



Second Opinion

Rakuten Group, Inc.

May 15, 2024

Sustainability Finance Framework

Sustainable Finance Division
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Rating and Investment Information, Inc. (R&I) has confirmed the alignment of the Sustainability Finance Framework of Rakuten Group, Inc. (Rakuten) formulated in May 2024 with the following principles and guidelines:

Green Bond Principles (2021, ICMA)	Green Loan Principles (2023, LMA, etc.)
Social Bond Principles (2023, ICMA)	Social Loan Principles (2023, LMA, etc.)
Green Bond Guidelines (2022, Ministry of the Environment)	Green Loan Guidelines (2022, Ministry of the Environment)
Social Bond Guidelines (2021, Financial Services Agency)	Sustainability Bond Guidelines (2021, ICMA)

■ Use of Proceeds

Eligible Project		
Investments related to 5G (Capital investment and research and development in relation to 5G)		
Green Project Category	Social Project Category	Target Population
Renewable energy Energy efficiency	Affordable basic infrastructure	People all over Japan
	Access to essential services	Children and students in areas with limited access to educational services Elderly and patients in areas with limited access to medical services
	Socioeconomic advancement and empowerment	Individuals who require a way of working that is not limited by geographical location Individuals working in industries with labor shortages

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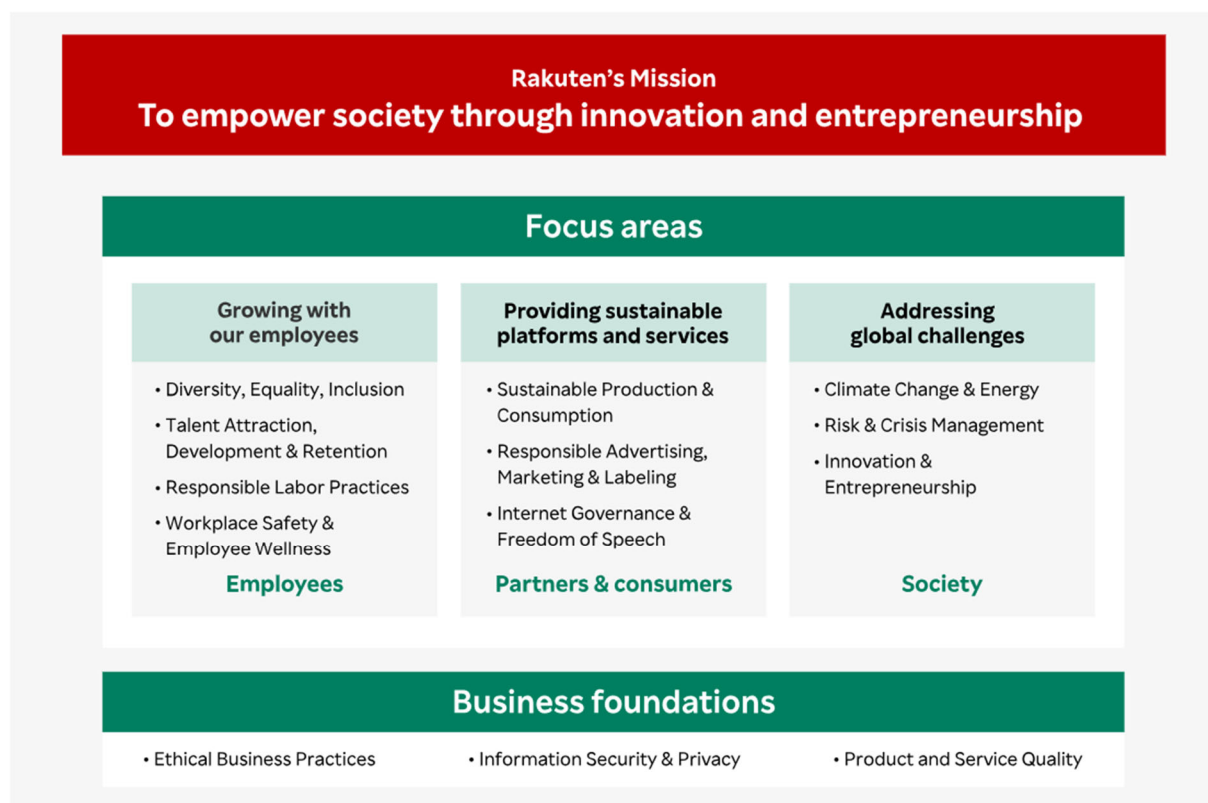
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1. Outline of the Issuer/Borrower

- Rakuten is the core company of the Rakuten Group, a provider of various Internet-related services. It operates Rakuten Ichiba, the largest online shopping mall in Japan, and manages subsidiaries that run credit card, banking, securities brokerage, mobile communication and other businesses.
- Rakuten Mobile, Inc., a subsidiary of Rakuten, launched full-fledged mobile communication services in April 2020, aiming to "democratize the mobile phone industry." With strength in affordable, simple pricing plans, the company strives to improve network quality by installing more base stations and optimizing roaming services. As of the end of March 2024, its population coverage for 4G services reached 99.9%, and efforts are underway to expand its 5G network.
- Through engagement with stakeholders, the Rakuten Group revised its sustainability strategy in 2021 and identified 13 material issues in four areas: "Business foundations," "Growing with our employees," "Providing sustainable platforms and services" and "Addressing global challenges." The group will promote initiatives aimed at solving social issues, not only because the initiatives will support the sustainable growth of its businesses, but also because doing so is at the core of its corporate mission: "contributing to society by creating value through innovation and entrepreneurship."

Rakuten's Sustainability Strategy



[Source: Rakuten Group website]

- The Rakuten Group is accelerating initiatives towards decarbonization based on the recognition that climate action is an urgent task. In 2019, Rakuten joined "RE100," an international initiative to rely solely on renewable energy for electricity, and also officially supported the Task Force on Climate-related Financial Disclosures (TCFD). It achieved a 100% renewable energy adoption rate in 2021 for the electricity used in its business activities. Besides realizing carbon neutrality in the Rakuten Group's business activities, the company plans to reduce greenhouse gas (GHG) emissions across its entire value chain through stronger collaboration with users and business partners.

2. Use of Proceeds

The eligible projects identified for the use of proceeds will deliver clear environmental and social benefits. The use of proceeds is appropriate.

(1) Eligible Projects

Investments related to 5G (Capital investment and research and development in relation to 5G)

Social Project Category: Affordable basic infrastructure, access to essential services, socioeconomic advancement and empowerment

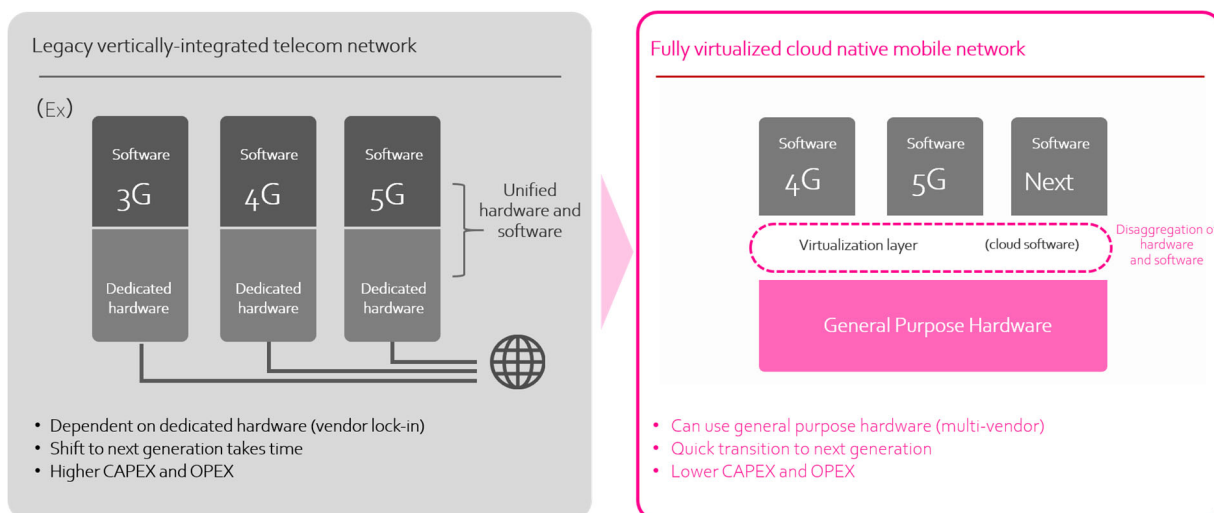
Green Project Category: Renewable energy, energy efficiency

Target Population: People all over Japan, children and students in areas with limited access to educational services, elderly and patients in areas with limited access to medical services, individuals who require a way of working that is not limited by geographical location, individuals working in industries with labor shortages

Relevant SDGs: 3. Good health and well-being, 4. Quality education, 7. Affordable and clean energy, 8. Decent work and economic growth, 9. Industry, innovation and infrastructure, 11. Sustainable cities and communities, 13. Climate action



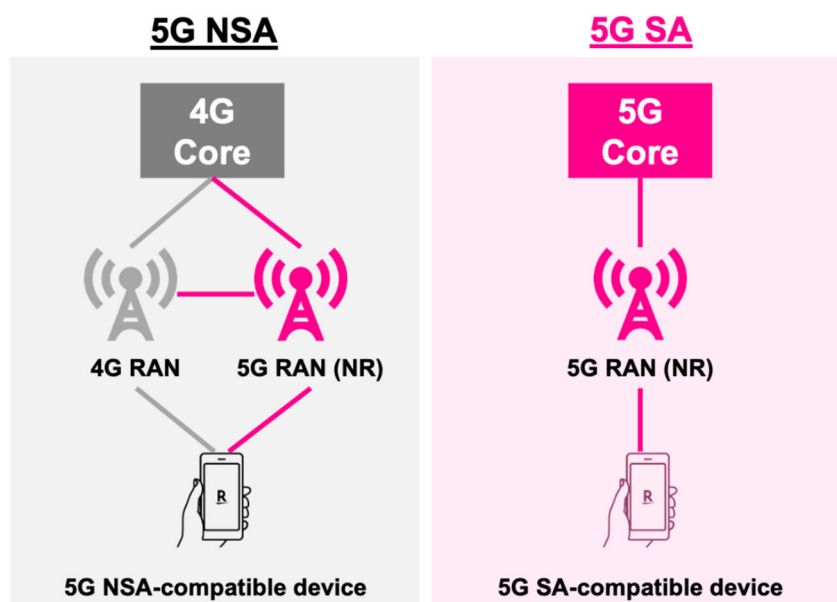
- The proceeds will be allocated to the 5G network construction business of Rakuten Mobile, a subsidiary of Rakuten, and expenses for the introduction of renewable energy in the entire Rakuten Group. In addition to the installation of base stations, research and development (R&D) will be conducted to improve network quality and energy efficiency. Moreover, the adoption of renewable energy will be expanded to rein in an increase in GHG emissions resulting from electricity consumption that is attributable to the wider use of the 5G network.
- Since entering the mobile carrier business, Rakuten Mobile has been providing services through a virtualized network. Mobile networks to date have required dedicated hardware integrated with software for each communication standard. Rakuten Mobile will replace base station hardware functions with software to the extent possible using virtualization technologies, to realize a flexible network infrastructure that enables a speedy transition to a next-generation standard.



[Source: Rakuten Mobile]

- Capitalizing on this advantage, Rakuten Mobile will expand its 5G network, primarily by adding 5G functions to, or installing them at the same site as, 4G base stations that it has deployed nationwide. In addition, the company will utilize existing assets, such as fire hydrant sign posts and utility poles, for base stations and also promote infrastructure sharing to build a denser network and thereby improve 5G network quality.
- Rakuten Mobile is conducting R&D to expand 5G Stand Alone (SA) services. In Japan, 5G commercial services started based on Non Stand Alone (NSA) architecture, by utilizing existing 4G core network¹ infrastructure. While NSA enables ultra-high speed, large capacity communications, 5G features of ultra-low latency and massive simultaneous connectivity can be fully leveraged with the deployment of SA architecture, which uses a core network and base stations dedicated to 5G. As SA coverage areas are still limited in Japan, Rakuten Mobile is focusing efforts on development activities aimed at wider provision of advanced 5G SA services that help create new businesses and enhance the convenience of living.

■ 5G NSA vs. 5G SA



[Source: Rakuten Mobile website]

- R&D is also underway on RAN Intelligent Controllers (RIC) that manage and control radio access networks (RAN)² using artificial intelligence (AI), a technology enabling energy savings on mobile networks. Going forward, efficient RAN operation will be essential to meeting diverse communication needs for 5G-powered services. RIC contributes to greater energy efficiency by interpreting traffic patterns and determining energy-saving policies, allowing flexible control based on the usage of specific base stations. With RIC, Rakuten Mobile demonstrated energy savings of up to 25% in 2024. R&D activities will go on for commercial application in the future.

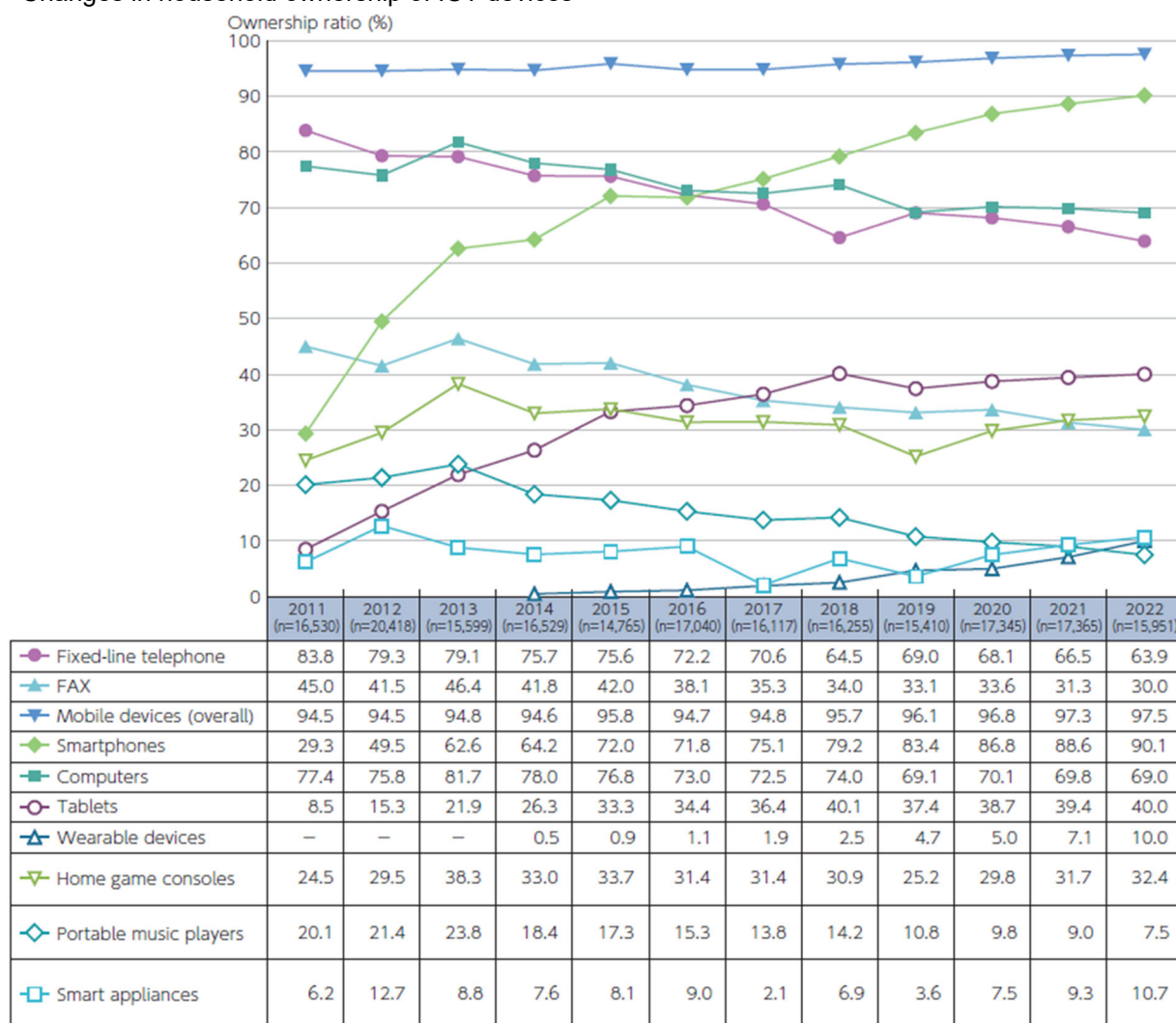
¹ A core network forms the core of a mobile network held by a telecom operator. It is connected to the Internet and other telecom operators' networks.

² A RAN is part of a mobile network and primarily consists of base stations and antennas. It connects end user devices (e.g., smartphones) and a core network.

(2) Social and Environmental Benefits

- Mobile communication systems have evolved from the first generation (1G) launched in 1979 to the current 5G with increased network capacity and speed, bringing about diverse and advanced services. While 1G only supported voice calls, high-resolution video streaming is available today. Moreover, mobile devices, primarily smartphones, have become the mainstream ICT devices used to connect to the Internet, as suggested by households' mobile device ownership rate of 97.5% in 2022. 5G thus serves as a key information infrastructure that supports the daily life of the public.

■ Changes in household ownership of ICT devices



[Source: 2023 White Paper on Information and Communications in Japan]

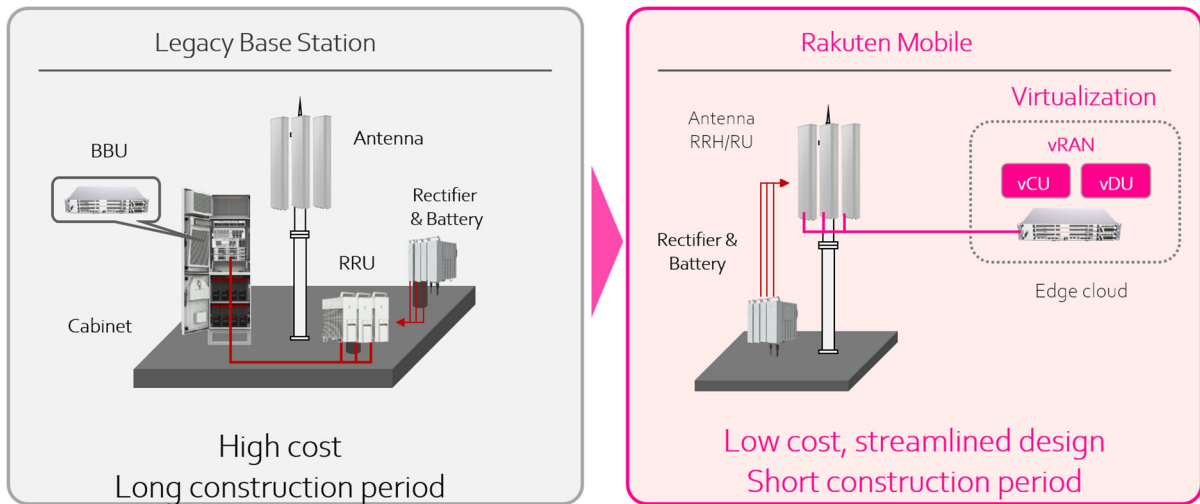
- Besides being over 100 times faster than 4G, 5G offers ultra-low latency, which is required for remote medical care and autonomous driving, and massive simultaneous connectivity that allows several devices to connect to a network simultaneously. These characteristics are expected to drive the extensive use of 5G in every field. Japan is facing a multitude of social issues due partly to the rapidly declining and aging population and weakening community functions. Advanced technologies, including IoT, AI and big data, are key to the realization of Society5.0, a vision advocated by the government to solve such issues, and 5G is identified as an essential infrastructure.
- In 2022, the Cabinet approved the "Basic Policy for the Digital Garden City Nation Concept" to realize a "society where everyone can live conveniently and comfortably anywhere in the country." This strategy is designed to achieve bottom-up growth throughout the country, starting with local areas, by promoting the development of vibrant communities through digitalization. As regards 5G, a digital infrastructure that underpins the concept, 99% population coverage was set as a target to be met by

the end of FY2030 for both the country as a whole and each prefecture. As shown in a nationwide 5G population coverage rate of 96.6% at the end of FY2022, 5G deployment is progressing steadily, but to a varying degree depending on the region. Base stations need to be installed across the country, including depopulated areas, remote islands and other geographically disadvantageous areas. Deployment in non-residential areas, such as roads, is also important from the perspective of improving convenience and ensuring safety and security during emergencies.

- Rakuten Mobile's investments related to 5G will help build and upgrade a digital infrastructure and contribute to the expansion of a 5G network as envisioned by the government. The company will provide an extensive, high-quality communication infrastructure to create an environment where all people can benefit from digitalization.
- Under the GIGA School Initiative, educational institutions are working to develop an ICT environment that facilitates optimal personalized education. While one device per student is being achieved, frequent network problems, such as loss of connectivity and latency, are hampering efficient learning. A high-quality 5G network plays a key role in effective teaching backed by video materials and digital textbooks.
- In many remote islands and locations, enhancing the healthcare system is a major challenge, as poor transportation systems and the uneven distribution of doctors, among other factors, are restricting residents' access to specialized medical services. 5G connectivity enables appropriate treatment and therapies based on instructions by specialist or expert physicians in remote locations, by allowing doctors to share a large amount of data, including high-resolution medical images and endoscopic and microscopic images, in a timely manner for remote diagnosis and surgery assistance.
- A stable 5G connection helps people work from home as efficiently as in the office by, for example, eliminating delays in voice and video transmission at online meetings. This opens doors to people with limited workplace and workstyle options due to geographical constraints, leading to realization of diverse ways of working. Since telework allows people to work regardless of their locations, its prevalence can also reduce workforce outflows to cities.
- Going forward, 5G-connected drones will likely be available. Real-time high-resolution airborne images are expected to ease damage inspection for bridges and other infrastructures and security services at large events, for instance. Amid the accelerating population decline, particularly in local areas, 5G drones will help solve labor shortages, an issue facing various industries.
- Meanwhile, digitalization in society achieved by a 5G network should increase traffic significantly, resulting in growth in energy consumption and, in turn, GHG emissions. Rakuten Mobile is working to improve energy efficiency by, for example, minimizing CPU and memory usage through the adoption of container-based architecture³ as a standard specification, while simplifying base stations using virtualization technologies. The company seeks to further reduce electricity consumption through the implementation of RIC that is under development.

³ Container-based architecture is a technology for running multiple independent applications on a single operating system (OS) by building a set of containers. A container does not have its own OS and runs an application using a shared OS, thereby reducing the usage of server resources.

■ Base station system



[Source: Rakuten Mobile]

- On top of energy-saving initiatives, aggressive efforts are going on to adopt renewable energy. Rakuten strives to reduce GHG emissions across the group through, among others, the purchase of non-fossil certificates, a switch to renewable energy electricity and the installation of in-house power generation systems. The company will pursue carbon neutrality despite an anticipated increase in emissions from mobile networks caused by the penetration of 5G and accompanying traffic growth.

3. Process for Project Evaluation and Selection

Environmental and social objectives, a decision-making process for evaluation and selection, and a process for identifying, mitigating and managing environmental and social risks have been defined. A process is in place to select projects that give due consideration to the environment and society. The process for project evaluation and selection is appropriate.

(1) Social and Environmental Objectives

- The Rakuten Group's mission is to contribute to society by creating value through innovation and entrepreneurship. By providing high-quality services that help its users and partners grow, the group aims to advance and enrich society. It strives to offer innovative services to play a part in solving social issues.
- On the environmental front, Rakuten has set a target of net zero GHG emissions (Scope 1+2) from the entire group's business activities. Over 90% of the Rakuten Group's direct emissions are derived from electricity consumption, and such consumption is mostly accounted for by its mobile network and data centers. To achieve mobile business expansion and carbon neutrality simultaneously, enhancing energy efficiency and utilizing renewable energy are indispensable.
- The eligible projects are considered as initiatives for fulfilling the aforementioned objectives.

(2) Decision-Making Process for Evaluation and Selection

- Projects are identified by the Finance Department, with support from relevant internal departments, based on compliance with the requirements of the eligible projects. The final decision is made after comprehensive analysis and consideration by the executive officer in charge of finance.

(3) Process for Identifying, Mitigating and Managing Environmental and Social Risks

- In selecting projects, Rakuten ensures that the following items are addressed.
 - Compliance with environmental laws and regulations required by the country or local governments of the project's location and conducting environmental impact assessments as necessary
 - Providing information to local residents and seeking the opinions of residents and related local governments as necessary for the implementation of the project
- Among the risks expected in the course of construction and operation of communication infrastructure is a data breach associated with the holding of massive customer data. The Rakuten Group protects and manages information assets appropriately to maintain and enhance information security on a continuous basis, which it recognizes as one of the top management priorities.

4. Management of Proceeds

The method of tracking proceeds for their allocation to sustainability projects and the method of managing unallocated proceeds have been identified. The management of proceeds is appropriate.

- The proceeds are managed by the finance department of Rakuten's group company where the eligible projects are executed. The allocation status of the eligible projects is tracked and managed annually using internal management documents, in coordination with Rakuten's Finance Department.
- Any unallocated funds will be managed as cash or cash equivalents and will be allocated to eligible projects as soon as possible.

5. Reporting

The timing, method and items of disclosure have been specified. The environmental benefit indicators for green projects and the social benefit indicators for social projects are consistent with the environmental and social objectives. The reporting is appropriate.

(1) Overview of Disclosure

- The status of the allocation of the proceeds and the social and environmental benefits will be disclosed on Rakuten's website to the extent reasonably practicable, until the proceeds are fully allocated to eligible projects. Should there be any significant changes to the allocation plan of the proceeds or other important events, Rakuten will disclose this information in a timely manner.

(2) Social and Environmental Benefit Indicators

- The information on the social benefits of social projects and the environmental benefits of green projects to be disclosed as listed below is consistent with the social and environmental objectives.

Eligible Projects	Reporting Items			
	Green	Social		
		Output	Outcome	Impact
Investments related to 5G	GHG emissions	Number of 5G outdoor base stations	5G construction area	Status of initiatives aimed at solving social issues in Japan using the Rakuten Group's 5G network (Disclosed at least once before the redemption or full repayment of the proceeds)

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The R&I assessment method and results are disclosed on the R&I website (at <https://www.r-i.co.jp/en/rating/esg/index.html>).

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