



Second-Party Opinion

Guangzhou Metro Group Co., Ltd.

Green Finance Framework

Evaluation Summary

Sustainalytics is of the opinion that Green Finance Framework of Guangzhou Metro Group Co., Ltd. (GZ Metro) is credible and impactful and aligns with the four core components of the Green Bond Principles 2021 and the Green Loan Principles 2021. This assessment is based on the following:



USE OF PROCEEDS The eligible categories for the use of proceeds – Low Carbon Transportation, Pollution Prevention and Control, Energy Efficiency and Renewable Energy – are aligned with those recognized by the Green Bond Principles and the Green Loan Principles. Sustainalytics considers that investments in the eligible categories will lead to positive environmental impacts and advance the UN Sustainable Development Goals, specifically SDGs 7 and 11.



PROJECT EVALUATION / SELECTION GZ Metro’s internal process for evaluating and selecting projects is managed by a Green Finance Working Group (GFWG), comprised of representatives from various departments, including Financial Management, Strategic Development, Construction Business, Chief Engineer Office and Legal Contract. The GFWG will meet biannually to select eligible projects in line with the Framework’s eligibility criteria, facilitate reporting and manage future updates. Sustainalytics considers the project selection process in line with market practice. GZ Metro’s internal environmental and social risk management systems apply to all allocation decisions made under the Framework. Sustainalytics considers these risk management systems to be adequate. This is in line with market practice.



MANAGEMENT OF PROCEEDS The process of management of proceeds is also overseen by the GFWG. The net proceeds will be deposited in the GZ Metro’s general funding account and earmarked for allocation. GZ Metro will maintain a green finance register to record and track allocation. GZ Metro intends to complete full allocation of the proceeds within two years. Pending allocation, unallocated proceeds will be held in accordance with GZ Metro’s normal liquidity management policy, in cash equivalents.



REPORTING GZ Metro intends to report on allocation and impact of proceeds in a green finance report on its website on an annual basis until full allocation. Allocation reporting will include a list of eligible projects, the amount allocated to each project, project details, examples of project financing, share of financing versus refinancing, and balance of unallocated amounts. GZ Metro is also committed to reporting on relevant impact metrics. Sustainalytics views GZ Metro’s allocation and impact reporting as aligned with market practice.

Evaluation date	September 09, 2021
Issuer Location	Guangzhou, China

Report Sections

Introduction.....	2
Sustainalytics’ Opinion	3
Appendices	8

For inquiries, contact the Sustainable Finance Solutions project team:

Charles Cassaz (Amsterdam)
 Project Manager
 charles.cassaz@sustainalytics.com
 (+31) 20 205 02 09

Flora Mile (Amsterdam)
 Project Lead

Mahesh Krishnamoorthy (Mumbai)
 Project Support

Taotao Yue (Amsterdam)
 Project Support

Patrick Jin (Shenzhen)
 Client Relations
 susfinance.apac@sustainalytics.com
 (+852) 3008 2391

Introduction

Founded in 1992, Guangzhou Metro Group Co., Ltd. (“GZ Metro” or the “Company”) is a state-owned enterprise wholly owned by the Guangzhou Municipal Government. The business scope of GZ Metro ranges from the planning and construction of new metro lines to investing in and financing railway construction, to full system operation of intercity railways and trams. The Company also engages in a range of diversified rail-related ancillary businesses including property development, resources operation and provision of professional services to external entities.

GZ Metro has developed the Guangzhou Metro Group Co., Ltd. Green Finance Framework (the “Framework”), under which it intends to issue green bonds and loans and use the proceeds to finance and refinance, in whole or in part, existing or future projects that are expected to improve the energy efficiency of GZ Metro’s activities and provide enhancements to China’s public transportation system. The Framework defines eligibility criteria in four areas:

1. Low Carbon Transportation
2. Pollution Prevention and Control
3. Energy Efficiency
4. Renewable Energy

GZ Metro engaged Sustainalytics to review the Framework dated September 2021 and provide a Second-Party Opinion on the Framework’s environmental credentials and its alignment with the Green Bond Principles 2021 (GBP)¹ and the Green Loan Principles 2021 (GLP).² The Framework will be published in a separate document.

Scope of work and limitations of Sustainalytics’ Second-Party Opinion

Sustainalytics’ Second-Party Opinion reflects Sustainalytics’ independent³ opinion on the alignment of the reviewed Framework with current market standards and the extent to which the eligible project categories are credible and impactful.

As part of the Second-Party Opinion, Sustainalytics assessed the following:

- The Framework’s alignment with the Green Bond Principles 2021, as administered by ICMA, and the Green Loan Principles 2021, as administered by LMA, APLMA and LSTA⁴;
- The credibility and anticipated positive impacts of the use of proceeds; and
- The alignment of the issuer’s sustainability strategy and performance and sustainability risk management in relation to the use of proceeds.

For the use of proceeds assessment, Sustainalytics relied on its internal taxonomy, version 1.10.1, which is informed by market practice and Sustainalytics’ expertise as an ESG research provider.

As part of this engagement, Sustainalytics held conversations with various members of GZ Metro’s management team to understand the sustainability impact of its business processes and planned use of proceeds, as well as management of proceeds and reporting aspects of the Framework. GZ Metro representatives have confirmed that: (1) they understand it is the sole responsibility of GZ Metro to ensure that the information provided is complete, accurate and up to date; (2) they have provided Sustainalytics with all relevant information, and (3) that any provided material information has been duly disclosed in a timely manner. Sustainalytics also reviewed relevant public documents and non-public information.

This document contains Sustainalytics’ opinion of the Framework and should be read in conjunction with that Framework.

¹ The Green Bond Principles are administered by the International Capital Market Association and are available at <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/>.

² The Green Loan Principles are administered by the Loan Market Association, Asia Pacific Loan Market Association and Loan Syndications and Trading Association and are available at <https://www.lsta.org/content/green-loan-principles/>

³ When operating multiple lines of business that serve a variety of client types, objective research is a cornerstone of Sustainalytics and ensuring analyst independence is paramount to producing objective, actionable research. Sustainalytics has therefore put in place a robust conflict management framework that specifically addresses the need for analyst independence, consistency of process, structural separation of commercial and research (and engagement) teams, data protection and systems separation. Last but not the least, analyst compensation is not directly tied to specific commercial outcomes. One of Sustainalytics’ hallmarks is integrity, another is transparency.

⁴ In addition to the Loan Markets Association, the GLP are also administered by the Asia Pacific Loan Market Association and the Loan Syndications and Trading Association

Any update of the present Second-Party Opinion will be conducted according to the agreed engagement conditions between Sustainalytics and GZ Metro.

Sustainalytics' Second-Party Opinion, while reflecting on the alignment of the Framework with market standards, is no guarantee of alignment nor warrants any alignment with future versions of relevant market standards. Furthermore, Sustainalytics' Second-Party Opinion addresses the anticipated impacts of eligible projects expected to be financed with bond and loan proceeds but does not measure the actual impact. The measurement and reporting of the impact achieved through projects financed under the Framework is the responsibility of the Framework owner.

In addition, the Second-Party Opinion opines on the potential allocation of proceeds but does not guarantee the realised allocation of the bond and loan proceeds towards eligible activities.

No information provided by Sustainalytics under the present Second-Party Opinion shall be considered as being a statement, representation, warrant or argument, either in favour or against the truthfulness, reliability or completeness of any facts or statements and related surrounding circumstances that GZ Metro has made available to Sustainalytics for the purpose of this Second-Party Opinion.

Sustainalytics' Opinion

Section 1: Sustainalytics' Opinion on the Guangzhou Metro Group Co., Ltd. Green Finance Framework

Sustainalytics is of the opinion that the Guangzhou Metro Group Co., Ltd. Green Finance Framework is credible and impactful, and aligns with the four core components of the GBP and GLP. Sustainalytics highlights the following elements of GZ Metro's Green Bond Framework:

- Use of Proceeds:
 - The eligible categories – Low-Carbon Transportation, Pollution Prevention and Control, Energy Efficiency and Renewable Energy – are aligned with those recognized by the GBP and GLP. Sustainalytics notes that the eligible categories are expected to improve the energy efficiency of GZ Metro's activities and provide enhancements to China's public transportation system.
 - GZ Metro has set a maximum three-year look-back period for its refinancing activities, which Sustainalytics views to be in line with market practice.
 - Under the Low-Carbon Transportation category, GZ Metro intends to invest in the following:
 - (i) Research associated with activities such as surveying, planning and site suitability assessment;
 - (ii) Development, construction and operation of electric mass transit rail system. This will include purchase and maintenance of electric rolling stock and construction of related infrastructure, including tunnels, railway tracks, etc.
 - (iii) Construction of rail transit stations, including associated facilities, such as ventilation, management of water and waste, firefighting equipment, automated ticket vending, escalators and safety doors;
 - (iv) Construction of associated rail infrastructure, such as signaling equipment, network interfaces and passenger access.
 - GZ Metro has confirmed that all ancillary expenses will be associated with electric transit systems and will exclude the projects that either use or promote the use of fossil fuel or nuclear energy. Sustainalytics view this as aligned with market practice.
 - Under the Pollution Prevention and Control category, GZ Metro may finance technologies related to enhancing air quality and noise reduction in metro vehicles and stations. Examples of intended projects include air filtration and air circulation measures, noise barriers, modification of turnouts, rail dampener, insulation booths, as well as the modernization and maintenance of ventilation and drainage systems. GZ Metro has confirmed to Sustainalytics that these expenditures will be exclusively related to electrical rail systems. This is in line with market practice.
 - Under the Energy Efficiency category, GZ Metro may finance energy-efficient systems products and technologies, including energy-efficient lighting, energy consumption management during

- construction, daily energy consumption management, installation of electric meters, use of inverter air conditioners and air-energy water heaters. For investment in energy-efficient products or technologies, GZ Metro is targeting projects that result in at least 20% energy efficiency improvement on the preexisting infrastructure, which will be used as a baseline. GZ Metro has confirmed to Sustainalytics that these expenses will be exclusively related to electrical rail systems. Sustainalytics views positively the Framework's inclusion of a defined energy efficiency threshold on a portfolio basis for the installations of energy-efficient systems, equipment and technologies.
- Within the Renewable Energy category, the Company may finance the design, manufacturing and installation of solar panels mainly at transit stations. This is aligned with market practice.
 - Project Evaluation and Selection:
 - GZ Metro's management of proceeds is overseen by the Company's Green Finance Working Group (GFWG), which includes senior representatives from the following departments: Financial Management, Strategic Development, Construction Business Headquarters, Chief Engineer Office and Legal Contract.
 - The GFWG will meet biannually to select eligible projects in line with the Framework's eligibility criteria, facilitate reporting and manage future updates.
 - GZ Metro has internal controls and policies in place to mitigate environmental and social risks in their operations, as well as an occupational health and safety policy, which apply to all allocation decisions made under the Framework. For additional details on risk management policies, see Section 2.
 - Based on the establishment of the GFWG and the identification of relevant policies to mitigate project-related risks, Sustainalytics considers this process to be in line with market practice.
 - Management of Proceeds:
 - The members of the Company's GFWG will be responsible for the management of proceeds.
 - GZ Metro will deposit the proceeds in a general funding account, then earmark them for allocation towards eligible projects. A green finance allocation register will be maintained to record allocation, and track the use of proceeds. The green finance transaction register will record details such as International Securities Identification Number (if applicable), pricing date, maturity date, unallocated amount, eligible project along with their category, description, location, ownership percentage, total cost and allocate cost.
 - Pending allocation, unallocated proceeds will be held in accordance with GZ Metro's normal liquidity management policy, in cash or cash equivalents. The Company intends to complete the full allocation of proceeds within two years from their respective issuance.
 - Based on the internal processes to manage proceeds and disclosures around temporary allocation, Sustainalytics considers this process to be in line with market practice.
 - Reporting:
 - GZ Metro intends to report on the allocation and impact of proceeds as part of the Green Finance Report annually on its website until full allocation. Allocation reporting will include a list of eligible projects, the amount allocated to each project, project details, examples of project financing, share of financing versus refinancing and balance of unallocated amounts.
 - In addition, the Company is committed to reporting on relevant impact metrics where feasible, such as annual GHG emissions reduced or avoided (in tonnes of CO₂ equivalent), reduction in NO_x, PM₁₀ and PM_{2.5} emissions (in tonnes), the amount of energy saved in MWh and capacity of renewable energy installed. For a complete list of impact indicators, please refer to Appendix 1.
 - Based on the frequency and accessibility of the allocation and impact report, Sustainalytics considers this process to be in line with market practice.

Alignment with Green Bond Principles 2021 and Green Loan Principles 2021

Sustainalytics has determined that the Guangzhou Metro Group Co., Ltd. Green Finance Framework aligns with the four core components of the GBP and GLP. For detailed information, please refer to Appendix 1: Green Bond/Green Bond Programme External Review Form.

Section 2: Sustainability Strategy of GZ Metro

Contribution of framework to GZ Metro's sustainability strategy

GZ Metro demonstrates a commitment to green development with a focus on reducing its carbon and environmental footprints, as described below.

GZ Metro has committed to addressing climate change through energy consumption management and energy efficiency enhancements at its operations. GZ Metro has adopted an energy conservation management policy at the group level, establishing energy conservation principles, governance and requirements in metro design, construction, refurbishment, repair and operation.⁵ GZ Metro has adopted various measures to manage the energy consumption of trains, constructions and daily operations. For example, GZ Metro has mandated each station to establish an energy conservation plan, which has enabled the implementation of more than 70 energy conservation management measures in 2020.⁶ To ensure efficient energy use and management during construction, GZ Metro has implemented similar measures, such as using mobile LED lights and low-voltage lighting equipment.⁶ As of 2014, GZ Metro has been using key performance indicators to monitor and report energy consumption,⁷ including but not limited to comprehensive energy consumption per vehicle-kilometre, annual total energy consumption for operation, and annual non-traction energy⁸ saving. In 2020 alone, in comparison with 2019, the Company increased non-traction energy saving by 2.25 million kWh, reduced comprehensive energy consumption per vehicle-kilometre by 0.2 kWh, and reduced average daily power and lighting consumption per station by 85 kWh and 37 kWh. It has also achieved the target of limiting traction energy consumption to no more than 2.32 kWh per vehicle-kilometre in 2020.

GZ Metro has taken actions to reduce GHG emissions and stimulate green development. In 2018, GZ Metro built and put into use a 5 MW photovoltaic power station in the Yuzhu Depot, which is expected to generate 4.2 million kWh of electricity per year for the metro network.⁹ In addition, the Company has obtained China's Green Building Evaluation Label for its command centre building⁹ and Jinkeng Station.¹⁰

Sustainalytics is of the opinion that the GZ Metro's Green Finance Framework is aligned with the Company's overall sustainability strategy and initiatives and will further the Company's action on its key environmental priorities. Sustainalytics notes that GZ Metro has not released publicly accessible sustainability targets, and encourages the Company to develop and disclose quantitative time-bound targets.

Well positioned to address common environmental and social risks associated with the projects

While Sustainalytics recognizes that the net proceeds from the bonds and/or loans issued under the Framework will be directed towards eligible projects that are expected to have positive environmental impact, Sustainalytics is aware that such eligible projects could also lead to negative environmental and social outcomes. Some key environmental and social risks associated with the eligible projects could include negative impacts to occupational health and safety, community relations and stakeholder participation, land-use and biodiversity issues associated with large-scale infrastructure development, emissions, effluents and waste generated in construction.

Sustainalytics is of the opinion that GZ Metro is able to manage or mitigate potential risks through implementation of the following:

- Under China's Environmental Impact Assessment Law and related regulations, all urban rail transit projects have to prepare environmental impact assessment (EIA) reports. The EIA for urban rail transit projects includes investigation, analysis and evaluation of impacts with regard to noise, surface water, ecology, air quality, solid waste, groundwater and electromagnetic environment during the project's construction and operation. The EIA must ensure public participation by publishing relevant information and consulting with stakeholders. Environmental protection measures and facilities eventually proposed in the EIA or required by environmental law must be integrated in the project's initial design and budget, and also implemented in construction and operation.
- In line with its commitment to building green line networks, GZ Metro has been applying various managerial and technical methods of controlling environmental pollution, saving water and reducing the Company's impact on biodiversity. Examples of these methods in construction include setting up soundproof walls and sheds to control noise, using high-power fog cannons to reduce dust,

⁵ "Guangzhou Metro Group Co., Ltd. Energy Conservation Management Measures" (2019), shared by GZ Metro on 24 August 2021.

⁶ Guangzhou Metro, "2020 Social Responsibility Report", at: <https://www.gzmtr.com/ygwm/gsgk/shzr/202106/P02021072255268224269.pdf>

⁷ Guangzhou Metro, "Social Responsibility", at: <https://gzmtr.com/ygwm/gsgk/shzr/>

⁸ Energy consumption for railways can be generally divided into traction and non-traction energy. Traction energy refers to the energy consumed to propel a vehicle, and non-traction energy is mainly consumed in stations, maintenance workshops, railway operations and offices.

⁹ Guangzhou Metro, "2018 Social Responsibility Report", at: <https://www.gzmtr.com/ygwm/gsgk/shzr/201906/P020190611505891402080.pdf>

¹⁰ Guangzhou Metro, "2019 Social Responsibility Report", at: <http://www.gzmtr.com/ygwm/gsgk/shzr/202007/P020200709643866334242.pdf>

recycling water for plant irrigation, including maintaining the original vegetation where possible. Among other KPIs, in relation to dust control, for example, GZ Metro has achieved 100% greening of long-term bare soil and 100% coverage of site sand and material stacking.⁶

- GZ Metro has adopted a policy on occupational health and safety (OH&S) management, which sets forth principles, governance and requirements for the protection of occupational health and safety.¹¹ The Company has established a committee composed of group leaders and work safety managers for the prevention and control of occupational health risks. The Company has also developed a work safety manual and standard operating processes to ensure implementation of OH&S risk management.
- The Company intends to perform feasibility studies for the projects financed under the Framework. In the feasibility study report sample shared with Sustainalytics, the Company had assessed a project's environmental impacts and occupational health and safety risks.¹² The feasibility study analysed environmental impacts relating to ecology, air, water, noise, solid waste, vibration and electromagnetic radiation, as well as occupational health and safety hazards and consequences, in the construction and operation phases of the project. The study includes proposed measures to prevent or mitigate impacts and risks.

Based on these policies, standards and assessments, Sustainalytics is of the opinion that GZ Metro has implemented adequate measures and is well positioned to manage or mitigate environmental and social risks commonly associated with the eligible projects.

Section 3: Impact of Use of Proceeds

All four use of proceeds categories are aligned with those recognized by the GBP and GLP. Sustainalytics has focused below on those where the impact is specifically relevant in the local context.

Importance of Low-carbon Transportation in Mitigating Climate Change in China

Transportation was responsible for 24% of global direct CO₂ emissions from fuel combustion in 2019¹³. The transport sector is the second-largest source of emissions in China, accounting for approximately 9% of the country's CO₂ emissions in 2014^{14,15} and 9.8% of total energy consumption in 2017.¹⁶ According to a study of the Energy Research Institute of the National Development and Reform Commission, the average annual growth rate of energy consumption in transportation in China reached 9% since 2000, above the 7.9% growth rate of energy consumption on average in China.¹⁷

As the world's largest emitter of CO₂,¹⁸ China is taking steps to mitigate its contribution to climate change. In 2020, China committed to a strengthened National Determined Contribution (NDC) target to peak CO₂ emissions before 2030, reach carbon neutrality before 2060¹⁹ and reduce carbon intensity (i.e. carbon emissions per unit of GDP) by more than 65% from 2005 levels by 2030²⁰. China's 14th FYP (2021-2025) highlights green development and establishes the binding targets of reducing carbon intensity and energy intensity respectively by 18% and 13.5% by 2025 from 2020 levels.²¹

In the transport sector, the 14th FYP has established a policy of promoting the low-carbon transport transition and developing urban rail transit. In addition, the State Council of China has released a plan to build a comprehensive three-dimensional transportation network, which would build urban public transport systems

¹¹ "Guangzhou Metro Group Co., Ltd., "Occupational Health and Safety Management Measures", shared by GZ Metro on 24 August 2021.

¹² "Project Feasibility Study Report - The East Extension Project of Guangzhou Metro Line 3 (Panyu Square – Haibang)", shared by GZ Metro on 27 August 2021.

¹³ IEA, "Tracking Transport 2020", (2020), at: <https://www.iea.org/reports/tracking-transport-2020>

¹⁴ Xue, L. et al. (2019), "Toward Net Zero Emissions in the Road Transport Sector in China", World Resources Institute Working Paper, at:

https://www.wri.org.cn/sites/default/files/20191202-%E4%B8%AD%E5%9B%BD%E9%81%93%E8%B7%AF%E4%BA%A4%E9%80%9A%E9%A2%86%E5%9F%9F%E6%8E%92%E6%94%BE_fin_0.pdf

¹⁵ "The Second Biennial Update Report on Climate Change of the People's Republic of China" (2018), at:

<https://www.mee.gov.cn/ywqz/ydqhbh/wsqtz/201907/P020190701765971866571.pdf>

¹⁶ Xu, X. and Xu, H. (2021), "The Driving Factors of Carbon Emissions in China's Transportation Sector: A Spatial Analysis", *Frontiers in Energy Research*, at: <https://www.frontiersin.org/articles/10.3389/fenrg.2021.664046/full>

¹⁷ Energy Research Institute of National Development and Reform Commission, (2019), at: <https://www.efchina.org/Attachments/Report/report-20170301-1-zh/report-20170301-1-zh>

¹⁸ Global Carbon Atlas, at: <http://www.globalcarbonatlas.org/en/CO2-emissions>

¹⁹ Climate Action Tracker, "China", at: <https://climateactiontracker.org/countries/china/>

²⁰ Reuters, "China's Xi targets steeper cut in carbon intensity by 2030", at: <https://www.reuters.com/world/china/chinas-xi-targets-steeper-cut-carbon-intensity-by-2030-2020-12-12/>

²¹ The Government of China, (2021), at: http://www.gov.cn/xinwen/2021-03/13/content_5592681.htm.

with rail transit as the backbone.²² These strategies are expected to help reduce energy consumption and CO₂ emissions, as well as promote more sustainable mobility in urban areas. Guangzhou is one of the largest cities in China and a top CO₂ emitter in the region, with a population of more than 13 million.²³ A shift to public rail transport can contribute to delivering China's climate change mitigation commitments, with added environmental and socio-economic benefits in reducing air pollution, alleviating congestion and improving connectivity.

Sustainalytics acknowledges GZ Metro's role as Guangzhou's primary rail operator in helping to achieve the above targets and finds investments planned under the Framework to be impactful in this context.

Alignment with/Contribution to SDGs

The Sustainable Development Goals (SDGs) were set in September 2015 by the United Nations General Assembly and form an agenda for achieving sustainable development by the year 2030. The bonds eventually issued under the Guangzhou Metro Group Co., Ltd. Green Finance Framework advance the following SDGs and targets:

Use of Proceeds Category	SDG	SDG target
Low Carbon Transportation	11. Sustainable Cities and Communities	11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport
Pollution Prevention and Control	11. Sustainable Cities and Communities	11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management
Energy Efficiency	7. Affordable and Clean Energy	7.3 By 2030, double the global rate of improvement in energy efficiency
Renewable Energy	7. Affordable and Clean Energy	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix

Conclusion

GZ Metro has developed the Green Finance Framework of Guangzhou Metro Group Co., Ltd., under which it may issue green bonds and loans and use the proceeds to finance or refinance projects, assets and activities under the categories of Low Carbon Transportation, Pollution Prevention and Control, Energy Efficiency and Renewable Energy. Sustainalytics considers that the projects eventually funded by the green bond proceeds are expected to provide positive environmental impact.

The Guangzhou Metro Group Co., Ltd. Green Finance Framework outlines a process by which proceeds will be tracked, allocated, and managed, and commitments have been made for reporting on the allocation and impact of the use of proceeds. Furthermore, Sustainalytics believes that the Guangzhou Metro Group Co., Ltd. Green Finance Framework is aligned with the overall sustainability strategy of the Company and that the green use of proceeds categories will contribute to the advancement of the UN Sustainable Development Goals 7 and 11. Additionally, Sustainalytics is of the opinion that GZ Metro has adequate measures to identify, manage and mitigate environmental and social risks commonly associated with the eligible projects funded by the use of proceeds.

Based on the above, Sustainalytics is confident that Guangzhou Metro Group Co., Ltd. is well positioned to issue green bonds and loans and that the Guangzhou Metro Group Co., Ltd. Green Finance Framework is robust, transparent and in alignment with the four core components of the Green Bond Principles 2021 and Green Loan Principles 2021.

²² The Government of China, (2021), at: http://www.gov.cn/zhengce/2021-02/24/content_5588654.htm

²³ Zhou, Y. et al. (2018), "Emissions and Low-carbon Development in Guangdong-Hong Kong-Macao Greater Bay Area Cities and Their Surroundings", Applied Energy, at: <https://www.sciencedirect.com/science/article/pii/S0306261918310675>

Appendix

Appendix 1: Green Bond / Green Bond Programme - External Review Form

Section 1. Basic Information

Issuer name:	Guangzhou Metro Group Co., Ltd.
Green Bond ISIN or Issuer Green Bond Framework Name, if applicable:	Guangzhou Metro Group Co., Ltd. Green Finance Framework
Review provider's name:	Sustainalytics
Completion date of this form:	September 09, 2021
Publication date of review publication:	

Section 2. Review overview

SCOPE OF REVIEW

The following may be used or adapted, where appropriate, to summarise the scope of the review.

The review assessed the following elements and confirmed their alignment with the GBP:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Use of Proceeds | <input checked="" type="checkbox"/> Process for Project Evaluation and Selection |
| <input checked="" type="checkbox"/> Management of Proceeds | <input checked="" type="checkbox"/> Reporting |

ROLE(S) OF REVIEW PROVIDER

- | | |
|---|--|
| <input checked="" type="checkbox"/> Consultancy (incl. 2 nd opinion) | <input type="checkbox"/> Certification |
| <input type="checkbox"/> Verification | <input type="checkbox"/> Rating |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Note: In case of multiple reviews / different providers, please provide separate forms for each review.

EXECUTIVE SUMMARY OF REVIEW and/or LINK TO FULL REVIEW (*if applicable*)

Please refer to Evaluation Summary above.

Section 3. Detailed review

Reviewers are encouraged to provide the information below to the extent possible and use the comment section to explain the scope of their review.

1. USE OF PROCEEDS

Overall comment on section *(if applicable)*:

The eligible categories for the use of proceeds – Low Carbon Transportation, Pollution Prevention and Control, Energy Efficiency and Renewable Energy – are aligned with those recognized by the Green Bond Principles and the Green Loan Principles. Sustainalytics considers that investments in the eligible categories will lead to positive environmental impacts and advance the UN Sustainable Development Goals, specifically SDGs 7 and 11.

Use of proceeds categories as per GBP:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Renewable energy | <input checked="" type="checkbox"/> Energy efficiency |
| <input checked="" type="checkbox"/> Pollution prevention and control | <input type="checkbox"/> Environmentally sustainable management of living natural resources and land use |
| <input type="checkbox"/> Terrestrial and aquatic biodiversity conservation | <input checked="" type="checkbox"/> Low Carbon transportation |
| <input type="checkbox"/> Sustainable water and wastewater management | <input type="checkbox"/> Climate change adaptation |
| <input type="checkbox"/> Eco-efficient and/or circular economy adapted products, production technologies and processes | <input type="checkbox"/> Green buildings |
| <input type="checkbox"/> Unknown at issuance but currently expected to conform with GBP categories, or other eligible areas not yet stated in GBP | <input type="checkbox"/> Other <i>(please specify)</i> : |

If applicable please specify the environmental taxonomy, if other than GBP:

2. PROCESS FOR PROJECT EVALUATION AND SELECTION

Overall comment on section *(if applicable)*:

GZ Metro's internal process for evaluating and selecting projects is managed by a Green Finance Working Group (GFWG), comprised of representatives from various departments, including Financial Management, Strategic Development, Construction Business, Chief Engineer Office and Legal Contract. The GFWG will meet biannually to select eligible projects in line with the Framework's eligibility criteria, facilitate reporting and manage future updates. Sustainalytics considers the project selection process in line with market practice. GZ Metro's internal environmental and social risk management systems apply to all allocation decisions made under the Framework. Sustainalytics considers these risk management systems to be adequate. This is in line with market practice.

Evaluation and selection

- | | |
|--|--|
| <input checked="" type="checkbox"/> Credentials on the issuer's environmental sustainability objectives | <input checked="" type="checkbox"/> Documented process to determine that projects fit within defined categories |
| <input checked="" type="checkbox"/> Defined and transparent criteria for projects eligible for Green Bond proceeds | <input type="checkbox"/> Documented process to identify and manage potential ESG risks associated with the project |

- Summary criteria for project evaluation and selection publicly available
- Other (*please specify*):

Information on Responsibilities and Accountability

- Evaluation / Selection criteria subject to external advice or verification
- In-house assessment
- Other (*please specify*):

3. MANAGEMENT OF PROCEEDS

Overall comment on section (*if applicable*):

The process of management of proceeds is also overseen by the GFWG. The net proceeds will be deposited in the GZ Metro's general funding account and earmarked for allocation. GZ Metro will maintain a green finance register to record and track allocation. GZ Metro intends to complete full allocation of the proceeds within two years. Pending allocation, unallocated proceeds will be held in accordance with GZ Metro's normal liquidity management policy, in cash equivalents.

Tracking of proceeds:

- Green Bond proceeds segregated or tracked by the issuer in an appropriate manner
- Disclosure of intended types of temporary investment instruments for unallocated proceeds
- Other (*please specify*):

Additional disclosure:

- Allocations to future investments only
- Allocations to both existing and future investments
- Allocation to individual disbursements
- Allocation to a portfolio of disbursements
- Disclosure of portfolio balance of unallocated proceeds
- Other (*please specify*):

4. REPORTING

Overall comment on section (*if applicable*):

GZ Metro intends to report on allocation and impact of proceeds in a green finance report on its website on an annual basis until full allocation. Allocation reporting will include a list of eligible projects, the amount allocated to each project, project details, examples of project financing, share of financing versus refinancing, and balance of unallocated amounts. GZ Metro is also committed to reporting on relevant impact metrics. Sustainalytics views GZ Metro's allocation and impact reporting as aligned with market practice.

Use of proceeds reporting:

- Project-by-project
 On a project portfolio basis
- Linkage to individual bond(s)
 Other (*please specify*):

Information reported:

- Allocated amounts
 Green Bond financed share of total investment
- Other (*please specify*):

Frequency:

- Annual
 Semi-annual
- Other (*please specify*):

Impact reporting:

- Project-by-project
 On a project portfolio basis
- Linkage to individual bond(s)
 Other (*please specify*):

Information reported (expected or ex-post):

- GHG Emissions / Savings
 Energy Savings
- Decrease in water use
 Other ESG indicators (*please specify*): kilometres of track built
- Number of passengers served
- Number of noise barriers installed
- Reduction in NOx, PM10 and PM2.5 emissions (in tonnes)
- Percentage annual energy efficiency gain relative to an established baseline
- Installed renewable energy production capacity

Frequency

- Annual
 Semi-annual
- Other (*please specify*):

Means of Disclosure

- Information published in financial report
 Information published in sustainability report

- Information published in ad hoc documents
- Other (please specify): Green Finance Report
- Reporting reviewed (if yes, please specify which parts of the reporting are subject to external review):

Where appropriate, please specify name and date of publication in the useful links section.

USEFUL LINKS (e.g. to review provider methodology or credentials, to issuer's documentation, etc.)

SPECIFY OTHER EXTERNAL REVIEWS AVAILABLE, IF APPROPRIATE

Type(s) of Review provided:

- Consultancy (incl. 2nd opinion)
- Certification
- Verification / Audit
- Rating
- Other (*please specify*):

Review provider(s):

Date of publication:

ABOUT ROLE(S) OF INDEPENDENT REVIEW PROVIDERS AS DEFINED BY THE GBP

- i. **Second-Party Opinion:** An institution with environmental expertise, that is independent from the issuer may issue a Second-Party Opinion. The institution should be independent from the issuer's adviser for its Green Bond framework, or appropriate procedures, such as information barriers, will have been implemented within the institution to ensure the independence of the Second-Party Opinion. It normally entails an assessment of the alignment with the Green Bond Principles. In particular, it can include an assessment of the issuer's overarching objectives, strategy, policy and/or processes relating to environmental sustainability, and an evaluation of the environmental features of the type of projects intended for the Use of Proceeds.
- ii. **Verification:** An issuer can obtain independent verification against a designated set of criteria, typically pertaining to business processes and/or environmental criteria. Verification may focus on alignment with internal or external standards or claims made by the issuer. Also, evaluation of the environmentally sustainable features of underlying assets may be termed verification and may reference external criteria. Assurance or attestation regarding an issuer's internal tracking method for use of proceeds, allocation of funds from Green Bond proceeds, statement of environmental impact or alignment of reporting with the GBP, may also be termed verification.
- iii. **Certification:** An issuer can have its Green Bond or associated Green Bond framework or Use of Proceeds certified against a recognised external green standard or label. A standard or label defines specific criteria, and alignment with such criteria is normally tested by qualified, accredited third parties, which may verify consistency with the certification criteria.
- iv. **Green Bond Scoring/Rating:** An issuer can have its Green Bond, associated Green Bond framework or a key feature such as Use of Proceeds evaluated or assessed by qualified third parties, such as specialised research providers or rating agencies, according to an established scoring/rating methodology. The output may include a focus on environmental performance data, the process relative to the GBP, or another benchmark, such as a 2-degree climate change scenario. Such scoring/rating is distinct from credit ratings, which may nonetheless reflect material environmental risks.

Disclaimer

Copyright ©2021 Sustainalytics. All rights reserved.

The information, methodologies and opinions contained or reflected herein are proprietary of Sustainalytics and/or its third party suppliers (Third Party Data), and may be made available to third parties only in the form and format disclosed by Sustainalytics, or provided that appropriate citation and acknowledgement is ensured. They are provided for informational purposes only and (1) do not constitute an endorsement of any product or project; (2) do not constitute investment advice, financial advice or a prospectus; (3) cannot be interpreted as an offer or indication to buy or sell securities, to select a project or make any kind of business transactions; (4) do not represent an assessment of the issuer's economic performance, financial obligations nor of its creditworthiness; and/or (5) have not and cannot be incorporated into any offering disclosure.

These are based on information made available by the issuer and therefore are not warranted as to their merchantability, completeness, accuracy, up-to-dateness or fitness for a particular purpose. The information and data are provided "as is" and reflect Sustainalytics' opinion at the date of their elaboration and publication. Sustainalytics accepts no liability for damage arising from the use of the information, data or opinions contained herein, in any manner whatsoever, except where explicitly required by law. Any reference to third party names or Third Party Data is for appropriate acknowledgement of their ownership and does not constitute a sponsorship or endorsement by such owner. A list of our third-party data providers and their respective terms of use is available on our website. For more information, visit <http://www.sustainalytics.com/legal-disclaimers>.

The issuer is fully responsible for certifying and ensuring the compliance with its commitments, for their implementation and monitoring.

In case of discrepancies between the English language and translated versions, the English language version shall prevail.

About Sustainalytics, a Morningstar Company

Sustainalytics, a Morningstar Company, is a leading ESG research, ratings and data firm that supports investors around the world with the development and implementation of responsible investment strategies. The firm works with hundreds of the world’s leading asset managers and pension funds who incorporate ESG and corporate governance information and assessments into their investment processes. The world’s foremost issuers, from multinational corporations to financial institutions to governments, also rely on Sustainalytics for credible second-party opinions on green, social and sustainable bond frameworks. In 2020, Climate Bonds Initiative named Sustainalytics the “Largest Approved Verifier for Certified Climate Bonds” for the third consecutive year. The firm was also recognized by Environmental Finance as the “Largest External Reviewer” in 2020 for the second consecutive year. For more information, visit www.sustainalytics.com.

