Jardine Cycle & Carriage

Climate Change Report 2021

Jardine Cycle & Carriage Limited

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Published May 2022

Introduction

Company overview

Jardine Cycle & Carriage ("**JC&C**" or the "**Company**") is an investment holding company of the Jardine Matheson Group in Southeast Asia. We seek to create growth in the region by investing in diversified market-leading businesses alongside Southeast Asia's urbanisation and emerging consumer class.

JC&C focuses on being a long-term strategic partner for our businesses, namely, automotive, financial services, heavy equipment, mining, construction & energy, agribusiness, infrastructure & logistics, property, cement and consumer products.

Through the committed execution of our growth strategy and capital allocation priorities, we aim to grow faster than Southeast Asia. We further add value to our businesses through people development, digital transformation and collaboration across our extensive network. Simultaneously, we strive to elevate communities by enabling positive social benefits while mitigating potential environmental impacts.

JC&C is listed on the Mainboard of the Singapore Exchange ("**SGX**").

Sustainability at JC&C

Environmental, social and governance ("**ESG**") considerations are cornerstones for achieving our ambitions. Since 2017, JC&C has been publishing annual sustainability reports that describe our ESG efforts and performance. The reports reflect our approach towards business sustainability and disclose what is important to the Company and its stakeholders. The Company's sustainability reports are available on our corporate website at www.jcclgroup.com/sustainability.

With the increasing focus on climate change, climate action has become a fundamental pillar in our ESG efforts. We have been conducting climate risk assessments to identify key focus areas for our portfolio businesses and build overall climate resilience.

Introduction

About this report

In 2021, we embarked to align to the Task Force on Climate-related Financial Disclosures ("**TCFD**") framework by conducting scientifically-based scenario analyses on our physical and transitional risks across the portfolio. This Climate Change Report is the result of our efforts and is our first publication aligned with the recommendations of the TCFD.

The TCFD framework provides a structured approach to assess our governance, risk management, strategy and metrics and targets as they pertain to the climate-related risks and opportunities of our portfolio.

Built on the four pillars of the TCFD framework, this report serves the following objectives:

- Outline the processes for identification, management and governance of climate-related risks and opportunities;
- Assess the potential impacts of climate change to our portfolio using scenario analysis;
- Define our mitigation and adaptation strategies;
- Measure our performance; and
- Share our plans for future progress updates.

This report also focuses on the climate-related risks and opportunities assessment performed in 2021.

Introduction

Evolving climate concerns and stakeholder expectations

With the publication of the Intergovernmental Panel on Climate Change ("**IPCC**") Working Group I's sixth report in August 2021, it is apparent that urgent action is needed to limit human influence on global warming. Although global surface temperatures are predicted to continue rising until 2050 under all emissions scenarios, the general view is that the longer-term outcomes can still be managed if the world is able to make significant reductions in its emissions of greenhouse gases ("**GHG**").

Governments around the world are starting to recognise this urgency and are updating their commitments towards global climate action. As at October 2021:

- Indonesia's Long-Term Strategy for Low Carbon and Climate Resilience document noted that it will peak emissions in 2030 and further explore the opportunity to rapidly progress towards net zero emission in 2060 or sooner[1];
- Vietnam has committed to reduce emissions by 9% independently or by 27% with international assistance by 2030[2];
- Singapore has committed to reach peak emissions of 65 $MtCO_2e$ in 2030, halving it to 33 $MtCO_2e$ by 2050 with a view to achieving net-zero emissions as soon as viable in the second half of the century[3].

Commitments towards global climate action are also accelerating regulatory requirements and stakeholder expectations. For example, the Monetary Authority of Singapore introduced an Environmental Risk Management Guideline in 2020 requiring financial institutions and asset managers to place greater emphasis on both physical and transitional environmental risks. In late 2021, SGX has mandated climate-related disclosures for listed companies from 2022 onwards on a 'comply or explain' basis in line with TCFD. The disclosures will become mandatory for key sectors starting from 2023, after which more sectors will be added.

JC&C recognises the potential implications of global efforts to limit the effects of climate change. Focusing on climate action will support the long-term sustainability of our businesses and enable them to be future-ready as the pace of transition towards a low-carbon economy quickens. As such, JC&C is committed to not only assessing the associated risks but also being a part of the solution for climate change through mitigation actions as well as sustainable and resilient investment decisions.

[1] Indonesia Long-Term Strategy for Low Carbon and Climate Resilience 2050, July 2021
[2] Updated Nationally Determined Contribution (NDC), July 2020
[3] Singapore's Enhanced Nationally Determined Contribution, February 2020

Governance

Board oversight

The board of directors of JC&C (the "**Board**") has the overall responsibility for the Company's ESG mandate and performs this duty within a robust governance framework. Our Board members also sit on other listed company boards and governing bodies, and thus are kept abreast of the latest updates within this space.

At the start of 2021, TCFD alignment was identified as a key corporate objective. During the year, the Board has exercised its oversight over JC&C's journey to becoming TCFD-ready. Board members were updated on the TCFD implementation progress along with other important ESG-related issues raised at the Board meetings, of which there are five in one year. In these discussions, the Board provided guidance on the direction of the overall strategy and approved next steps.

Additionally, the Board also considers climate-related issues with respect to the review of annual budgets, set up of performance objectives and oversight of major expenditure and investment activities.

The Board-level **Audit Committee** is responsible for overseeing the management of risks faced by the Company, including climate risks. Following the conclusion of a climate risk assessment exercise in 2021, JC&C is incorporating more climate-related risks into its existing risk management process. This comes under the purview of the Company's management-level Risk Management Committee that is chaired by the Group Finance Director. This committee reports directly to the Audit Committee.

Governance

Management oversight and functional groups

The JC&C executive leadership team forms the Executive Committee ("**Excom**"). The Excom comprises the Group Managing Director, the Group Finance Director, the Group General Counsel who is also the Chief Sustainability Officer, and the Director of Business Development. Both the Group Managing Director and the Group Finance Director are Board-appointed executive directors and have board-level responsibilities. The majority of the Excom attends each Board meeting and there is clear communication of all climate-related issues between management and the Board.

The Excom is directly involved in leading the climate risk assessment of the Company and shaping its climate strategy. As aforementioned, ESG considerations are factored into the Company's annual budget discussions and management's performance incentives. Thus, the Excom considers climate-related risks and opportunities in the Company's business strategy and capital allocation plans.

These are looked at in the specific context of the individual businesses and investments. Some examples include the strategies for electric vehicles ("**EV**") and renewable energy generation. Moreover, an ESG risk evaluation is conducted as a part of our capital allocation strategy, and mergers and acquisitions due diligence process.

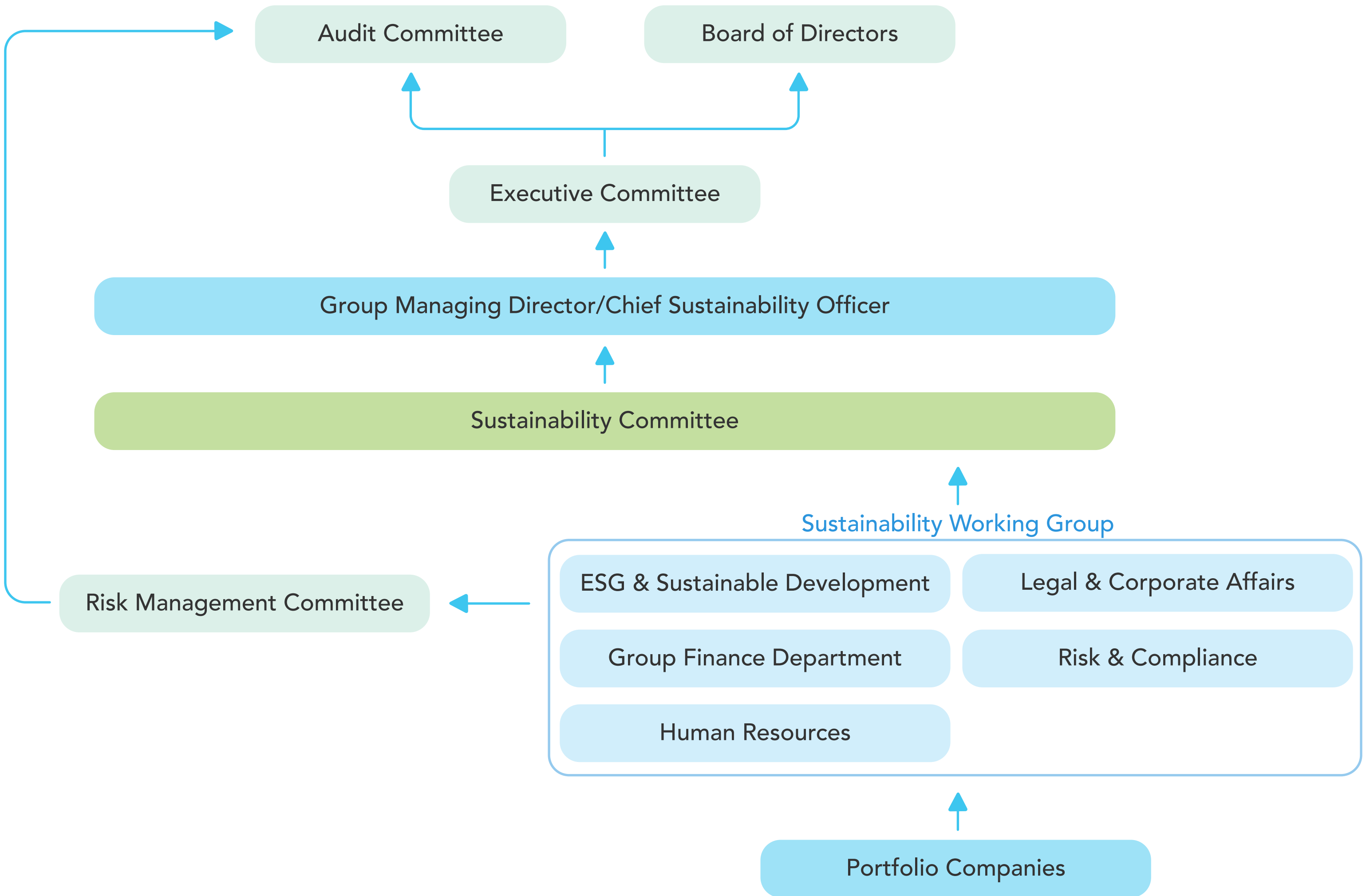
JC&C's ESG work is carried out by its management-level **Sustainability Committee**. The committee is responsible for managing the low-carbon transition as well as the ESG-related goals and targets for JC&C. The committee is cross-functional. Apart from the Excom members, the committee comprises the heads of departments from ESG & Sustainable Development, Group Finance, Human Resources, Legal & Corporate Affairs and Risk & Compliance. The committee convenes quarterly to set the direction and plan group-wide initiatives.

The Sustainability Committee is further supported by the Sustainability Working Group ("**SWG**"). The SWG comprises a wider range of employees from all levels and meets on a monthly basis, helping to implement the initiatives of the Sustainability Committee. Some core responsibilities include conducting ongoing engagements with JC&C's portfolio companies as well as monitoring rising ESG-related trends and issues.

Governance

Management oversight and functional groups

Figure 1: JC&C's sustainability governance structure



Risk Management

Identifying and assessing climate-related risks

JC&C and our portfolio companies have always considered climate-related risks and their potential impacts to the business. The relative significance of climate-related risks in relation to other risks are assessed by their impact on the underlying profit contributed to JC&C. We have identified both physical (e.g. natural disasters) and transition risks (e.g. EV development) in our risk registers. Specific mitigation and/or adaptation plans have also been developed by the businesses to ensure resiliency. Taking the EV development risk as an example, our automotive-related businesses are in close communication with their partner Original Equipment Manufacturers ("**OEM**") to support the development and rollout pathway for EVs.

In the past two years, JC&C has gone a step further and conducted studies that dived deeper into both climate-related risks and opportunities. In 2021, we performed a scientifically-based scenario analysis to identify and evaluated the impacts of climate change on our investment portfolio. As part of the study, we looked at seven main sectors across the countries that we operate in, which covered more than 75% of JC&C's underlying profit for 2019. Table 1 shows the scope of our assessment.

Risk Management

Identifying and assessing climate-related risks

Table 1: Overview of sectors and countries assessed

Sectors	Countries	Investee
Automotive	Indonesia	Astra
	Vietnam	THACO
	Singapore, Malaysia, Myanmar, Indonesia	DMI
Heavy Equipment, Mining, Construction & Energy	Indonesia	Astra
Agribusiness	Indonesia	Astra
	Vietnam	THACO
Infrastructure & Logistics	Indonesia	Astra
	Vietnam	REE
Property	Indonesia	Astra
	Vietnam	THACO
	Vietnam	REE
Cement	Vietnam, Thailand, Bangladesh, Sri Lanka, Cambodia	SCCC
Consumer Products	Vietnam	Vinamilk

The two scientific climate scenarios covered in the assessment were: (i) Well below 2°C scenario (IEA WB2DS[4]) and (ii) 3°C scenario (IPCC RCP 4.5[5]). Due to the nature of the scenarios and the material impact under each, the former was primarily explored in terms of transition risks and opportunities, while the latter was explored mainly in terms of physical risks.

Table 2 sets out the key considerations and assumptions used in these scenarios.

DMI – Direct Motor Interests
THACO – Truong Hai Group Corporation
REE – Refrigeration Electrical Engineering Corporation
SCCC – Siam City Cement

[4] International Energy Agency ("IEA") Well below 2°C scenario
[5] IPCC Representative Concentration Pathway 4.5

Risk Management

Identifying and assessing climate-related risks

Table 2: Scenario overview

Scenario	Overview	Key considerations and assumptions
Well below 2°C (IEA WB2DS)	This scenario fulfils United Nations Sustainable Development Goals including Paris Agreement (2015) with the lowest macroeconomic costs (normative)	Key policy, market and technology levers include: • Strong subsidy schemes for technology innovation in energy efficiency • Policy support for renewable energy sector • CO_2 price range: up to 175 USD/MtCO_2 between 2019-2050 for Asia-Pacific • Peak oil demand between 2020 and 2025, followed by a reduction of almost ~40% by 2040 compared to today • Share of renewables in global energy generation mix triples by 2060
3°C (IPCC RCP 4.5)	A high to intermediate emissions scenario where GHG emissions peak around 2040 and subsequently decline through the remainder of the century	Key considerations include: • Peak global emissions around 2040 and then decline until 2100 • Global mean sea level rise of 0.48m by 2100, equating to a mean sea level rise which is 35% higher than that of RCP 2.6 (up to 1°C global warming) • Frequency and intensity of extreme weather events increase with growing CO_2 concentrations

Risk Management

Identifying and assessing climate-related risks

The impacts were explored using JC&C's 2019 financial data as a baseline to capture operations in a perceived 'business as usual' condition, as opposed to 2020 which was adversely impacted by COVID-19. The future timeframes explored also varied by scenario, where we analysed 2025, 2030 and 2050 for Well below 2°C and 2030, 2050 and 2100 for 3°C. As aforementioned, the timeframes used were defined by assessing the nature of the scenarios and the material impact under each. The size and scope of the climate risks and opportunities were identified using four impacts in each scenario:

- Well below 2°C (IEA WB2DS): climate models, energy system models, sector analysis and specific company analysis and portfolio data modelling; and
- 3°C (IPCC RCP 4.5): exposure to risk, climate hazard, vulnerability and financial impact.

Managing climate-related risks

JC&C's enterprise risk management framework takes into account the risks of its various subsidiaries, each of whom develops and maintains their own risk registers. Material risks are aggregated at the JC&C level and reported on a regular basis to the Audit Committee. The key risks are disclosed in JC&C's annual report, the latest of which are stated in the Corporate Governance section of the Annual Report 2021[6]. Some examples include natural disasters, competition, economic cycle, commodity prices and government regulations.

Moving forward, JC&C will encourage our portfolio companies to carry out a more detailed analysis of the climate-related risks in their risk registers. Particularly, we will encourage portfolio companies to take a closer look at both the physical and transition risks as described by the TCFD framework. These risks will be aggregated at the JC&C level, where deemed material, and will be supplemented with any additional information derived from JC&C's own analysis as we monitor regulatory requirements related to climate change, e.g. carbon tax and renewables. This information will be provided to both the Risk Management Committee and the Audit Committee. From there they will decide to either mitigate, transfer, accept or control the risks as deemed appropriate.

[6] JC&C Annual Report 2021, Corporate Governance section (p.44)

Strategy

Risk and opportunities

At JC&C, we use three sets of time horizons to analyse climate-related risks and opportunities: short-term (now till 2025), medium-term (2025-2030) and long-term (2030-2050 and onwards).

Defining materiality in terms of impact to earnings before interest and taxes ("**EBIT**") or earnings before interest, taxes, depreciation and amortisation ("**EBITDA**") in our scenario analysis, we found that physical risks would become material in the longer term, with the most impact happening around 2070. In contrast, transition risks are more material in the shorter term and thus we decided to focus our strategy around the next 30 years.

Strategy

Based on the climate change scenario analysis performed in 2021, the key risks and opportunities for JC&C include:

Risks

- **Coal mining sector**
  Transition risks in the coal mining sector are driven by the global phasing down of coal. It is expected that future coal demand will decrease significantly in a Well below 2°C scenario. Some of the regulatory drivers for the impacts on this sector include higher carbon prices and the phasing out of fossil fuel subsidies. It is acknowledged that these risks could be mitigated by transitioning towards sectors that are less affected by climate change, e.g. other minerals and renewables. Some physical risks found relevant to this sector include flooding, landslide and wildfires.

- **Automotive sector**
  Transition risks in the automotive sector relate mainly to the technological shift towards EVs. It is expected that there would be a significant shift from conventional vehicles to battery powered electric vehicles under a Well below 2°C scenario. We find that demand for EVs in Southeast Asia is expected to increase, although the adoption of this technology will be the highest in developed markets. These risks can be mitigated by having early adaptation capabilities. In the case of JC&C, this would include monitoring and assessing our partner OEMs' EV competitiveness as well as securing our EV pipeline.

- **Cement sector**
  Transition risks in the cement sector result from the expected increase in carbon pricing as well as global investments in low-carbon technologies. The increase in carbon prices could possibly amount to approximately more than half of the production costs. These risks can be mitigated through changing some of the operating procedures, such as clinker mix, fuel type and transportation process. Physical risks associated with this sector include severe flood damage in Thailand, Bangladesh and Sri Lanka, which might impede the production process and sourcing of raw materials.

- **Agribusiness sector**
  In a 3°C scenario, high flooding risk is expected, which in turn would impact both meat farming (e.g. increased mortality of livestock and increased cooling and electricity costs for indoor farming) and oil palm farming (e.g. reduced yields due to delays in planting and harvesting and decreased workforce productivity). Additionally, in this scenario, wildfires and heatwaves could destroy arable land, plants and potentially animal herds, which would further drive up costs.

Strategy

Opportunities

- **Automotive sector**
  Potential upsides in the automotive sector can be realised through a timely shift towards electric and hybrid vehicles. As aforementioned, JC&C's automotive businesses are working closely with our partner OEMs to secure our EV pipeline in a timely manner.

- **Utilities sector**
  Future installed capacity is expected to be dominated by renewable energy. The transition would be faster in a Well below 2°C scenario, resulting in a higher share of renewables within the energy mix. This development signifies that more opportunities in the renewable energy sector can be explored, particularly hydro and solar power in Southeast Asia. As such, JC&C has investments in renewables through our portfolio companies and is actively supporting our businesses to expand their capacities.

Other observations

- Impact from physical risks can vary depending on the site characteristics. As such, JC&C is currently conducting an asset-specific risk assessment to better understand its effects.

- Renewable energy generation in Vietnam is relatively more resilient to physical risk impacts.

Metrics and Targets

JC&C recognises the associated risks of emissions in the sectors that we have invested in and thus, have taken the step to measure and quantify our GHG footprint. In 2021, we have started developing a baseline inventory for our Scope 1 and 2 emissions following the operational control approach and plan to track the trend going forward. Our emissions are calculated in line with the methodology proposed by the GHG Protocol and associated standards.

Our Scope 1 and 2 emissions comprise those from head office as well as Astra and our Cycle & Carriage businesses in Singapore, Malaysia and Myanmar (please see Table 3 for FY2021 Scope 1 and 2 emissions breakdown). The 2021 emissions data for the full year will also be set out in our Sustainability Report 2021 (published in May 2022) and will be externally assured.

Table 3: FY2021 Scope 1 and 2 emissions

Entities	Scope 1 emissions ($MtCO_2e$)	Scope 2 emissions ($MtCO_2e$)
JC&C head office	34	44
Astra	3,598,219	414,088
Cycle & Carriage (Singapore, Malaysia, Myanmar)	1,662	7,337
Total	**3,599,915**	**421,469**

Starting from 2022, JC&C will begin measuring its Scope 3 emissions, making estimates where needed. We will start with the Scope 3 categories most applicable to our head office operations.

Moving forward, managing our GHG inventory will be a key metric for us to measure and mitigate our climate-related risks. We also recognise that our portfolio also poses pivotal climate-related opportunities, particularly within the energy sector. As such, we are looking at ways to increase our investments in the transition to a low-carbon economy and will be measuring our progress.

We are in the process of formulating a net-zero ambition for the Group and establishing the necessary mid-term reduction targets needed to achieve this, using 2021 as the baseline year. We plan to disclose further information on this topic before the end of 2022. We are also simultaneously assessing the feasibility of establishing science-based targets for our portfolio companies and will continue to actively support our businesses in their individual decarbonisation pathways.

Way Forward

Building a climate resilient business

After conducting the climate scenario analysis, we have a clearer understanding of where our climate-related risks and opportunities lie. To ensure resiliency, we will continually factor them into our future strategy and capital allocation plans. For example, we will use the climate-related timeframes to incorporate identified risks within our financial planning and strategy development process. We will also continue to actively support our businesses to achieve sustainable long-term growth, encouraging resource efficiency and the decarbonisation of their operations. At the same time, we will steer the overall strategy and business direction towards building resilience to tackle these climate-related challenges.

Our primary focus will be on the coal, automotive and cement businesses as these sectors pose the biggest financial impact for the Company based on our scenario analysis. Some key strategic considerations going forward include:

- Exploring the potential to transition towards other minerals within the mining sector;
- Participating in the transition towards electric and hybrid vehicles in the automotive sector;
- Supporting technological transition, upgrades and investment in climate-friendly technologies that will decrease emissions;
- Evaluating carbon capture and storage technologies, as well as alternative fuels and hydrogen;
- Strengthening flood resilience measures in our manufacturing activities;
- Including physical risk considerations for new acquisitions and expansions. This would include developing plans to strengthen the resilience of specific sites identified to be most vulnerable to physical risks;
- Investing in climate-friendly technologies less exposed to physical hazards, e.g. renewables such as solar and wind power; and
- Establishing an internal carbon price, which will be applied to the assessment of potential investment opportunities to continue building climate resiliency within our portfolio.

Way Forward

Building a climate resilient business

We are also reviewing and putting in place some mitigation actions, such as:

Decarbonisation of our businesses
JC&C is working on a decarbonisation plan and is in the process of aligning around our net-zero ambition as well as the mid-term targets needed to secure this. We plan to provide more information on this before the end of 2022. Eventually, some of the activities with respect to decarbonisation would include:

- Collecting and monitoring Group-wide energy and carbon inventories annually;
- Reducing carbon footprint by reducing waste and energy consumption as well as using more efficient technology, materials and renewable energy; and
- Establishing at the Group-level, milestone targets and timelines for attaining net-zero.

Climate-related risk adaptation and mitigation
For physical risks to our assets, we are starting to explore some of the potential mitigation and adaptation strategies such as strengthening our flood prevention infrastructure and acquiring new assets in locations less prone to physical risks in the long term. For transition risks, especially those pertaining to the automotive sector, our operating businesses are already in close communication with their partner OEMs to define and support the development pathway for EVs.

Being a strategic partner for our portfolio companies
We are actively engaging our subsidiaries to help progress their climate strategies and encourage alignment of their sustainability initiatives with the TCFD framework. JC&C encourages our subsidiaries to develop a robust plan to mitigate challenges that will come with climate change and the transition towards a low-carbon economy. We will continue to work on our strategies around risk and opportunity management, capital allocation and portfolio company engagement in order to ensure the climate resiliency of our business.

Way Forward

Building a climate resilient business

Advocating and contributing to the regional and global climate change agenda
We encourage partnerships and believe that we can learn and share our experiences with like-minded organisations and institutes. We are evaluating local and global memberships, coalitions and networks to foster knowledge sharing and collective action towards the climate agenda. For example, we actively engage with organisations, such as SGX, and endorse collaboration towards climate action.

Strengthening our internal governance in the area of climate resiliency
The Board currently receives information and updates from the management team on the latest climate-related governance trends and issues. Moving forward, we hope to offer more opportunities to develop the Board's capabilities and expertise on climate-related risks and opportunities. We will support the training initiatives recommended by SGX.

In addition, a formal ESG strategy and action progress review will be carried out and reported to the Board on a bi-annual basis.

Climate-related risks and opportunities will be monitored and reported to the Board together with the mitigation strategies. When the climate-related goals and targets are established, the Board will receive regular updates on the progress and intended disclosures under the TCFD framework. As we look to embed more climate-related risks and opportunities into JC&C's overall strategy and business processes going forward, we expect the engagement with the Board in this area to become more in-depth.

This report highlights the steps we have undertaken to align to the TCFD framework as well as our efforts in mitigating the climate-related risks while leveraging the potential opportunities presented by a low-carbon economy. Moving forward, we look to continue enhancing our efforts across the different pillars of the TCFD framework and potentially updating our scenario analysis with newly available information if and when appropriate.

Jardine Cycle & Carriage

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