switching off the external lighting installations of decorative, promotional or advertising purposes from 11 pm to 7 am the following day.

Impact of engagement, including measures of success

Our customers/tenants fully support our climate change engagement initiatives. As a service provider, one of the criteria to reflect success of these measures is the number of negative feedback received from our customers/tenants. There was no negative feedback received from our customers/tenants regarding these measures. In addition, our mobile app "MTR Mobile" reaches over 1.4 million active users every month. In August 2020, we have launched a brand new Carbon Footprint Challenge in MTR Mobile to encourage our customers to take MTR trains, a low-carbon transport mode compared with road vehicles driven by fossil fuel. Saving in carbon emissions would be converted to MTR points for gift redemption. We have also share low carbon tips with our customers through MTR Mobile.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Direct engagement with policy makers

Trade associations

Other

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Adaptation or resilience	Support	Development (under the umbrella of Climate Change Business Forum, CCBF established by the Business Environment Council, NGO) of a risk assessment and mitigation tool for	A comprehensive adaptation assessment tool has been developed for test-drive; full launch first in Hong Kong for 2013/14. We also support various climate and energy-efficiency related consultations from the HKSAR Government, on topics such as Post-COP 21 engagement sessions the Regional Cooperation Plan on Building a Quality

		businesses across all geographies and sectors to cope with climate change and its impacts on business continuity. We are a member of the Advisory Group.	Living Area, on establishing an Urban Climatic Map and Wind Environment, and on devising a long-term decarbonisation strategy for Hong Kong.
Energy efficiency	Support	We are Committee Member of the Hong Kong Green Building Council. We are also engaged with the Environment Bureau, Environmental Protection Department and Electrical and Mechanical Services Department in support of the initiatives for energy efficiency.	Pledge on Energy Saving Charter by the Environment Bureau at MTR malls, Chartership on External Lighting to shorten operating hours of external lighting and reduce energy consumption and save electricity; WBCSD's Manifesto for Energy Efficiency in Buildings, Green Building Certification (BEAM Plus) Gold rating as a minimum for new residential developments, voluntary adoption of Building Energy Codes prior to legislation, energy efficiency systems and equipment, etc.
Other, please specify Transport Planning	Support	The Chief Executive of the HKSAR highlighted in his Policy Address 2014 that the city would continue to develop a transportation system centred on public transport with railway as the backbone. The Corporation is in support of this and has been working closely with the Transport and Housing Bureau of the HKSAR Government according to the Railway Development Strategy 2014 (RDS 2014) which provides a framework for planning the future expansion of Hong Kong's railway network up to 2031. The Climate Action Plan 2030+ published by the HKSAR Government commends MTR as an energy-efficient mode of transport and seeks to increase	The strategy aims to provide a framework to develop a safe, efficient, economically viable and environmentally friendly transport system. The HKSAR Government continues using railway as the backbone in the development of our public transport network. Beyond the Shatin to Central Link that we are building now, government recommends that seven railway projects be completed in the planning horizon up to 2031 under the RDS 2014. The government has already invited the Corporation to submit proposals for the development of 6 new rail lines. Recently, we have commenced the detailed planning and design of 2 of the new rail lines with the policy support from the HKSAR Government (Tung Chung Line Extension and Tuen Mun South Extension Projects). Construction is expected to commence in 2023 for both Projects. Please refer to the press releases below for details. https://www.mtr.com.hk/archive/corporate/en/press_release/PR-20-026-E.pdf https://www.mtr.com.hk/archive/corporate/en/press_release/PR-20-037-E.pdf

		the market share of public transport by extending the rail network and improving the quality of public transport services.	

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

International Association of Public Transport (UITP)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

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.

How have you influenced, or are you attempting to influence their position?

We have supported rail as the low carbon transport solution through UITP since 2001, and helped develop the UITP Charter on Sustainable Development and are a full signatory. We were pivotal in establishing the UITP Sustainable Development Commission. We also supported the "Bridging the Gap" initiative with UITP to get public transport accepted as a Nationally Appropriate Mitigation Action (NAMA) under the United Nations Framework Convention on Climate Change (UNFCCC). We are also supporting UITP's efforts to frame public transport as a climate change solution for the twenty-first session of the Conference of the Parties (COP21).

Trade association

Hong Kong Green Building Council (HKGBC)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

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.

How have you influenced, or are you attempting to influence their position?

We are a Gold Patron Member and a Member of its Industry Standards and Practices Committee to steer the development of industry standards and best practices for the local green building industry in driving progressive market transformation towards a sustainable built environment.

Trade association

Hong Kong Construction Industry Council (CIC)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

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.

How have you influenced, or are you attempting to influence their position?

We closely follow the disclosure of the CIC embodied carbon database and will seek the adoption in the assessment for our projects, once available and where appropriate.

Trade association

Business Environment Council (BEC)

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

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.

How have you influenced, or are you attempting to influence their position?

We are a member of BEC and recognised the leadership in building energy pledge. We also support BEC's work on the issue of "Hong Kong Climate Resilience Roadmap for Business". In addition, we are members of the BEC's Climate Change, Energy, and ESG (Environmental, Social and Governance) advisory groups. These advisory groups discuss and advise the government on policies and issues surrounding climate change and environmentally related subject areas.

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

1. Internal Engagement

The Corporation engages with staff regularly on climate change issues, relating to mitigation and resilience through talks, presentations, e-mail notices and initiatives, related external events and activities, and workshops on green procurement practices. All these engagements are undertaken as a group at different departments.

To raise awareness of energy saving and waste reduction in our operations, we organised a two-day ID Pitch Forum in January 2019, inviting colleagues to suggest innovative and practical green ideas regarding energy conservation and waste management. All employees were invited to submit their ideas on energy efficiency and waste reduction to one of four discussion forums, namely Offices & Canteens, Malls & Managed Estates, Stations & Trains, and Depots, Logistics Centres & Project Sites. Each discussion forum was presided by a subject expert with knowledge relevant to the respective forum. The experts helped guide the participants to inspire their innovative ideas through discussion and instant feedback. By the end of the event, over 2,100 participants submitted over 1,200 ideas and more than 3,500 discussion posts. A total of 134 outstanding ideas across all four discussion forums were awarded a “Spot Award”, of which 16 of the best ideas were selected for further evaluation by a panel of judges. After careful deliberation, two of the most outstanding ideas were selected for the “Best Idea Award” and advanced for feasibility evaluation for future implementation.

In early 2020, we have organised an Energy Saving Competition for the Operations Division to encourage enhancing energy efficiency in our rail operation.

2. External Engagement

The Corporation also engages our customers/tenants to communicate our commitment to environmental protection and climate change mitigation/adaptation. In 2019 engagement activities include but not be limited to:
(a) turning off the redundant escalators during non-peak hours in stations and shopping malls;
(b) inviting tenants to join our food waste reduction pledge;
(c) organising regular environmental seminars to our building tenants and engage our mall tenants where relevant; and

(d) being a signatory to the Hong Kong Environment Bureau Charter on energy saving and external lighting of which we have made commitment to saving energy and switching off the external lighting installations of decorative, promotional or advertising purposes from 11pm to 7am the following day.

In August 2020, we have launched a brand new Carbon Footprint Challenge in MTR Mobile to encourage our customers to take MTR trains, a low-carbon transport mode compared with road vehicles driven by fossil fuel. Saving in carbon emissions would be converted to MTR points for gift redemption. We have also share low carbon tips with our customers through MTR Mobile.

The Corporation also participates in engagement activities organised by the government. In Hong Kong, our choice of energy suppliers is restricted to two vertically integrated companies that are regulated by the HKSAR Government under a Scheme of Control Agreement (SCA) that is valid until 2033. In 2015, we participated in a consultation exercise organised by the Environment Bureau to consider the future arrangement of the SCA in Hong Kong. We reiterated our views for the HKSAR Government to continue to find an appropriate balance between the objectives of safety, reliability, affordability and environmental protection. To reinforce the introduction of renewable energy and demand side management measures, we also suggested that the Government provides more financial support for the private sector, not only through tax incentives.

In 2019, we also submitted our response to the Sustainable Development Council for the development of a long-term decarbonisation strategy for Hong Kong.

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

There are 3 levels to ensure consistency with our overall climate change strategy.

1. Oversight from the Board is exercised through the Board-level Corporate Responsibility (CoR) Committee. The CoR Committee has the mandate to monitor and implement the Corporate Responsibility Policy, identify emerging issues and provide regular updates for the Board.

2. The CoR Committee is supported by the CoR Steering Committee, which is chaired by the Corporate Affairs Director, a member of the Executive Directorate reporting directly to the Chief Executive Officer. Sustainability and corporate responsibility issues are discussed at the CoR Steering

Committee under the guidance of the Executive Directorate. The CoR Steering Committee is also responsible for developing and implementing Corporate Responsibility initiatives for the Corporation and the respective divisions that members represent.

3. Sustainability Team of the Public Affairs Department coordinates among different departments to ensure activities are consistent with the Corporate Climate Change Strategy which was effective in April 2020. Overseas hubs were involved in the development process of the Strategy and a finalised version was shared with all hubs for integration into their businesses.

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

Performance_Metrics_EN_2019.pdf

MTR_Full2019_Eng.pdf

Page/Section reference

Sustainability Report: pp28 - 39 (Environmental Protection including Climate Change

Performance Metrics: pp7 (HK GHG Performance 2015-2019), pp16 (Mainland of China, Australia and UK GHG Performance 2017-2019), pp21 (Sweden GHG Performance 2017-2019)

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

C15. 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.

N/A

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Corporate Affairs Director	Other 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 am submitting to	Public or Non-Public Submission
I am submitting my response	Investors	Public

Please confirm below

I have read and accept the applicable Terms