

Second-Party Opinion

Mirae Asset Daewoo Co., Ltd. Green, Social and Sustainability Bond

Evaluation Summary

Sustainalytics is of the opinion that the Mirae Asset Daewoo Co., Ltd. Green, Social and Sustainability Bond Framework is credible and impactful, and aligns with the Green Bond Principles 2018, the Social Bond Principles 2018 and the Sustainability Bond Guidelines 2018. This assessment is based on the following:



USE OF PROCEEDS The eligible categories for the use of proceeds, (i) renewable energy, (ii) green buildings, (iii) sustainable water and wastewater management, (iv) SME financing and microfinance, and (v) affordable housing, are aligned with those recognized by the Green Bond Principles 2018, Social Bond Principles 2018 and Sustainability Bond Guidelines 2018. Sustainalytics considers that financing these eligible projects will have positive environmental and/or social impacts that advance the UN Sustainable Development Goals.



PROJECT EVALUATION / SELECTION Mirae Asset Daewoo’s internal process for evaluating and selecting projects is in line with market standard. Mirae Asset Daewoo’s dedicated Green, Social and Sustainability Bond Working Group is responsible for project evaluation and selection, and is composed of members from the Business Innovation Team, Business Management Team, Treasury Team, Investor Relations Team, Public Relations Team, Investment Banking Division, Alternative and Principal Investment Department, Risk Policy Team, Market Risk Management Team, Credit Risk Management Team, Corporate Finance Assessment Team and Investment Finance Assessment Team.



MANAGEMENT OF PROCEEDS Mirae Asset Daewoo’s processes for management of proceeds is in line with market practice. The management of proceeds will be overseen by the Treasury team, and the balance of the proceeds and its allocation will be tracked and monitored using a dedicated register.



REPORTING Mirae Asset Daewoo will annually report allocation of proceeds on its website. In addition, Mirae Asset Daewoo is also committed to reporting quantitative environmental and social indicators. Sustainalytics views Mirae Asset Daewoo’s allocation and impact reporting as aligned with market practice.

Evaluation date	11 April 2019
Issuer Location	Seoul, Korea

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Introduction

Mirae Asset Daewoo Co., Ltd. (“Mirae Asset Daewoo” or “the Group”) is one of Korea’s leading financial institutions.

The Group’s headquarters is located in Seoul, Korea. As of FY2018, the Group carried out its business activities through its global network, comprising 136 domestic branches, three representative offices (in Beijing, Shanghai and Ho Chi Minh City) and 11 overseas subsidiaries (including in the United States, United Kingdom, Hong Kong, Brazil, Vietnam, Indonesia, China (Beijing), Singapore, Mongolia and India). The Group generates its revenue primarily through the following five reportable operating business segments; wealth management, investment banking, sales and trading, wholesale, principal investment and others.

Mirae Asset Daewoo has developed the Mirae Asset Daewoo Co., Ltd. Green, Social and Sustainability Bond Framework (the “Framework”) under which it is considering to issue green, social and/or sustainability bonds and use the proceeds to finance and/or refinance, in whole or in part, future or existing projects related to the following 5 categories:

Green Eligible Categories:

- Renewable Energy
- Green Buildings
- Sustainable Water and Wastewater Management

Social Eligible Categories:

- SME Financing and Microfinance
- Affordable Housing

Mirae Asset Daewoo engaged Sustainalytics to review the Mirae Asset Daewoo Co., Ltd. Green, Social and Sustainability Bond Framework dated April 2019 and provide a second-party opinion on the Framework’s environmental and social credentials and its alignment with the Green Bond Principles (“GBP”), Social Bond Principles (“SBP”) and the Sustainability Bond Guidelines 2018 (“SBG”).¹ This Framework has been published in a separate document.²

As part of this engagement, Sustainalytics reviewed relevant public and non-public documentation to understand the sustainability impact of their business processes and planned use of proceeds, as well as management of proceeds and reporting aspects of Mirae Asset Daewoo’s green, social and/or sustainability bond. Sustainalytics also reviewed relevant public documents and non-public information.

This document contains Sustainalytics’ opinion of the Mirae Asset Daewoo Co., Ltd. Green, Social and Sustainability Bond Framework and should be read in conjunction with that Framework.

¹ The Sustainability Bond Guidelines are administered by the International Capital Market Association and are available at: <https://www.icmagroup.org/green-social-and-sustainability-bonds/sustainability-bond-guidelines-sbg/>.

² The Mirae Asset Daewoo Co., Ltd. Green, Social and Sustainability Bond Framework is available on Mirae Asset Daewoo’s website at: <https://english.miraeassetdaewoo.com/> (Under Investor Relations)

Sustainalytics' Opinion

Section 1: Sustainalytics' Opinion on the Mirae Asset Daewoo Co., Ltd. Green, Social and Sustainability Bond Framework

Summary

Sustainalytics is of the opinion that the Mirae Asset Daewoo Co., Ltd. Green, Social and Sustainability Bond Framework is credible and impactful, and aligns with the four core components of the Green Bond Principles 2018, Social Bond Principles 2018 and the Sustainability Bond Guidelines 2018. Sustainalytics highlights the following elements of Mirae Asset Daewoo's Sustainability Bond Framework:

- Use of Proceeds:
 - The use of proceeds described in the Framework, (i) renewable energy, (ii) green buildings and (iii) sustainable water and wastewater management, (iv) SME financing and microfinance, and (v) affordable housing, are aligned with those recognized by the Green Bond Principles 2018, Social Bond Principles 2018 and Sustainability Bond Guidelines 2018 as having clear green and/or social benefit.
 - Under the renewable energy category, the proceeds will be allocated to development, construction, maintenance and operation. Sustainalytics recognizes that CAPEX (such as development and construction) is generally preferred by investors, however, given the nature to the projects, it also believes that OPEX will be important to sustaining positive environmental impacts.
 - Mirae Asset Daewoo includes financing/refinancing of biomass power limited to energy generation from marine, agriculture, and forest waste. The company excludes biomass sources that will compete with food production, but no quantitative threshold for the carbon intensity of biomass facilities has been included, which Sustainalytics views as a limitation of the framework. For hydroelectric however, Sustainalytics highlights that financing of hydroelectric power generation is limited to projects with lower than 25MW.
 - In the green building category, Mirae Asset Daewoo uses recognized third party certification standards such as LEED, BREEAM, HQE, and G-SEED with a focus on the top two levels of certification, as well as BBC-Effinergie+ (see Appendix 1 for additional details on the certification schemes). This is in line with market best practice.
 - The framework also allows for the financing of acquisition of green buildings, in addition to construction and renovation. Sustainalytics recognizes that the acquisition of green buildings may have limited additionality given that it is just an ownership transition. However, Sustainalytics considers that acquisitions of green buildings support the overall development of green buildings in the market.
 - For the social use of proceeds, Mirae Asset Daewoo intends to finance start-ups, venture companies and SMEs certified as 'Good Employment Company' by the central or local government in South Korea. While the label, given by the South Korean Government does not have minimum threshold, it considers number of jobs created or quality of employment, including baseline requirements on employment and employment standard. Sustainalytics considers the selection process to be robust and believes that the financing of SMEs that received the label can contribute to employment generation in South Korea. The full process can be found in Appendix 2. In addition, Mirae Asset Daewoo commits to review the selection of companies on an annual basis to ensure the SMEs label as "Good Employment Company" is still valid.
 - Mirae Asset Daewoo also includes financing of SMEs founded by Business Starters (and re-starter) with management under age of 39 or 50% of employees under age of 39. Sustainalytics considers the financing of businesses by starters (less than seven years of

- experience) to contribute to employment generation given studies indicate that young companies significantly contribute to employment generation.^{3,4}
- The company also finances affordable housing for people with income below national average or college students, young people, newlyweds or single parents. Given the clear definition of target population for affordable housing, Sustainalytics considers the use of proceeds to contribute to access to affordable housing for disadvantaged groups.
 - Mirae Asset Daewoo intends to refinance projects with the lookback period of 36 months. While Sustainalytics acknowledges that the market may view the refinancing of older projects to reduce the additionality of the bond, it considers that this lookback period is in line with market practice.
- **Project Evaluation and Selection:**
 - Mirae Asset Daewoo's dedicated Green, Social and Sustainability Bond Working Group composed of members from the Business Innovation Team, Business Management Team, Treasury Team, Investor Relations Team, Public Relations Team, Investment Banking Division, Alternative and Principal Investment Department, Risk Policy Team, Market Risk Management Team, Credit Risk Management Team, Corporate Finance Assessment Team, and Investment Finance Assessment Team, will be responsible for assessing environmental and social impacts and selecting the projects in alignment with the Framework, which is in line with market practice.
 - **Management of Proceeds:**
 - The management of the use of proceeds is in line with market practice and includes an internal tracking process where the balance of the proceeds and its allocation will be reviewed using a dedicated Green, Social and Sustainability Bond Register, on an annual basis. The Treasury team will supervise the management of the proceeds.
 - Unallocated proceeds will be invested in cash, cash equivalents, investment grade securities or other marketable securities and short-term instruments or other capital market activities.
 - **Reporting:**
 - Mirae Asset Daewoo is committed to reporting on information including the amount of allocated proceeds per eligible category as well as the amount of unallocated proceeds annually on its website. This is in line with market standard. Where possible, Sustainalytics encourages the company to report on new financing vs. refinancing.
 - Impact reporting will include environmental impact indicators such as the amount of power generated from renewable energy (kWh), tons of GHG avoided, tons of water treated, type of certification and number of green buildings as well as social impact indicators such as the amount of financing provided to start-ups, venture companies and SMEs, number of start-ups, venture companies and SMEs financed, and the amount of financing provided for public housing. In Sustainalytics' view, reporting on these metrics is in line with market practice.

Alignment with Green Bond Principles 2018, Social Bond Principles 2018 and Sustainability Bond Guidelines 2018

Sustainalytics has determined that the Mirae Asset Daewoo's green, social and sustainability bond proceeds align to the four core components of the Green Bond Principles 2018, Social Bond Principles 2018 and the Sustainability Bond Guidelines 2018. For detailed information please refer to Appendix 3: Sustainability Bond / Sustainability Bond Programme External Review Form.

³ <https://www.mv.helsinki.fi/home/ajripatt/HMRAD/dependent%20vs%20independent.pdf>.

⁴ http://www.ilo.org/global/about-the-ilo/newsroom/comment-analysis/WCMS_218252/lang-en/index.htm.

Section 2: Sustainability Performance of the Issuer

Contribution of Framework to Issuer's sustainability strategy

Mirae Asset Daewoo sets out "Citizenship" as one of the four components of their Core Values and pledges to be aware of its social responsibilities and give back to the communities. With respect to sustainability issues, the company conducted a materiality assessment and commits to manage and report on ten sustainability themes, including "Expand in the development of socially responsible investment (SRI)", "Develop eco-friendly products to respond to climate change" and "Strategic social contribution activities".

In line with the above issues, the company has developed various SRI funds that respond to social needs and climate change. As a result, the amount invested in SRI has reached KRW 36 billion as of December 2017.⁵ Furthermore, the company supported companies possessing green technologies through paid-in capital increases, initial public offerings (IPO), and making direct investments. Mirae Asset Daewoo has also provided financial advisory, brokerage, and agent services to renewable power generation projects.

Moreover, Mirae Asset Daewoo works to support the growth of SMEs, by providing financial services that are specialized for SMEs, and hosting seminars and gatherings.

Given the sustainability-related initiatives undertaken by Mirae Asset Daewoo, Sustainalytics is of the opinion that Mirae Asset Daewoo is well positioned to issue green, social and sustainability bonds, and the framework aligns with the company's sustainability strategy. Nevertheless, Sustainalytics encourages the company to disclose structured sustainability policies and sustainability targets.

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

Sustainalytics recognizes that some of the eligible criteria included in the Mirae Asset Daewoo Co., Ltd. Green, Social and Sustainability Bond Framework have potential environmental and social risks. These risks mainly relate to loss of biodiversity from construction and infrastructure for large renewable energy projects or water infrastructure, workers' health and safety, and community relations related to renewable energy and green building projects. Additionally, social projects may have the risk of increasing inequality if not targeted at specific vulnerable populations. Mirae Asset Daewoo manages environmental and social risks in the following ways:

- Mirae Asset Daewoo's project selection process for the green, social and sustainability bond use of proceeds excludes investments and loans that finance the business related to weapons, child labour, luxury sectors, adult entertainment, alcohol, tobacco, fossil fuel, and nuclear power. In addition, Mirae Asset Daewoo limits investments in biomass to waste sources and sources that will not compete with food production. Hydro-power projects are limited to those projects with a generating capacity of over 25 megawatts, decreasing related biodiversity and community relations risks.
- Mirae Asset Daewoo, through its Code of Conduct, is committed to conduct duties in accordance with laws and regulations which include environmental and social matters. However, Sustainalytics also notes that the regulatory environments in which projects may be based vary in the robustness with which they address key risks. Sustainalytics recommends Mirae asset Daewoo to set internal guidelines to mitigate environmental and social risks from the projects financed through its social, green and sustainability bonds, including through the incorporation of sustainability considerations into credit risk assessments, for example.

While Mirae Asset Daewoo has some measures in place to limit risks from eligible use of proceeds, Sustainalytics encourages the company to further expand its screening process and project assessment to address common environmental and social risks associated with the projects.

⁵ Mirae Asset Daewoo, "2018 Mirae Asset Daewoo Integrated Report", at <https://www.miraeassetdaewoo.com/public/newir/report/2018/07/17/1531805585069.pdf>.

Section 3: Impact of Use of Proceeds

All five use of proceeds categories are recognized as impactful by the Green Bond Principles 2018, the Social Bond Principles 2018, and the Sustainability Bond Guidelines 2018. Sustainalytics has focused the impact relevant in the local context.

Renewable Energy

South Korea's government announced an energy policy transformation on June 2017 to gradually reduce dependence on nuclear and coal power, and accelerate the shift towards renewable energy and natural gas.⁶ Reflecting this policy, the 8th national electricity procurement plan published in 2017, set out a target to increase the share of renewable generation in the total electricity production from 7% in 2017 to 20% by 2030. The plan also showed the government's aim to increase installed capacity of renewable energy from 11.3GW in 2017 to 58.5GW by 2030.⁷ Additionally, as part of their commitments under the Paris Agreement, the country intends to reduce 37% of the GHG emissions compared to business-as-usual levels by 2030,⁸ which indicates the need to accelerate the expansion of low-carbon energy generation capacities.

Given this context, Sustainalytics holds a positive view that Mirae Asset Daewoo's financing of renewable energy related projects is aligned with South Korea's government policy and will contribute to advance South Korea's renewable energy goals and climate targets.

Green Building

According to a study by the American Council for an Energy-Efficient Economy, South Korea ranked 16th among the 25 largest energy-consuming countries for energy efficiency in the buildings sector. In particular, South Korea's primary energy demand per unit of residential floor area, adjusted for climate, was exceeded only by South Africa, Russia, and Poland. For commercial buildings, Korea's energy intensity per unit of floor space was the highest noted, and when ranked on energy usage per dollar of GDP was behind only Russia and Ukraine.⁹ In this context, actions to develop energy-efficient buildings, both residential and commercial, will have significant impact.

Mirae Asset Daewoo's Framework describes that the use of proceeds will be used for green buildings that qualify for recognized Green Building Standards such as LEED, BREEAM, HQE HQE, BBC-Effinergie+ and G-SEED. Sustainalytics is of the opinion of Mirae Asset Daewoo's financial investments into certified green buildings with top two levels of certifications, which will provide positive environmental impacts, in particular in the South Korean context.

Sustainable Water and Wastewater Management

The annual average rainfall of South Korea is 1,283mm, which is 1.4 times higher than the global average. However, due to high population density, annual rainfall per person is 2,591mm which is 13% of the global average, and two-thirds of the annual rainfall is concentrated in the summertime.¹⁰ Furthermore, "Environmental Outlook to 2050" published by OECD in 2012, described South Korea as a country under severe water stress. Water abstractions as a percentage of renewable water resources, was 40% in 2009, the highest among the OECD countries.¹¹ Moreover, recent studies suggested increased seasonality and regional variability of mean and extreme precipitation, with the rainfall variation likely to increase over time, thus putting increased pressure on water quality and availability.¹²

⁶ Lee, S. (2017), "Energy Transition and Renewable Energy in Korea" at: https://www.unescap.org/sites/default/files/Session%201-6.%20Sanghoon%20Lee_GESI.pdf

⁷ Ministry of Trade, Industry and Energy, "Ministry announces 8th Basic Plan for Electricity Supply and Demand", at: http://english.motie.go.kr/en/tp/energy/bbs/bbsView.do?bbs_seq_n=605&bbs_cd_n=2&view_type_v=TOPIC&¤tPage=1&search_key_n=&search_val_v=&cate_n=3.

⁸ NDC Registry, "Intended Nationally Determined Contribution (Submission by the Republic of Korea)", at: <https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Republic%20of%20Korea%20First/INDC%20Submission%20by%20the%20Republic%20of%20Korea%20on%20June%202030.pdf>.

⁹ Castro-Alvarez, F. et al. (2018), "The 2018 International Energy Efficiency Scorecard", American Council for an Energy-Efficient Economy, at: <https://aceee.org/sites/default/files/publications/researchreports/i1801.pdf>.

¹⁰ OECD (2015), "Water Resources Allocation (Korea)", at: <https://www.oecd.org/korea/Water-Resources-Allocation-Korea.pdf>.

¹¹ OECD (2012), "OECD Environmental Outlook to 2050", at: https://espas.secure.europarl.europa.eu/orbis/sites/default/files/generated/document/en/OECD%20Environmental%20outlook%20to%202050_0.pdf.

¹² Jung, I. et al. (2011), "Recent trends of mean and extreme precipitation in Korea", at: <https://rmets.onlinelibrary.wiley.com/doi/pdf/10.1002/joc.2068>.

Given the current water challenges in South Korea, Sustainalytics is of the opinion that the Sustainable Water and Wastewater Management use of proceeds category will create positive impact by supporting the establishment of sustainable water management systems and mitigating water scarcity risks.

SME financing and microfinance

SMEs accounted for 99.9% of the South Korean enterprises and 87.9% of total employment in the country in 2014.¹³ As they represent a way of securing economic growth, while also promoting job creation, innovation and social integration, the South Korean government provides a high level of support for SMEs, such as implementing measures to boost financing, developing business incubation centers, and providing tax incentives. In 2017, the central government operated 288 programs to support SMEs, and allocated 3.0% of its total spending of that year.¹⁴ Furthermore, SMEs have increasingly relied more on bank loans for funding their businesses, increasing from 73.5% in 2005 to 83.8% in 2013,¹⁵ which highlights that SMEs are highly dependent on bank debts. Despite the numbers of SMEs, only 0.01% of small companies grew into medium-sized enterprises over the period 2011-2014,¹⁶ which indicates that limited access to funding remains a major obstacle in the growth path of small and medium enterprises.

Mirae Asset Daewoo's Framework describes that the use of proceeds will be used to provide loans or direct investment in start-ups, venture companies and SMEs founded by starters (no longer than seven years in the business) and with management under age of 39 or 50% of employees under age of 39 or those SMEs certified as Good Employment Company. Sustainalytics considers that Mirae Asset Daewoo's projects would be able to contribute to stimulate employment opportunities given the age of businesses financed as well as the robust selection process by the South Korean Government for "Good Employment Companies" (see Appendix 2).

Affordable housing

Housing policy in South Korea has historically been characterized by government intervention to support the construction of housing units by providing land to developers, financing initiatives, various regulations, and direct actions by state-owned corporations.¹⁷ These measures were designed to ameliorate widespread housing shortages and deficiencies in quality, and were largely successful in meeting these goals.¹⁸ However, housing affordability remains an ongoing issue, in particular in major cities, which have seen substantial population growth. Socioeconomic and systemic factors, such as demographic shifts and the decline of the traditional Jeonse rent system, have exacerbated the situation. In the city of Seoul, despite a 2.3 time increase in housing stock between 1990 and 2015, purchase prices and rent levels continue to increase, impacting affordability.¹⁹ To address this issue, government policy has moved towards more targeted programs for low-income earners, young people, and other vulnerable groups.²⁰

Sustainalytics is of the opinion that the affordable housing use of proceeds category will create positive social impact by increasing lending to affordable housing for disadvantaged populations such as single parents, college students, young people, and the elderly with low and medium income in Korea. Mirae Asset Daewoo's affordable housing use of proceeds category is important in the context of affordability challenges in Korea.

Alignment with/contribution to SDGs

The Sustainable Development Goals ("SDGs") were set in September 2015 and form an agenda for achieving sustainable development by the year 2030. This green, social and sustainability bond advances the following SDG goals and targets:

¹³ Ministry of SMEs and Start-ups, "Status of Korean SMEs", at: <https://www.mss.go.kr/site/eng/02/10202000000002016111504.jsp>.

¹⁴ Jones, R. et al. (2018), "Enhancing Dynamism in SMEs and Entrepreneurship in Korea", OECD, at: [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ECO/WKP\(2018\)58&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ECO/WKP(2018)58&docLanguage=En).

¹⁵ OECD (2016), "OECD Economic Surveys Korea", at: <https://www.oecd.org/eco/surveys/Korea-2016-OECD-economic-survey-overview.pdf>.

¹⁶ OECD (2016), "Korea Policy Brief", at: https://www.oecd.org/industry/korea-promoting-innovative-entrepreneurship_EN.pdf.

¹⁷ Kim, K. et al. (2017), "Housing policy in the Republic of Korea", Asian Development Bank Institute, at: <https://www.asiapathways-adbi.org/2017/08/housing-policy-in-the-republic-of-korea/>.

¹⁸ Kim, K. et al. (2016), "Housing Policy in the Republic of Korea", Asian Development Bank Institute, at: <https://www.adb.org/sites/default/files/publication/183281/adbi-wp570.pdf>.

¹⁹ Park, E. et al., "Affordable Rented Housing Strategies in Seoul", The Seoul Institute, at: <http://global.si.re.kr/content/affordable-rented-housing-strategies-seoul>.

²⁰ "Seoul's revitalisation of youth housing", Retalk Asia, at: <https://www.retalkasia.com/news/2017/10/30/seoul%E2%80%99s-revitalisation-youth-housing/1509329098>.

Use of Proceeds Category	SDG	SDG target
Renewable Energy	7. Affordable and Clean Energy	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix
Green Building	11. Sustainable Cities and Communities	11.B By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters
Sustainable Water and Wastewater Management	6. Clean Water and Sanitation	6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all
SME financing and microfinance	8. Decent Work and Economic Growth	8.10 Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all
Affordable Housing	11. Sustainable Cities and Communities	11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

Conclusion

Mirae Asset Daewoo has developed the green, social and sustainability bond framework to finance eligible projects focused on renewable energy, green buildings, sustainable water and wastewater management, SME financing and microfinance and affordable housing. It is supporting projects with clear environmental benefits by mitigating GHG emissions and preventing resource waste, as well as social benefits by providing access to finance for SMEs and to housing for vulnerable populations.

Additionally, Mirae Asset Daewoo's green, social and sustainability framework displays market practice. The eligibility criteria are aligned with projects recognized by the Green Bond Principles 2018, Social Bond Principles 2018 and Sustainability Bond Guidelines 2018 as having clear environmental and/or social benefits. Furthermore, the evaluation and selection of eligible projects by a dedicated Green, Social and Sustainability Bond Working Group, the management of proceeds using a dedicated register and the company's commitment to annual allocation and impact reporting align with market practice.

Sustainalytics considers Mirae Asset Daewoo's definition of eligible social categories to ensure investments are targeted to vulnerable populations. In addition, Sustainalytics views the company's green eligible categories to be aligned with market practice.

Based on the above considerations, Mirae Asset Daewoo's green, social and sustainability bond is in alignment with market norms such as the Green Bond Principles 2018, Social Bond Principles 2018 and Sustainability Bond Guidelines 2018, and Sustainalytics is of the opinion that Mirae Asset Daewoo's green, social and sustainability bond framework is transparent and credible.

Appendices

Appendix 1: Overview and Comparison of Green Building Certification Schemes

	LEED ²¹	BREEAM ²²	HQE	BBC Effinergie+	G-SEED ²³
Back ground	Leadership in Energy and Environmental Design (LEED) is a US Certification System for residential and commercial buildings used worldwide. LEED was developed by the non-profit U.S. Green Building Council (USGBC) and covers the design, construction, maintenance and operation of buildings.	BREEAM (Building Research Establishment Environmental Assessment Method) was first published by the Building Research Establishment (BRE) in 1990. Based in the UK. Used for new, refurbished and extension of existing buildings.	The Haute Qualité Environnementale or HQE (High Quality Environmental standard) is a standard for green building in France, based on the principles of sustainable development first set out at the 1992 Earth Summit. The standard was launched in 2005 and is controlled by HQE and certificate is issued by Cerway/ Certivea/ Cerqual.	'Bâtiment basse consommation Effinergie +' is an energy efficiency label launched in 2007 and administered by the French association EFFINERGIE. At its inception in 2007, the label targeted energy consumption levels averaging 50 kWh in primary energy per m ³ /year. The label covers all newly built assets (residential buildings, educational buildings, healthcare facilities, office buildings, hotels, restaurants, commercial buildings, airports, tribunals, industrial buildings etc.) and requires that the energy consumption levels and bioclimatic needs to be 20% lower than the 2012 French Thermic Regulations (40 kWh/m ²)	G-SEED (Green Standard for Energy and Environmental Design) is a green building certification used in Korea. First implemented in 2002, and later expanded in 2016, G-SEED is administered by the Korean Government under the authority of the Green Building Act (2006).
Certification	Certified Silver Gold	Pass Good Very Good	Pass Good Very good	Certified	Green 4 Green 3 Green 2

²¹ More information on the LEED certification scheme at: <https://new.usgbc.org/leed>.

²² More information on the BREEAM certification scheme at: <https://www.breeam.com/>.

²³ More information on the G-SEED certification scheme at (Korean): <http://gseed.greentogether.go.kr/sys/gms/selectGreenMain.do>.

Mirae Asset Daewoo Co., Ltd. Green, Social and Sustainability Bond

n levels	Platinum	Excellent Outstanding	Excellent Exceptional		Green 1
Areas of Assessment: Environmental Project Management	Integrative process, which requires, from the beginning of the design process, the identification and creation of synergies between the various project stakeholders regarding the construction choices and the technical systems.	Management (Man) addresses various aspects: project management, deployment, minimal environmental disturbance worksite and stakeholder engagement.	Global management system	Not Applicable	
Areas of Assessment: Environmental Performance of the Building	<ul style="list-style-type: none"> - Energy and atmosphere - Sustainable Sites - Location and Transportation - Materials and resources - Water efficiency - Indoor environmental quality - Innovation in Design - Regional Priority 	<ul style="list-style-type: none"> - Energy - Land Use and Ecology - Pollution - Transport - Materials - Water - Waste - Health and Wellbeing - Innovation 	<ul style="list-style-type: none"> - Energy - Environment (Site, Components, Worksite, Water, Waste, Maintenance) - Comfort (Hydrothermal, Acoustic, Visual, Olfactory) - Health (Spaces quality, Air Quality, Water Quality) - Principles of Equivalence 	<ul style="list-style-type: none"> - Bioclimatic needs - Energy consumption - Air permeability - Ventilation systems - Evaluation of equipment energy consumption 	<ul style="list-style-type: none"> - Land Use & Transportation - Energy & Environmental Pollution - Materials & Resources - Water Management - Maintenance - Ecology - Indoor Environment - Innovative Design
Requirements	<p>Prerequisites (independent of level of certification) + Credits with associated points.</p> <p>These points are then added together to obtain the LEED level of certification.</p>	<p>Prerequisites depending on the levels of certification + Credits with associated points.</p> <p>This number of points is then weighted by item²⁴ and gives a BREEAM level of certification, which is based on the overall</p>	<p>Prerequisites (independent of level of certification) + Points-based performance level: Performing and High Performing</p> <p>The Prerequisite level is obtained when all the minimum requirements for a target are met,</p>	<p>Points-based system divided between the preinspection verification stage and the functional verification stage.</p> <p>Single assessment criteria targeting:</p> <ul style="list-style-type: none"> - The improvement of the building's thermal 	<p>Prerequisites (independent of level of certification) + Credits with associated points.</p> <p>Individual credits are achieved in a number of categories, category scores are then weighted to</p>

²⁴ BREEAM weighting: Management 12%, Health and wellbeing 15%, Energy 19%, Transport 8%, Water 6%, Materials 12.5%, Waste 7.5%, Land Use and ecology 10%, Pollution 10% and Innovation 10%. One point scored in the Energy item is therefore worth twice as much in the overall score as one point scored in the Pollution item.

	<p>There are several different rating systems within LEED. Each rating system is designed to apply to a specific sector (e.g. New Construction, Major Renovation, Core and Shell Development, Schools- /Retail- /Healthcare New Construction and Major Renovations, Existing Buildings: Operation and Maintenance).</p>	<p>score obtained (expressed as a percentage). Majority of BREEAM issues are flexible, meaning that the client can choose which to comply with to build their BREEAM performance score.</p> <p>BREEAM has two stages/ audit reports: a 'BREEAM Design Stage' and a 'Post Construction Stage', with different assessment criteria.</p>	<p>while the Performing and High Performing levels are obtained based on a percentage of points given per target, allowing for flexibility.</p> <p>Based on the total number of stars obtained per area, an overall HQE level is then given.</p> <p>Environmental certificates are assigned at all stages of the building life cycle, and on-site audits are required.</p>	<p>insulation based on the climatic and altitude coefficient</p> <ul style="list-style-type: none"> - Extensive energy Consumption monitoring (TV, microwave etc.) - Renewable energy consumption display 	<p>achieve an overall grade.</p>
Performance display					
Accreditation	<p>LEED AP BD+C LEED AP O+M</p>	<p>BREEAM International Assessor BREEAM AP BREEAM In Use Assessor</p>	<p>HQE Construction Certification Referent HQE Operations Certification Advisor</p>	<p>Cerqual, Certivea, Promotelec, Prestaterre</p>	<p>Certification Bodies, appointed by the Ministry of Environment (MOE) and the Ministry of Land, Infrastructure and Transportation (MLIT) review and certifies projects.</p>
Qualitative considerations	<p>Widely recognised internationally, and strong assurance of overall quality.</p>	<p>Used in more than 70 countries: Good adaptation to the local normative context. Predominant environmental focus. BREEAM certification is less strict (less minimum thresholds) than HQE and LEED certifications.</p>	<p>HQE certification has the most number of targets concerning individuals. The "Comfort" and "Health" related themes are the most developed in this scheme. The HQE scheme recognises European and international standards (in</p>	<p>Used in France to promote energy performance beyond the requirements of the thermal regulation under which the building was built. Upon the introduction of new Thermal Regulation in 2020, the Effinergie+ label will no longer be</p>	<p>Widely used in Korea and aligned with government standards. Strong overall qualifications. Little international recognition.</p>

			particular the ISO and ASHRAE standards).	relevant for new buildings.	
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Appendix 2: Selection Process for South Korean “Good Employment Companies”

1. Certified as ‘Good Employment Company’ by the central or local government²⁵
 - i. Target: 100 companies with good track record of qualitative (High increase in # of % of employment) or quality (workhour management (support work life balance, transfer of part time to full time etc.) of employment – this is selected annually, and there is a list from 2018
 - ii. Step 1: Select candidate pool from employment guarantee database (500) and recommendation by local government (100)
 - iii. Step 2: Select 300 from the pool – Even with good quality jobs, exclude companies with decreasing # of employment and have track record of not following employment standard, job safety, requirement for hiring disabled, fair trade etc.
 - iv. Step 4: On site interview, including opinion from the union labor – Site review and interview conducted by the local government
 - v. Step 5: Select 100 companies

²⁵ http://www.moel.go.kr/local/jinju/news/notice/noticeView.do?bbs_seq=20190200076.

Appendix 3: Sustainability Bond / Sustainability Bond Programme - External Review Form

Section 1. Basic Information

Issuer name: Mirae Asset Daewoo Co., Ltd.

Sustainability Bond ISIN or Issuer Sustainability
Bond Framework Name, if applicable:
[specify as appropriate]

Review provider's name: Sustainalytics

Completion date of this form: 8 April 2019

Publication date of review publication: *[where
appropriate, specify if it is an update and add
reference to earlier relevant review]*

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 GBPs and SBPs:

- | | |
|--|--|
| <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, (i) renewable energy, (ii) green buildings, (iii) sustainable water and wastewater management, (iv) SME financing and microfinance, and (v) affordable housing, are aligned with those recognized by the Green Bond Principles 2018, Social Bond Principles 2018 and Sustainability Bond Guidelines 2018. Sustainalytics considers that financing these eligible projects to have positive environmental and/or social impacts that advance the UN Sustainable Development Goals.

Use of proceeds categories as per GBP:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Renewable energy | <input type="checkbox"/> Energy efficiency |
| <input 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 type="checkbox"/> Clean transportation |
| <input checked="" 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 checked="" 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 GBPs | <input type="checkbox"/> Other <i>(please specify)</i> . |

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

Use of proceeds categories as per SBP:

- | | |
|--|--|
| <input type="checkbox"/> Affordable basic infrastructure | <input type="checkbox"/> Access to essential services |
| <input checked="" type="checkbox"/> Affordable housing | <input checked="" type="checkbox"/> Employment generation (through SME financing and microfinance) |
| <input type="checkbox"/> Food security | <input type="checkbox"/> Socioeconomic advancement and empowerment |

- Unknown at issuance but currently expected to conform with SBP categories, or other eligible areas not yet stated in SBPs
- Other (please specify):

If applicable please specify the social taxonomy, if other than SBPs:

2. PROCESS FOR PROJECT EVALUATION AND SELECTION

Overall comment on section (if applicable):

Mirae Asset Daewoo's internal process in evaluating and selecting projects is in line with market standard, considering that Mirae Asset Daewoo's dedicated Green, Social and Sustainability Bond Working Group composed of members from the Business Innovation Team, Business Management Team, Treasury Team, Investor Relations Team, Public Relations Team, Investment Banking Division, Alternative and Principal Investment Department, Risk Policy Team, Market Risk Management Team, Credit Risk Management Team, Corporate Finance Assessment Team and Investment Finance Assessment Team, will be responsible for the project evaluation and selection.

Evaluation and selection

- | | |
|---|--|
| <input checked="" type="checkbox"/> Credentials on the issuer's social and green 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 Sustainability Bond proceeds | <input type="checkbox"/> Documented process to identify and manage potential ESG risks associated with the project |
| <input type="checkbox"/> Summary criteria for project evaluation and selection publicly available | <input type="checkbox"/> Other (<i>please specify</i>): |

Information on Responsibilities and Accountability

- | | |
|--|--|
| <input checked="" type="checkbox"/> Evaluation / Selection criteria subject to external advice or verification | <input type="checkbox"/> In-house assessment |
| <input type="checkbox"/> Other (please specify): | |

3. MANAGEMENT OF PROCEEDS

Overall comment on section (*if applicable*):

Mirae Asset Daewoo's processes for management of proceeds is in line with market practices. The management of the proceeds will be overseen by the Treasury team, and the balance of the proceeds and its allocation will be tracked and monitored using a register.

Tracking of proceeds:

- Sustainability 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:

- | | |
|--|---|
| <input type="checkbox"/> Allocations to future investments only | <input checked="" type="checkbox"/> Allocations to both existing and future investments |
| <input type="checkbox"/> Allocation to individual disbursements | <input type="checkbox"/> Allocation to a portfolio of disbursements |
| <input type="checkbox"/> Disclosure of portfolio balance of unallocated proceeds | <input type="checkbox"/> Other (<i>please specify</i>): |

4. REPORTING

Overall comment on section (if applicable):

Mirae Asset Daewoo will annually report allocation proceeds on its website. In addition, Mirae Asset Daewoo is also committed to reporting quantitative environmental and social indicators. Sustainalytics views Mirae Asset Daewoo's allocation and impact reporting as aligned with market practice.

Use of proceeds reporting:

- | | |
|--|--|
| <input type="checkbox"/> Project-by-project | <input checked="" type="checkbox"/> On a project portfolio basis |
| <input type="checkbox"/> Linkage to individual bond(s) | <input type="checkbox"/> Other (<i>please specify</i>): |

Information reported:

- | | |
|---|---|
| <input checked="" type="checkbox"/> Allocated amounts | <input type="checkbox"/> Sustainability Bond financed share of total investment |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Frequency:

- | | |
|--|--------------------------------------|
| <input checked="" type="checkbox"/> Annual | <input type="checkbox"/> Semi-annual |
| <input type="checkbox"/> Other (please specify): | |

Impact reporting:

- | | |
|--|--|
| <input type="checkbox"/> Project-by-project | <input checked="" type="checkbox"/> On a project portfolio basis |
| <input type="checkbox"/> Linkage to individual bond(s) | <input type="checkbox"/> Other (please specify): |

Frequency:

- | | |
|--|--------------------------------------|
| <input checked="" type="checkbox"/> Annual | <input type="checkbox"/> Semi-annual |
|--|--------------------------------------|

Other (please specify):

Information reported (expected or ex-post):

- | | |
|---|--|
| <input checked="" type="checkbox"/> GHG Emissions / Savings | <input type="checkbox"/> Energy Savings |
| <input type="checkbox"/> Decrease in water use | <input type="checkbox"/> Number of beneficiaries |
| <input type="checkbox"/> Target populations | <input checked="" type="checkbox"/> Other ESG indicators (please specify): kWh of power generated from renewable energy, tonnes of water treated, type of certification and number of green buildings, amount of financing provided to start-ups, venture companies and innovative SMEs, number of start-ups, venture companies and SMEs financed, and amount of financing provided for public housing |

Means of Disclosure

- | | |
|---|--|
| <input type="checkbox"/> Information published in financial report | <input type="checkbox"/> Information published in sustainability report |
| <input type="checkbox"/> Information published in ad hoc documents | <input checked="" type="checkbox"/> Other (please specify): Mirae Asset Daewoo's website |
| <input type="checkbox"/> 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:

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

Review provider(s):

Date of publication:

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

- i. **Consultant Review:** An issuer can seek advice from consultants and/or institutions with recognized expertise in environmental and social sustainability or other aspects of the issuance of a Sustainability Bond, such as the establishment/review of an issuer's Sustainability Bond framework. "Second Party Opinions" may fall into this category.
- ii. **Verification:** An issuer can have its Sustainability Bond, associated Sustainability Bond framework, or underlying assets independently verified by qualified parties, such as auditors. In contrast to certification, verification may focus on alignment with internal standards or claims made by the issuer. Evaluation of the environmentally and socially sustainable features of underlying assets may be termed verification and may reference external criteria.
- iii. **Certification:** An issuer can have its Sustainability Bond or associated Sustainability Bond framework or Use of Proceeds certified against an external green and social assessment standard. An assessment standard defines criteria, and alignment with such criteria is tested by qualified third parties / certifiers.
- iv. **Rating:** An issuer can have its Sustainability Bond or associated Sustainability Bond framework rated by qualified third parties, such as specialised research providers or rating agencies. Sustainability Bond ratings are separate from an issuer's ESG rating as they typically apply to individual securities or Sustainability Bond frameworks / programmes.

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For more information, visit www.sustainalytics.com

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