

# STEERING AHEAD FOR CLIMATE ACTION

Task Force On Climate-Related Financial Disclosures  
(TCFD) INAUGURAL Report 2023



## Task Force on Climate-related Financial Disclosures Reference Index

This index lays out SBS Transit Ltd's alignment with the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD). SBS Transit Ltd is committed to safeguarding the interests of our stakeholders for sustainable growth.

SBS Transit Ltd, formerly known as Singapore Bus Service, SBS, was formed through the merger of three existing bus companies in 1973, with the aim of improving the standards of the bus transport system in Singapore. By 1978, SBS was listed on the Singapore Exchange as Singapore Bus Service (1978). In 2001, we were rebranded as SBS Transit to reflect our bimodal status as both a bus and rail operator when we won the licence to operate the North East Line (NEL) – Singapore's third Mass Rapid Transit (MRT) system and the world's first fully automated underground MRT system.

In 2003, the Comfort Group and the DelGro Group merged to form ComfortDelGro Corporation – one of the world's largest land transport companies. With this merger, SBS Transit, which was under the DelGro Group, became a member of the ComfortDelGro Group, leveraging the Group's extensive resources, expertise and knowledge to effect higher levels of service, reliability and comfort for Singapore commuters.

As the biggest public bus operator in Singapore, we strive to provide world-class public transport services that are efficient, safe, reliable, inclusive and customer-centric. Today, we operate 218 bus services in Singapore with a fleet of over 3,500 buses comprising single deck, double deck, and articulated buses. All are wheelchair-accessible with nine in 10 buses rated at least a Euro 5, based on the engine emission standards set by the European Union for pollution. SBS Transit also operates 56 green buses comprising 31 fully electric and 25 diesel-hybrid.

Additionally, SBS Transit manages two of Singapore's six MRT lines – the North-East Line (NEL), and Downtown Line (DTL), as well as the Sengkang and Punggol Light Rail Transit (SPLRT) systems.

This inaugural climate-related financial report is compiled on information and data from the established baseline year of 2022, which is more reflective of a business-as-usual scenario in a post COVID-19 pandemic world.

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## Introduction

SBS Transit recognises that it is important to be transparent in how we manage our climate-related risks and opportunities to maintain the trust of our stakeholders and enable our investors to better comprehend the implications of climate change in our business. This is essential as increased uncertainties brought on by climate change necessitate businesses, including ours, to adapt, mitigate and, where possible, minimise or prevent any negative environmental consequences to the world we live in.

In July 2022, SBS Transit's parent company, ComfortDelGro Group, published an inaugural TCFD report, which identified the relevant physical and transition climate risks and opportunities applicable to the Group's operations in all the regions it operates. This groupwide assessment included Singapore, where SBS Transit's operations and assets are located.

Using 2022 as the baseline year, the potential impacts of climate risks and opportunities relating to SBS Transit were identified in the first phase of the climate scenario analysis conducted. Subsequently, these results were integrated into SBS Transit's overarching sustainability strategy and into the operational strategies of our Business Units to ensure the effective management of relevant climate-related risks and opportunities.

This financial year, we furthered our TCFD journey through greater detailing and robust disclosures and as such, SBS Transit is pleased to publish our inaugural standalone TCFD report. This report aims to provide stakeholders with deeper insight into how we consider and manage potential climate-related risks and opportunities, and should be read in tandem with our FY2022 Sustainability Report.

Through the identification and assessment of climate-related risks and opportunities, we strive to strengthen our climate mitigation and adaptation measures. This includes committing to carbon reduction targets, adopting renewable energies and operationalising a green fleet. As we actively transition our fleet towards cleaner alternatives, we seek to significantly reduce our GHG emissions and minimise the impacts of climate change in the communities that we operate in.

# 1. Governance

*This section provides an outline of SBS Transit's governance around climate-related risks and opportunities.*

## **a) Describe the Board's oversight of climate-related risks and opportunities**

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SBS Transit has an established governance framework to effectively manage our Environmental, Social and Governance (ESG) risks and opportunities with the Board of Directors spearheading responsibility pertaining to all climate-related considerations and, ultimately, decision-making. A dedicated Board-level Sustainability Committee (SC) has also been set up to provide oversight and ensure alignment to SBS Transit's sustainability strategy whilst accounting for long-term profitability.

The SC meets on a quarterly basis to discuss our progress towards climate-related goals. The SC also monitors the climate arena to report issues during Board meetings

The Board and the SC currently consider emissions and energy, resource efficiency and sustainable transition as focal material topics, identified through a materiality assessment. These material topics have been incorporated into the Company's sustainability framework.

## **b) Describe management's role in assessing and managing climate-related risks and opportunities**

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The SC is supported by a Risk & Sustainability Steering Committee (R&S SC), which is chaired by the Group Chief Executive Officer (CEO) and comprises SBS Transit's Senior Management team. The R&S SC reviews SBS Transit's sustainability performance against established targets on a quarterly basis and provides regular reports to the Board and the SC about our performance, climate-related trends as well as the recommendations to address these trends.

It also has the responsibility of undertaking more detailed scenario analyses and identifies projected financial implications for the Company's Business Units, and investigates the implications of climate-related issues on our business ambition, strategy, management and performance.

As the conduit between the organisation and the Board, it assumes overall responsibility for the assessment and management of relevant climate-related risks and opportunities. Significantly, it sets the direction for the Risk and Sustainability Workgroups to implement the assessment and management of climate-related risks and opportunities throughout the organisation.

SBS Transit's Head of Bus and Head of NEL/SPLRT spearhead the Risk and Sustainability Bus and Rail Workgroups respectively. The Workgroups convene every quarter to analyse consumption patterns and discuss key topics that are impacting their operations and business development, including climate-related issues.

A dedicated Risk and Sustainability Department responsible for developing and implementing sustainability initiatives within the company. The team supports the running of the quarterly Risk and Sustainability meetings and works closely with Senior Management to develop and implement sustainability strategies that align with the Company's overall business goals. The team also tracks and reports on the Company's progress in its sustainability performance and goals in the annual Sustainability Report.

Figure 1. Sustainability Governance Structure



## 2. Strategy

*This section provides an update on the actual and potential impacts of climate-related risks and opportunities on SBS Transit's businesses, strategy and financial planning, where such information is material.*

### **a) Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long term**

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To identify and understand the climate-related risks and opportunities for SBS Transit over the specific time horizons in two climate scenarios, a climate-related risk and opportunity screening exercise was undertaken. From the screening, the potential financial risks and opportunities for SBS Transit were identified. This also enabled us to determine the potential financial risks to quantify in the scenario analysis, where we have utilised 2022 as the baseline year, alongside our latest financial data. The results from the scenario analysis aided in the formulation of action plans and responses to guide our climate-related strategies.

As part of the scenario analysis, SBS Transit has chosen to align with time horizons that are discussed in climate science and the business planning horizon of the organisation, namely:

- Short term: up to 2030
- Medium term: up to 2040
- Long term: up to 2050

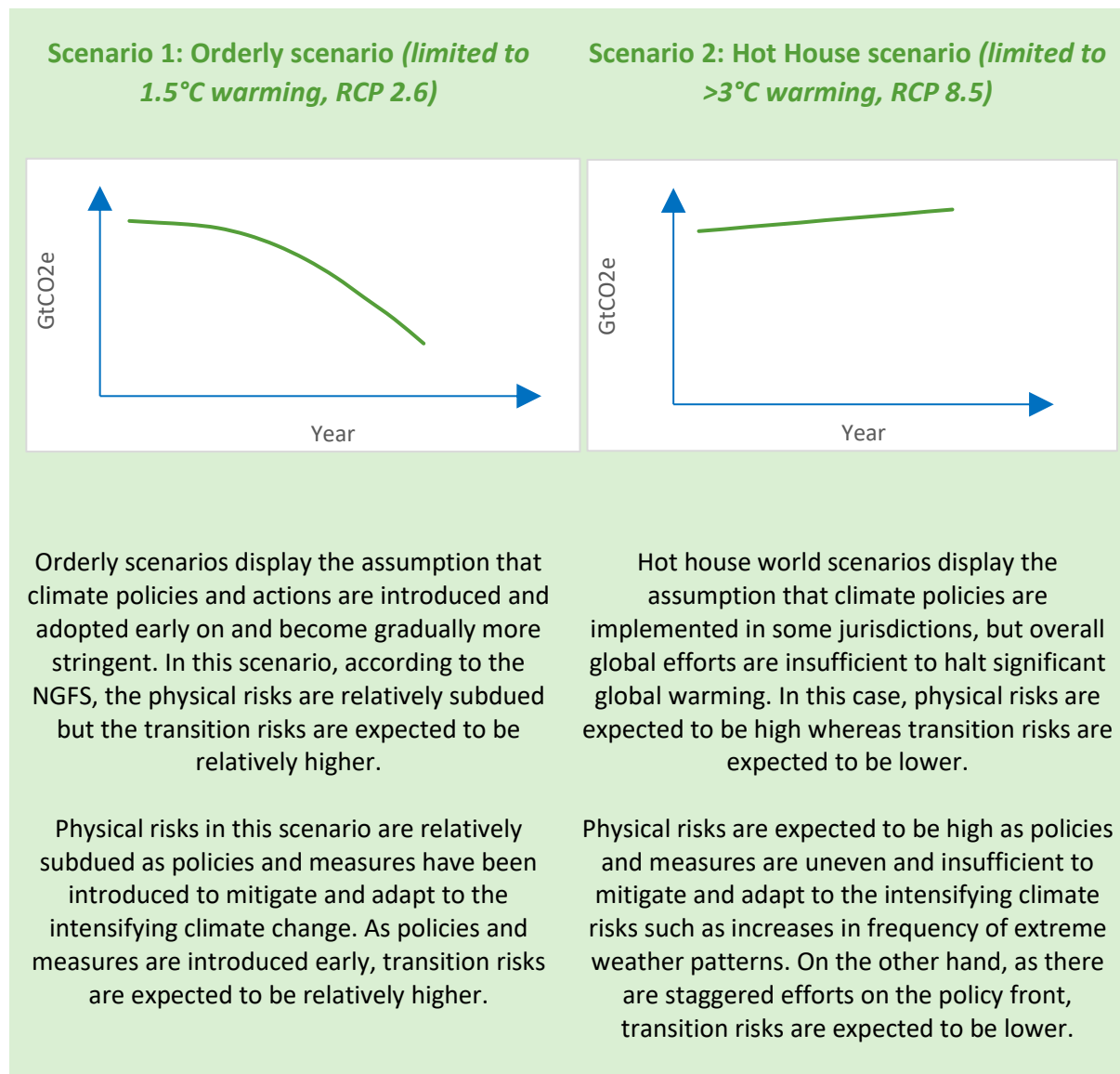
This detailed climate scenario analysis was based on two scenarios, namely a 1.5°C warming scenario and a >3°C warming scenario. The orderly scenario (1.5°C scenario) assumes climate policies are introduced and rapid decarbonisation is undertaken, whereas the hot house scenario (>3°C scenario) assumes that climate policies and action are limited and insufficient for the impacts of climate change (Figure 2). The climate impacts are modelled for these two scenarios for all short-, medium- and long-term timeframes (Figure 3).

Figure 2. Parameters and scope of climate-related risk and opportunity screening

Parameters	Scope	
<b>Country</b>	Singapore	
<b>Baseline year</b>	2022	
<b>Timeframe</b>	Short term: up to 2030 Medium term: up to 2040 Long- erm: up to 2050	
<b>Scenarios explored</b>	1.5°C warming (Network for Greening the Financial System (NGFS) Net-Zero by 2050, International Energy Agency (IEA) NZE 2050 and RCP 2.6) > 3°C warming (Network for Greening the Financial System (NGFS) Current Policies, International Energy Agency (IEA) STEPS and RCP 8.5)	
<b>Key identified risks and opportunities</b>	<u>Transition</u> <ul style="list-style-type: none"> <li>- Carbon pricing</li> <li>- Changing customer expectations</li> <li>- Low-carbon economy transition policies and regulations</li> <li>- Reputational risks</li> <li>- Technology shifts</li> </ul>	<u>Physical</u> <ul style="list-style-type: none"> <li>- Floods</li> <li>- Heatwaves (rising mean temperatures)</li> <li>- Storms and cyclones</li> <li>- Wildfires</li> <li>- Rising sea levels</li> <li>- Droughts/Water scarcity</li> </ul>



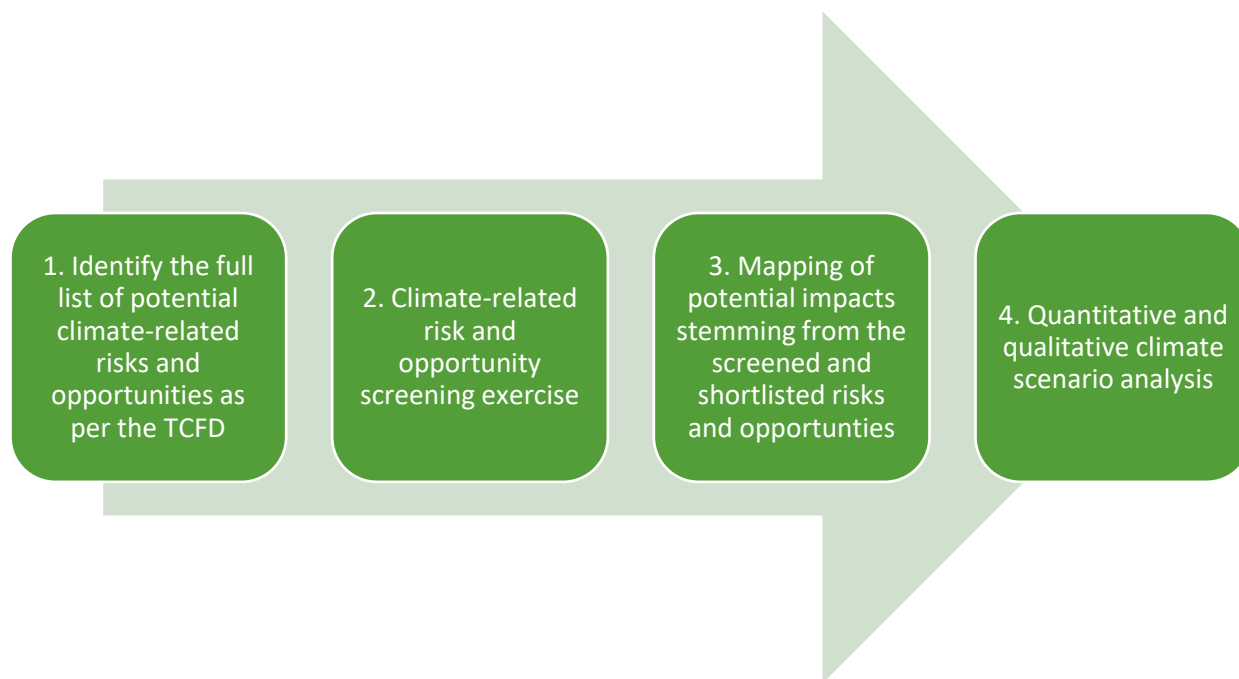
Figure 3. Climate scenarios explored



Both transition and physical risks and opportunities were considered in the screening analysis. The long list of potential climate-related risks and opportunities as per the TCFD was consulted and the shortlisted risks and opportunities mentioned in Figure 2 are further explored below.

The full process of the climate risk scenario analysis can be summarised in four steps:

Figure 4. Four steps of climate scenario analysis



The following section captures the detailing of steps one and two of the full process.

Taking into account the examples of climate-related risks from Table 1 of TCFD’s Final Recommendations Report<sup>1</sup>, to identify and understand the climate-related risks and opportunities for SBS Transit over the specific time horizons in two climate scenarios, a climate-related risks and opportunity qualitative screening exercise was undertaken.

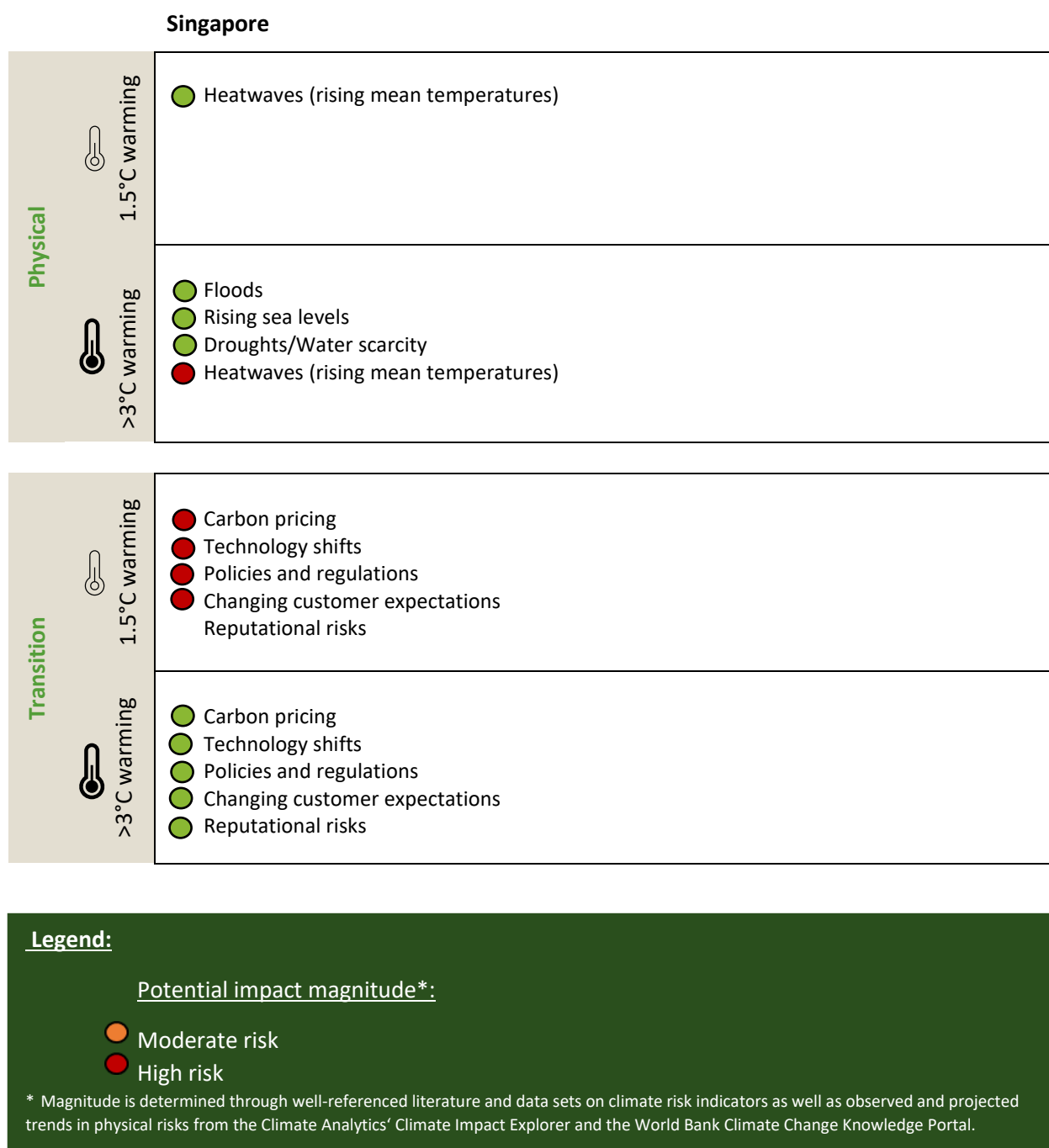
Transition risks arise from interventions associated with a transition to a low-carbon economy, such as newly introduced climate policies and regulations, low-carbon technologies, carbon pricing, or changes in consumer preferences and market sentiments.

Physical risks are those that arise from the physical impact of climate change, both chronic (impacts that happen over a period of time, such as temperature increases or rising sea level) and acute (impacts that happen as extreme events, such as floods, storms or wildfires). The results of the screening exercise are outlined in Figure 5 below, where we have identified the potential level of risk. It presents only the shortlisted climate-related risks that are likely to have a potentially moderate or high impact on our business operations and financials. Based on the research done, some of the physical and transition risks that have not been presented below (for example, storms and typhoons) were deemed to have a lower or negligible impact on SBS Transit’s operations within the specific time horizons and climate scenarios looked at.

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<sup>1</sup> Recommendations of the Task Force on Climate-related Financial Disclosures.  
<https://www.tcfhub.org/Downloads/pdfs/E08%20-%20Table%201%20&%202.pdf>

Figure 5. Climate-related risk screening results



The screening exercise references available, appropriate and credible literature such as the International Energy Agency (IEA) World Energy Outlook<sup>2</sup>, Climate Analytics' Climate Impact Explorer<sup>3</sup> and the Network for Greening the Financial System<sup>4</sup> (NGFS), as well as the latest understanding of climate science from the Intergovernmental Panel on Climate Change's Sixth Assessment Report (IPCC AR6)<sup>5</sup>.

<sup>2</sup> IEA, 2022, World Energy Outlook 2022. <https://www.iea.org/reports/world-energy-outlook-2022>

<sup>3</sup> Climate Analytics, Climate Impact Explorer. <https://climate-impact-explorer.climateanalytics.org/>

<sup>4</sup> NGFS, Scenarios Portal. <https://www.ngfs.net/ngfs-scenarios-portal/>

<sup>5</sup> Intergovernmental Panel on Climate Change, Sixth Assessment Report, 2022. <https://www.ipcc.ch/assessment-report/ar6/>

After the climate-related risks and opportunities were derived and shortlisted from the screening exercise, they were explored in more detail and the associated business and financial impacts were mapped to the relevant risks and opportunities. For the risks and opportunities that had available and credible data, their potential impacts were quantified (steps three and four). These steps are further explored in the next section. The results from the scenario analysis subsequently aided in the formulation of action plans and responses to guide our climate-related strategies.

## **b) Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy and financial planning**

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From the climate screening exercise and climate scenario analysis, the various climate-related impacts on SBS Transit's business, strategy and financial planning were identified. Physical risks such as heatwaves (rising mean temperatures) and floods would potentially result in higher operational costs and business interruptions, which would adversely affect SBS Transit's revenue. Similarly, transition risks may result in additional financial costs if left unmitigated.



The following table summarises the climate-related risks and opportunities that are pertinent to us. It highlights the potential extent of the financial impacts and anticipated results of the physical and transition risks and opportunities identified from the climate screening and climate scenario analysis. The identified potential financial implications and opportunities to SBS Transit will also be subsequently quantified comprehensively in the climate scenario analysis. Certain risks and opportunities were not quantified, due to a lack of supporting data and necessary information. This report presents further insights on and analysis of the climate-related risks and opportunities that have been quantified with current and more comprehensive supporting data and information.

Risks and opportunities that have been qualitatively explored will be kept in SBS Transit's purview and explored further as data and information become readily available.

Figure 6 below focuses on the risks identified, while the following section and Figure 7 focuses on the opportunities.

For further details, please refer to the Risk Management section.

Figure 6. Identified climate-related risks and the accompanying potential business impacts

Type	Climate-related risks	Potential impacts <sup>6</sup>
Physical	<b>Acute</b> <ul style="list-style-type: none"> <li>Heatwaves (rising mean temperatures)</li> <li>Floods</li> </ul>	<b>Quantified impacts</b>  <ul style="list-style-type: none"> <li>Additional financial costs due to lower productivity from heat-related illnesses</li> <li>Additional business interruption costs due to flash floods</li> <li>Additional operational costs due to flash floods</li> <li>Additional electricity costs for cooling</li> </ul> <b>Qualitatively explored impacts</b>  <ul style="list-style-type: none"> <li>Liquidation damages if service-level agreements with clients not met due to disruption</li> <li>Increased need for business continuity planning</li> <li>Higher insurance costs for buildings due to physical climate risks</li> <li>Higher repair and maintenance costs due to damage from floods</li> <li>Reputational risks if risks are not handled properly</li> </ul>
	<b>Chronic</b> <ul style="list-style-type: none"> <li>Rising sea levels</li> <li>Droughts/ Water scarcity</li> </ul>	

<sup>6</sup> Taking into account the amount of current data and information available, only some potential impacts were further qualitatively explored or quantified as they were deemed the most relevant to SBS Transit’s business.









<b>Transition</b>	<p>Policies and regulations</p> <ul style="list-style-type: none"> <li>• Achieve carbon neutrality by a given date set by the local government</li> <li>• Services that boost contribution to low-carbon economy can unleash investment demand <ul style="list-style-type: none"> <li>•</li> </ul> </li> </ul>	<p><b><u>Qualitatively explored impacts</u></b> </p> <ul style="list-style-type: none"> <li>• Penalties for not transitioning to low-carbon operations</li> <li>• Increased costs of energy and fuel due to low-carbon emission regulations</li> <li>• Regulatory and reputational pressures if not aligned with country trends</li> <li>• Low carbon transition investment opportunities</li> </ul>
	<p>Carbon pricing</p> <ul style="list-style-type: none"> <li>• If a facility's emissions subsequently exceed its allowances, it must either pay a carbon tax or buy more allowances from an exchange</li> <li>• Carbon prices are expected to increase over the years <ul style="list-style-type: none"> <li>•</li> </ul> </li> </ul>	<p><b><u>Quantified impacts</u></b> </p> <ul style="list-style-type: none"> <li>• Higher operational costs due to energy/fuel price increases from carbon pricing (this impact has been explored quantitatively as an indirect risk impact)</li> </ul> <p><b><u>Qualitatively explored impacts</u></b> </p> <ul style="list-style-type: none"> <li>• Increased expenses to purchase carbon allowances</li> <li>• Higher maintenance costs</li> <li>• Higher costs of services</li> </ul>
	<p>Changing customer expectations</p> <ul style="list-style-type: none"> <li>• Shift in consumer preference to low-carbon vehicle options</li> </ul> <p>Increasing pressure to enable affordability of low-carbon vehicle services</p>	<p><b><u>Qualitatively explored impacts</u></b> </p> <ul style="list-style-type: none"> <li>• Market capture can decrease if preferences are not addressed; similarly market capture can increase if affordable and efficient solutions to customer preferences are addressed</li> <li>• Competitive advantage can be established</li> </ul>
	<p>Technology shifts</p> <ul style="list-style-type: none"> <li>• Changing technologies to address climate related impacts</li> <li>• Transition to low-carbon transport (electric and hybrid vehicles) and alternative fuels (hydrogen)</li> <li>• Infrastructure changes to accommodate the technological shifts in transport</li> <li>• Changing technology to handle electric vehicle charging and deployment fleet</li> </ul>	<p><b><u>Qualitatively explored impacts</u></b> </p> <ul style="list-style-type: none"> <li>• Capital expenses to adopt changing technologies, including upskilling</li> <li>• Reputational advantages for timely or early uptake of technology</li> </ul>

Figure 7. Climate-related opportunities identified and accompanying potential impacts

Type	Climate-related opportunities	Potential impacts
Physical	<ul style="list-style-type: none"> <li>Acute and chronic climate physical risks</li> </ul>	<p><b><u>Qualitatively explored impacts</u></b> </p> <ul style="list-style-type: none"> <li>Reputational advantages from being a reliable transport operator</li> <li>Increase in ridership due to bad weather conditions</li> </ul>
	<p>Policy and regulations</p> <ul style="list-style-type: none"> <li>Transition towards a cleaner fleet</li> <li>Moving towards a low-carbon economy</li> </ul>	<p><b><u>Qualitatively explored impacts</u></b> </p> <ul style="list-style-type: none"> <li>Policy incentives on transport decarbonisation, including subsidies and infrastructure support</li> <li>Demand growth for electric vehicles or fleet</li> </ul>
Transition	<p>Markets</p> <ul style="list-style-type: none"> <li>Changing customer expectations</li> <li>Access to new market</li> <li>Use of public-sector incentives</li> <li>Access to new assets and locations</li> </ul>	<p><b><u>Qualitatively explored impacts</u></b> </p> <ul style="list-style-type: none"> <li>Increased revenue through expansion of services to meet changing customer needs and expectations</li> </ul>

### **c) Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario**

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Based on the mapped risks, we were able to perform a more detailed quantitative climate scenario analysis to identify the potential financial exposure to climate-related risks and opportunities and strengthen our understanding of the expected financial impacts to our business as well as our business' resilience to the identified risks (Step four in Figure 4). It must be noted that the analysis' results for physical risks were determined on the assumption that no action was undertaken by SBS Transit to mitigate and adapt to the pertinent climate risks. The results also do not differentiate between business units.

To assess the extent of financial impact of physical climate risks to our business, the scenario analysis modelled how vulnerable our assets are to extreme weather conditions.

This exercise allows SBS Transit to assess the resilience of our existing decarbonisation strategy, determining additional areas that require improvement to mitigate future risks. Additional resilience measures will be further evaluated and may be implemented according to the relevance and magnitude of risks.

Overall, in the assessment of both physical and transition risks, it was determined that some risks apply directly to SBS Transit as 'first-order' risks, which are expected to have a direct and material impact on the business. For example, physical risks such as floods can cause damage to our property. On the other hand, 'second-order' risks have a more indirect impact and are experienced by SBS Transit through cost pass-through. For example, SBS Transit does not experience direct implications of carbon taxes. Due to the nature of our operations, however, the indirect impact of increasing carbon taxes may be felt as the electricity prices continue to rise in the future. As carbon taxes do not directly affect SBS Transit currently and remain as a second-order risk, the transition risk of rising carbon prices is excluded from the overall direct financial impact diagram below (Figure 8). However, as this risk is relevant when talking about transitioning to a lower carbon economy, it is explored separately under a 'what if' scenario in the Transition Risks section below.

Through the scenario analysis, we can conclude that unmitigated climate risks result in potential additional financial impact for the respective year.

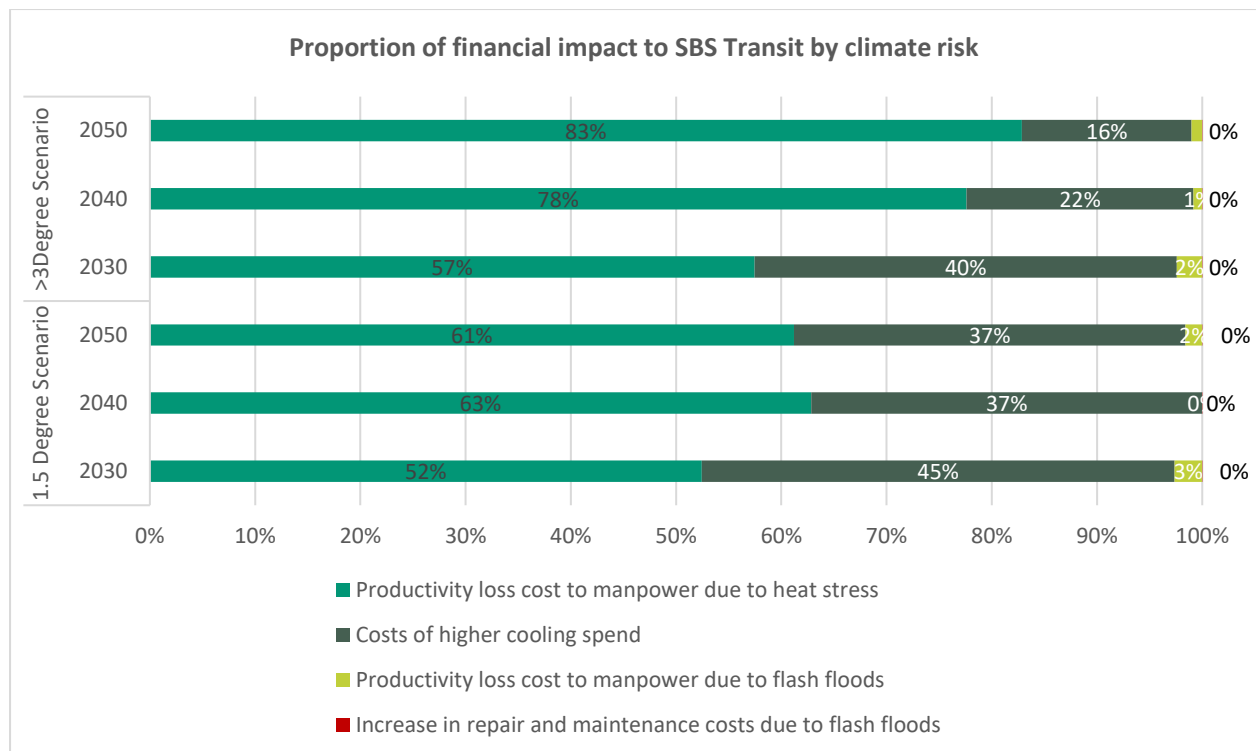
Among the quantified physical risks, costs of higher spending on cooling due to rising temperatures appears to be the most significant<sup>7</sup> first-order risk in terms of potential additional financial impact in all timeframes and scenarios.

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<sup>7</sup> Risk impacts estimated based on our current inputs are considered to be majorly financially material if the financial impact is >5% of SBS Transit's 3-year average EBITDA (FY2020, 2021 and 2022).



Figure 8. Proportion of additional financial impact by climate risk <sup>8 9</sup>



Nevertheless, transition risks are still considered to be impactful. While potential carbon prices in the form of carbon taxes presently remain a second-order risk to SBS Transit, they may account for a large proportion of the additional financial costs in future. The impact from carbon tax has been modelled on a ‘what if’ scenario basis, i.e. if carbon taxes were applicable to SBS Transit, the potential impact was quantified. If left unmitigated, carbon taxes would approximately account for 47 to 61% and 23 to 31% of SBS Transit’s total financial impact caused by climate-related risk under the 1.5°C and >3°C scenarios respectively (further details on the carbon tax transition ‘what if’ scenario can be found in the Transition Risks section below).

### Physical Risks

#### *Higher mean temperatures and more frequent/intense heatwaves*

In both scenarios, rising mean temperatures and more frequent heatwaves pose the highest risk to SBS Transit. The two main observable impacts are heat-related illnesses that would affect the labour productivity of SBS Transit’s workforce, especially those exposed to natural elements in their scope of work. Second, higher cooling demand is expected, resulting in additional electricity consumption costs from increased usage of air-conditioning and cooling systems. Both of these lead to additional cooling costs for SBS Transit.

<sup>8</sup> Impact from carbon costs is not considered in the total additional financial impacts as it is an indirect impact and is explored separately. The total financial impact thus consists of the physical risk impacts only.

<sup>9</sup> This study **estimates the annual additional and proportionate financial impacts for a single year** and does not model the rate of change of impacts across 2022 and 2050 (i.e., impacts are not cumulative). Therefore, should a physical climate risk event occur, the impact would be larger. Refer to appendix 2 for more information.

The effects on labour productivity due to heat-related illnesses is expected to be most pronounced in the >3°C scenario under the 2050-time horizon. Under such a scenario, a 15% increase in annual operational costs is projected to account for the loss in productivity.

On the additional cooling costs due to higher temperatures, under both the 1.5°C and >3°C scenarios, SBS Transit expects additional electricity costs for cooling to increase over time, with financial costs being the most pronounced in the >3°C scenario when compared to the 1.5°C scenario. Additional electricity costs for cooling are also expected to be the highest in the long-term timeframe of 2050 in the >3°C scenario, translating to an approximate 33% increase from baseline electricity costs.

#### *More frequent or intense floods (flash floods) and rising sea levels*

Similarly, the financial impact of flash floods on SBS Transit is expected to be two-pronged. With flash floods being a likely phenomenon in Singapore, operations of public transportation may be affected due to the occurrences of such floods. Additionally, repair and maintenance costs may increase due to flooding.

Financial loss from heavy rainfall and flood events is expected to be significant in the >3°C scenario, in which business interruption costs are estimated to increase between 27 to 55% over the short-term horizon of 2030 to the long-term horizon of 2050.

On the other hand, the expected damage of flash floods on SBS Transit's overall repair and maintenance costs is deemed to be immaterial to low. The impact of flash floods is expected to be low overall, as the change in flood risk is expected to remain fairly low over the time horizons, and hence are not considered to have large implications. In the 1.5°C scenario, the costs of damage on SBS Transit's fleet and engines are expected to remain relatively constant over all three timeframes. Conversely, in the >3°C scenario, the financial costs SBS Transit can expect to incur increases in over time are higher because flash flooding is expected to worsen. Flash floods are projected to account only for a small fraction of financial costs for SBS Transit at present as the calculation is based on the estimated annual increment and proportional financial impact expected in a single year. Should the physical climate risk event occur, the impact would be larger. Furthermore, it can be expected that the frequency and severity of occurrence<sup>10</sup> are likely to worsen if climate change remains unmitigated. Not only do heavy rainfall and flooding impede various modes of transport, but they may also cause damage to property and even result in power outages. As such, their potential to significantly disrupt SBS Transit's business operations may change in future.

#### *Resilience measures*

Undergoing and conducting a climate scenario analysis serves as the first step to strengthen our understanding of the risks our operations face. In light of the climate-related risks that our business can expect to face in future years, SBS Transit strives to effectively manage, mitigate and adapt to these physical climate risks. We have established requisite frameworks, standard operating procedures and Business Continuity Plans (BCPs) in preparation for any potential business disruptions such as flash flood risks and higher mean temperatures.

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<sup>10</sup> Based on the [IPCC AR6 WG1](#), Coupled Model Intercomparison Project (CMIP) 5 model simulations, a framework for evaluating future projections of climate change, show that the frequency for present-day climate 20-year extreme precipitation is projected to increase by 10% at the 1.5°C global warming level and by 22% at the 2.0°C global warming level, while the increase in frequency for present-day climate 100-year extreme precipitation is projected to increase by 20% and more than 45% at the 1.5°C and 2.0°C warming levels, respectively. CMIP 6 simulations with SSP scenarios show that the frequency of 10- and 50-year events will approximately double and triple, respectively, at a very high warming level of 4°C.

Our BCPs seek to mitigate the risks of disruption and catastrophic loss to our operations, people, information databases and other assets. These plans include identifying and planning alternative recovery centres, operational procedures to maintain communication, measures to ensure continuity of critical business functions, protection of our employees and customers, and recovery of information databases. We update and test our BCPs regularly to ensure the efficacy of the plan and familiarise our employees with drill and emergency responses to potential climate-related threats and hazards. In doing so, SBS Transit hopes to enhance the Group's operational readiness and resilience to potential business disruptions.

To mitigate non-controllable environmental risks, such as flooding and road cracks due to heat expansion, we can work closely with the Land Transport Authority (LTA) on preventative measures.

### **Transition Risks**

#### *Policies and regulations moving towards a low-carbon economy*

Increased carbon costs are an impactful second-order risk for SBS Transit. While SBS Transit does not experience direct implications of carbon costs due to the nature of our operations (we are not a major consumer of energy nor do we emit >25,000 mt of CO<sub>2</sub>e), the additional indirect impact of increasing carbon prices may be felt as electricity prices continue to rise in the future. A carbon reduction plan thus assists in reducing the impact felt from carbon pricing.

In alignment with LTA's bus fleet replacement plan, all buses will use cleaner energy by 2040, with half of the total fleet being electric buses by 2030. Forming the basis of our carbon reduction targets, our emissions reduction pathway of the transition plan was also aligned with the Science Based Target Initiative (SBTi) 1.5 °C scenario pursued by our parent company, ComfortDelGro, which was validated and approved by SBTi in June 2022.

We also set carbon emissions targets which are consistent with reductions necessary to limit global warming to 1.5°C above preindustrial levels, aligning with the goal of the Paris Agreement. Further details can be found in our Metrics and Targets section.

#### *Carbon pricing*

Taking our transition plan into consideration, a 'what if' scenario was applied for SBS Transit in our climate scenario analysis. The 'what if' scenario models the financial implications for SBS Transit if SBS Transit was affected by the carbon pricing scheme, providing a financial quantification of the additional impact of carbon pricing. Under this 'what if' scenario, a comparison between an 'unmitigated' option (i.e. no carbon reduction plan, business as usual, no mitigation measures) and a 'mitigated' option (i.e. considering SBS Transit's current plan to reduce carbon, mitigation measures applied) was presented.

Overall, for both the 1.5°C and >3°C scenarios, the additional costs incurred in the mitigated scenario are projected to be significantly lower than the additional costs in the unmitigated scenario across all three timeframes. For the mitigated scenario, SBS Transit estimates additional financial carbon costs increases to be 24.6% to 46.4% lower than the costs in an unmitigated scenario. This stems from lower projected Scope 1 and 2 emissions over the 2030, 2040 and 2050 timeframes when decarbonisation plans are in place. This highlights the importance and benefits of planning and implementing decarbonisation strategies and solutions aimed at reducing SBS Transit's overall emissions, demonstrating our resilience to the second-order transition risk of increased carbon costs.

## **Transition Opportunities**

Based on the climate scenario analysis conducted, we identified two key business opportunities arising from the increased focus on the changing climate. Opportunities most pertinent to SBS Transit's operations in this regard are the transition towards a cleaner fleet and changing customer expectations.

### *Transition towards a cleaner fleet*

As part of the Land Transport Master Plan 2040 (LTMP 2040), LTA is committed to reduce the carbon footprint of public transport. This means a 100% cleaner energy public bus fleet by 2040, comprising alternatives such as hybrid or electric vehicles.

While the costs and necessary infrastructure of moving to a 100% cleaner energy fleet will be borne by LTA, SBS Transit will need to be prepared to make changes in its planning to adapt and optimise operations as the proportion of electric buses increase.

Electric buses currently constitute 0.86% of SBS Transit's fleet. As such, there is significant scope for SBS Transit to move towards a cleaner energy fleet as we work closely with the LTA. On plan, we expect half of the fleet to run on cleaner energy by 2030 and 100% by 2040. We are adjusting our operations planning and maintenance to ensure our readiness in supporting the gradual fleet transition.

With the transition to electric fleet it is expected that electric buses are likely to become the most cost-effective option by 2030. Furthermore, based on the International Trade Administration, electric bus fleets in Singapore were found to have 50% less emission than diesel buses, and have up to 50% fuel cost savings per kilometre. The typical cost of lithium-ion batteries used in EVs has also dropped by 89% between 2010 and 2020, and are expected to continue to fall, with the cost per kilowatt hour (kWh) decreasing from \$137 in 2020 to \$58 by 2030. While there may be limited data to quantify the equivalent savings in SBS Transit's operating context, we anticipate long-term reduction in emissions and cost savings from the transition towards a cleaner fleet.

### *Changing customer expectations*

With the government's push towards a car-lite Singapore and a long-term vision towards an improved transport network that is convenient, well-connected and fast, there has been a corresponding shift in customer expectations.

The LTMP 2040 aims to improve connectivity across the island for all residents by creating 20-minute towns and a 45-minute city journeys.

Surveys<sup>11</sup> have shown that car ownership rates have fallen in Singapore, with a 30% fall in car ownership rates among youths aged 25 to 34 from 2013 to 2019. This is echoed by research that shows private cars' total mobility share is expected to decline by 2035. This suggests that residents are embracing other forms of transport, including private hire vehicles and public transportation. Hence, there is significant room for public transport operators to ensure the availability of good car-lite transport options as alternatives.

These findings suggest that a reliable public transport system and network is key to supporting the needs of commuters in Singapore. As part of the efforts, mass public transport modal share is expected

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<sup>11</sup> Green Commuting among Youths, conducted by LTA in March 2022. <https://knowledge.csc.gov.sg/ethos-issue-24/green-transport-in-singapore-public-attitudes-intention-and-actions>

to increase to 75% by 2030. While average public transport daily ridership numbers have fallen since 2020 due to the pandemic, it has been steadily increasing ever since, and SBS Transit is planning our business strategy around potential growth in ridership/demand in public transport services, in alignment with the LTMP 2040.

With measures and initiatives being introduced to reduce carbon footprint by encouraging residents to walk, cycle or take public transport, SBS Transit's is also aligned with these national ambitions. Lastly, to improve connectivity island wide, SBS Transit is working with the LTA to expand its bus and rail services to promote the use of public transport.

#### *Strategies for transition risks and opportunities*

Through the climate scenario analysis, SBS Transit has a better understanding of the transition opportunities that are present and that they can capitalise on in the future to adapt to and mitigate climate-related impacts. Going forward, all the information derived will aid us in refining our business strategies and decisions to ensure the resilience of our strategies.

### 3. Risk Management

*This section provides details on how SBS Transit identifies, assesses and manages climate-related risks.*

#### **a) Describe the organisation's processes for identifying and assessing climate-related risks**

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The climate risk screening and scenario analysis undertaken sought to identify and assess the most pertinent physical (chronic and acute) and transition climate risks applicable to SBS Transit's operations. This helps to reduce the uncertainty associated with executing our business operations as well as mitigate potential adverse impacts on our businesses. The climate risk screening and scenario analysis were performed at country-level.

The risk screening involves assessing SBS Transit's operations, identifying the material climate risks and opportunities in our operational location (Singapore) and determining what first- and second-order risks apply to SBS Transit. This enables us to pinpoint the quantifiable risks and determine the assumptions necessary for the scenario analysis.

SBS Transit performs our climate scenario analysis on first-order risks. Our modelling approach for each physical and transition risk considers risk factors within our operational scope, available financial data for SBS Transit and other scientific research and information available to quantify the potential financial costs SBS Transit can expect to incur.

In our most recent climate scenario analysis, the risks quantified - flash floods and heatwaves/high temperatures, were also aligned across the entities at the Group-level. Other risks, such as storms, were deemed to be less material and were not quantified to avoid double counting, given that their impact is already accounted for in the quantification of flash flood risks.

In modelling the impact of higher mean temperatures on our operations, we considered factors such as the higher cooling demand, the projected electricity prices and the assumed percentage of electricity for cooling to calculate the additional electricity costs for cooling that SBS Transit can potentially expect to experience.

With regards to flash floods, we took into account factors such as annual estimated gross domestic product (GDP) loss caused by flash floods and the increase in likelihood and severity of flash floods to model the revenue loss under each time horizon and scenario.

Whilst SBS Transit does not experience the direct implications of carbon costs due to the nature of our operations, the indirect impact of increasing carbon prices may be felt as electricity prices continue to rise in the future. The mitigation of carbon through a carbon reduction plan may therefore assist in reducing the impact felt from carbon pricing. In order to understand the importance of reducing carbon emissions from a business case, a 'what if' scenario was applied. The 'what if' scenario models the financial implications for SBS Transit if SBS Transit was affected by the carbon pricing scheme. This allows for a financial quantification of the impact of a carbon reduction plan.

Under this 'what if' scenario, SBS Transit's current carbon emissions, decarbonisation plan and key assumptions were factored in to derive the expenses relating to carbon pricing. Subsequently, a comparison between an 'unmitigated' option (i.e. no carbon reduction plan, business as usual, no mitigation measures) and a 'mitigated' option (SBS Transit's current plan to reduce carbon, mitigation measures applied) was made. In doing so, the importance and benefits of planning and implementing decarbonisation strategies and solutions aimed at reducing SBS Transit's overall emissions were highlighted.

The significance of the climate-related risks and impacts, as informed by the climate scenario analysis, is outlined in the Strategy section.

## **b) Describe the organisation's processes for managing climate-related risks**

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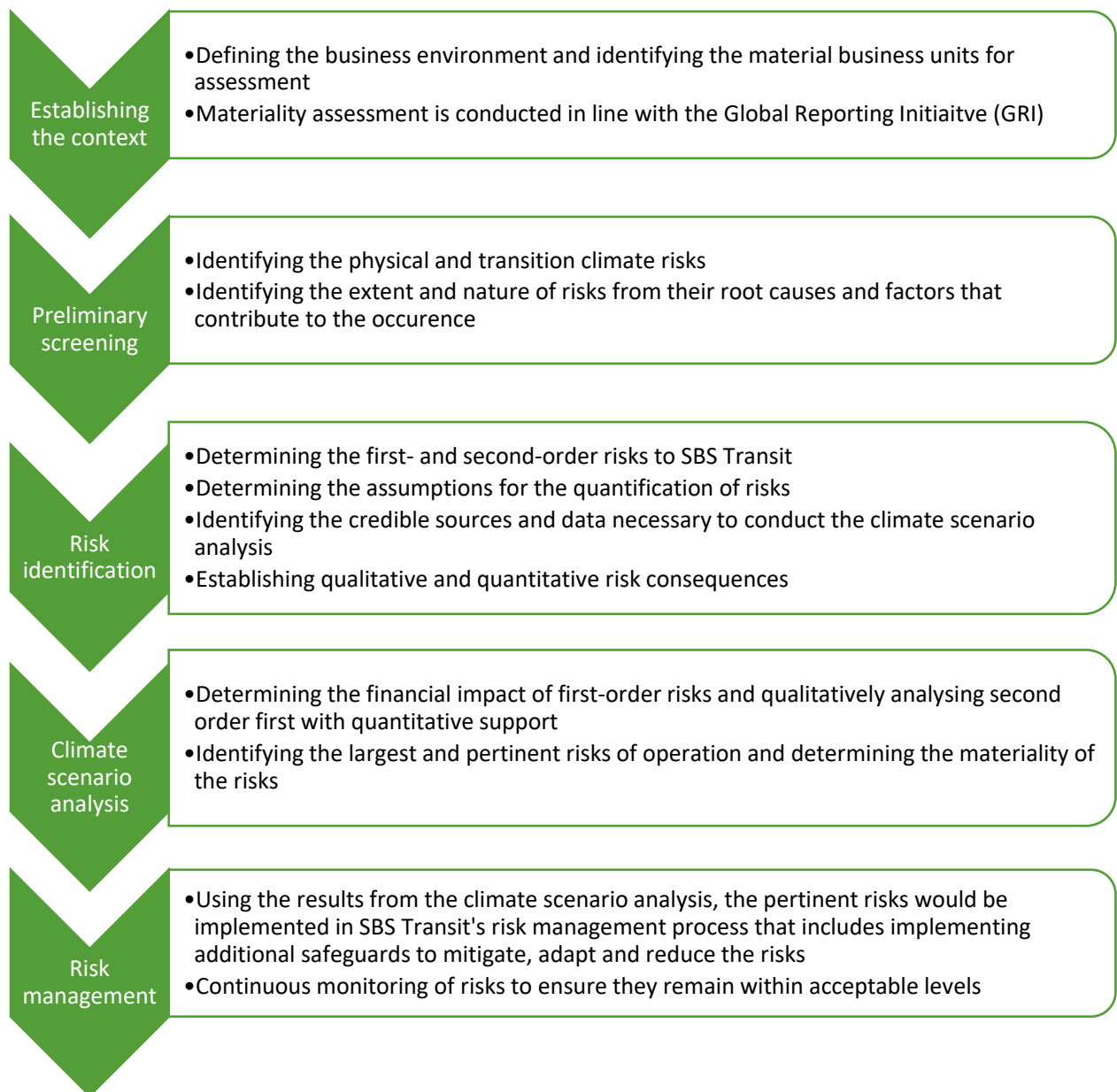
The potential financial impacts arising from physical and transition risks are identified during the screening exercise and further refined in the scenario analysis. We also identified the potential opportunities which SBS Transit can capitalise on.

The various possible climate outcomes enable SBS Transit to adapt and develop our business strategy and operations accordingly to manage climate-related impacts. This pertains to both risks and opportunities that may arise from climate-related changes. From here, we utilise these results to refine our overarching business strategy as well as integrate them into our Business Unit's operational strategies to promote economic growth and enhance sustainability.

Our SC is responsible for maintaining oversight of SBS Transit's sustainability ambitions, strategies and performance, including the management of climate-related risks and opportunities. The SC conducts quarterly meetings to address ESG matters within the organisation and convenes on an ad hoc basis during important periods and as and when required.

Likewise, SBS Transit's senior management works closely with our SC and regularly keeps track of key sustainability issues and performance. Regular meetings between the SC and senior management are held to identify, analyse and review important ESG issues, and deploy appropriate responses required to address any gaps for improvement. Additionally, the SC aids in the rollout of ESG initiatives aimed at managing climate-related impacts.

Figure 9. Process for identifying and managing climate risks





**c) Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organisation's overall risk management**

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SBS Transit's risk management framework outlines a systematic process for the business to identify, assess and manage risks proactively. The risk management process is a continuous and iterative one. Risk management practices are reviewed and updated regularly to manage and monitor risks proactively.

The R&S SC works closely with all Businesses to ensure that risk management is taken seriously, and that the Risk Management Framework is diligently implemented across the group. The Group CEO chairs this Steering Committee, and members are drawn from major Businesses/Department Heads. Key risks for the Group, including ESG-related risks, are identified and presented to the Audit and Risk Committee and the Board at half-yearly intervals.

SBS Transit is committed to being a socially responsible organisation through minimising the impact our business activities have on the environment. Our operations, accidents and natural events can result in pollution or other environmental risks. To manage the likelihood and impact of these risks, we put in place active environmental risk management, ensuring that all risk factors are addressed with the preventive measures put in place. These risks are reviewed on a regular basis to ensure that the controls in place are functioning as intended.

## 4. Metrics and Targets

*This section outlines the metrics and targets used to assess and manage climate-related risks and opportunities relevant to SBS Transit, where such information is material.*

### **a) Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.**

SBS Transit is committed to progress and performance in ESG-related metrics. Based on our material topics, we have established these key metrics (not limited to): emission intensity, fuel consumption, energy intensity, waste directed to disposal and water intensity. More details can be found in Appendix 1 as well as in our Sustainability Report 2022.

SBS Transit not only reports on these metrics for the year in review, but also includes historical data to provide insights into the performance trends over time. Environmental data for our operations is prepared in accordance with the GRI and Sustainability Accounting Standards Board's (SASB) disclosure standards.

As SBS Transit undertakes our scenario analysis and integrates climate-related risks and opportunities into our operations, we will continue to adopt relevant climate-related metrics, including those that may not yet be included in our reporting.

### **b) Scope 1, Scope 2 and, if appropriate, Scope 3 GHG emissions, and the related risks**

SBS Transit calculates our emissions according to the GHG Protocol Corporate Standard. In 2022, we underwent a detailed review of our GHG Inventory and included a more robust assessment of our Scope 3 emissions.

Emissions (tCO2e)	FY 2019	FY 2021	FY 2022
Direct (Scope 1) GHG Emissions	374,171	380,194	381,690
Indirect (Scope 2) GHG Emissions	165,932	173,334	167,439
Scope 3 GHG Emissions	NA <sup>12</sup>	238,955	216,374

<sup>12</sup> SBS Transit only started calculating its Scope 3 GHG emissions in 2021.

Scope 3 Category	Screened or Calculated	Total Emissions (tCO2e)
Category 1: Purchased goods & services	Calculated	53,693
Category 2: Capital goods	Calculated	3,394
Category 3: Fuel- and energy-related activities not included in Scope 1 and Scope 2	Calculated	134,663
Category 4: Upstream transport and distribution	Screened	743
Category 5: Waste generated in operations	Calculated	0
Category 6: Business travel	Screened	303
Category 7: Employee commute	Screened	14,641
Category 8: Upstream leased assets	Screened	2,436
Category 12: End-of-life treatment of sold products	Calculated	34.68
Category 13: Downstream leased assets	Screened	6,463

For more details on our GHG emissions performance, please refer to our FY2022 Sustainability Report (page 32).

As governments around the world make greater efforts to decarbonise their economies, potential risks related to GHG emissions could adversely affect SBS Transit's operations. These risks will include stricter requirements aimed at reducing diesel and petrol use, regulations that limit emissions, volatile fuel and energy costs associated with operations, and difficulties in accurate calculations of Scope 3 emissions.

**c) Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets**

SBS Transit has established targets for each of our key material topics. The key targets relating to climate-related risks and opportunities are focused primarily on our emissions reduction as validated by the SBTi. Further information on these targets can be found in our FY2022 Sustainability Report (page 18).

SBS Transit aims to drive environmental stewardship to enhance sustainability in Singapore, reinforce our social responsibilities to our customers, employees and communities, and ensure ethical business and strong governance practices.

## Conclusion and Next Steps

SBS Transit remains committed to assessing climate risks and opportunities relevant to the organisation, whilst identifying and taking mitigation steps to manage climate-related impacts, outcomes and affiliated technological, market and policy responses. As we continue to mature in our TCFD reporting journey, we recognise that additional efforts are required to adapt, mitigate and respond to prevailing climate risks and opportunities.

In this inaugural TCFD report, the screening exercise and detailed scenario analysis undertaken considered two climate scenarios alongside both physical and transition risks and opportunities relevant to SBS Transit's operations. The results derived from the screening exercise and climate scenario analysis provided us with a more granular assessment and insight into the material risks and opportunities presented by climate change. Going forward, SBS Transit will utilise the information gathered to enhance our organisation governance, strategy and risk management practices. A core component of our sustainability strategy lies in monitoring our established environmental metrics and ensuring that we are faring well in our progress to achieve our short-, medium-, and long-term targets.

Moving forward, we aim to continually strengthen our TCFD reporting and align with market practices, regulatory requirements and industry reporting practices. This includes working closely with our Business Units to understand their perception of the climate risks and opportunities to strengthen the organisation's mitigation and adaptation strategies. This would also entail exploring additional metrics and targets related to climate risks, such as remuneration considerations, capitalising on climate-related opportunities, and physical risk indicators. As the global economy transitions towards more sustainable options as greener transportation technology develops, SBS Transit strives to leverage these opportunities. Additionally, when data becomes more readily available, we aim to improve and expand on our financial inputs for the quantification of our climate risks and opportunities in our climate scenario analysis.

## Appendix

### Methodology, assumptions and limitations

Subject	Methodology, assumptions and limitation
<b>Additional financial impact</b>	Additional financial impact represents the additional effects from the baseline impacts of climate-related risks and is analysed to understand the increasing effects of climate-related risks.
<b>Financial items growth and environmental data changes</b>	<p>The study is aiming to show the isolated effect of climate change on ComfortDelGro's financials. Thus, no growth rate or inflation rate are factored in the results.</p> <p>For the same reason, environment data such as energy and emissions has also been assumed to be constant in the three future time horizons (as compared to 2022).</p>
<b>Macroeconomic impacts</b>	Macroeconomic effects of climate change such as changes to consumers demand pattern, transportation patterns or distribution of income and industry costs are not quantified in this study, given the high uncertainty of the magnitude and timing of these effects.
<b>Legal, reputational risks and contingent liabilities</b>	These types of risks are mostly intangible and challenging to quantify with reasonable confidence at this point of time.
<b>Scenario analysis</b>	<p>A scenario analysis describes a path of development leading to a particular outcome. As per the TCFD, scenarios are not intended to represent a full description of the future, but rather to highlight central elements of a possible future and to draw attention to the key factors that will drive future developments.</p> <p>As per the TCFD, scenarios are hypothetical constructs, not forecasts, predictions or sensitivity analyses. A key feature of scenarios is that they should challenge conventional wisdom about the future. In a world of uncertainty, scenarios are intended to explore alternatives that may significantly alter the basis for "business-as-usual" assumptions.</p> <p><b>Key features of a scenario analysis:</b></p> <ul style="list-style-type: none"> <li>• Parameters or assumptions, such as carbon price, energy demand and mix, technology, policy etc.</li> <li>• Analytical choices, such as the scenarios used, timing, quantitative or qualitative, scope of applications, data set and model etc.</li> <li>• Business impacts such as costs, revenues, assets, responses, business interruption due to physical impacts etc.</li> </ul> <p><b>Sources and literature used:</b></p> <ul style="list-style-type: none"> <li>• The sources used as inputs in the scenario analysis include but are not limited to following recognised sources:</li> <li>• The NGFS &amp; Climate Impact Explorer</li> <li>• The IEA World Energy Outlook</li> <li>• The IPCC AR6 Report</li> <li>• The World Bank Climate Change Knowledge Portal</li> <li>• Other country specific sources and academic studies</li> </ul>

<p><b>Data</b></p>	<ol style="list-style-type: none"> <li>1. The area of climate scenario analysis including the associated modelling is still evolving. Therefore, it is important that the uncertainties and limitations associated with climate scenario analysis are understood to ensure that the results are interpreted and used appropriately.</li> <li>2. The data used for scenario analysis such as company-level emissions, business activity and transition plans, as well as government intervention measures, are subject to limited availability or reporting inconsistencies. Hence all use of these sources is subject to interpretation relating to their associated climate-related impacts.</li> <li>3. Data limitations relating to the expense of different business units, restrict the ability to scale up the analysis, for example emissions, energy and land use data required for climate stress-testing are scarce. The resulting bias towards the larger group may have implications on the portfolio extrapolation.</li> </ol>
<p><b>Methodology</b></p>	<ol style="list-style-type: none"> <li>1. To account for the long-term build-up of climate impacts, climate scenario analysis extends to a time horizon of 30 years, which is much longer than in traditional stress tests, as well as a typical business planning horizon. This introduces a higher degree of complexity and uncertainty from potential changes in the pace of technology advancement, geopolitical and demographic shifts and occurrence of climate tipping points. In addition, credit rating and natural catastrophe models are calibrated to forecast over the short term and not over the decades-long time horizon required for climate scenario analysis.</li> <li>2. Scenario analysis does not capture potential non-linearities and some indirect impacts, such as losses borne by insurance companies and costs of adaptation measures introduced to limit losses. This may therefore understate the climate exposure and vulnerabilities. For example, the assessment of business interruption due to extreme climate events does not capture the potential costs associated with repair and maintenance, business continuity planning activation and any reputational impact related to non-performance of the operations, but it purely captures the losses in revenues associated with an extreme climate event.</li> </ol>
<p><b>Granularity</b></p>	<ol style="list-style-type: none"> <li>1. Bottom-up firm level analysis requires granular data such as absolute emissions or intensity for various scope of a firm's activities, which currently varies in terms of availability, granularity, and accuracy. With the focus on climate risk scenario analysis by the industry and regulators, it is expected that continuous effort will be invested to address such limitations over the next couple of years.</li> <li>2. The climate scenarios and parameters from international think tanks and research bodies are often calibrated at levels of granularity which may not fully reflect local market dynamics and constraints.</li> </ol>

<b>Purpose and restriction on distribution and use</b>	This report, including our conclusion, has been prepared solely for the Company in accordance with the letter of engagement between us. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Company for our work or this report.
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### *Metrics Disclosed*

The metrics disclosed can be found in our FY2022 Sustainability Report.

<b>Metric</b>	<b>FY2022 Sustainability Report Page</b>
GHG Emissions (Scope 1, 2 and 3)	30
Emission intensity (tCO <sub>2</sub> e per S\$M revenue)	30
Fuel Consumption (litres and %)	29
Electricity consumption	29
Energy intensity (kWh per S\$M revenue)	29
Renewable electricity generated (kWh)	9
The proportion of diesel hybrid/electric buses	10
Waste generated (hazardous, non-hazardous)	36
Waste directed to disposal (hazardous, non-hazardous)	36
Waste diverted from disposal (hazardous, non-hazardous)	36
Water Withdrawn (by Source in Megalitres)	32
Water intensity (megalitres per S\$M revenue)	32