

METHODOLOGY (OTHER PERMISSIBLE SERVICES)

Green Bonds Assessment (GBA)

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Summary

This report sets out our methodology for assessing green bonds, which are fixed-income securities, both taxable and tax-exempt, that raise capital for use in financing or refinancing projects and or activities with specific climate or environmental sustainability purposes. The Green Bonds Assessment (GBA) provides an evaluation of the bond issuer's management, administration, allocation of proceeds to and reporting on environmental projects financed with the proceeds derived from green bond offerings.

Our assessment process will score each bond issue on five key factors (along with their respective sub-factors), weighted to reflect their relative importance, to arrive at a composite grade. The composite grade, in turn, will inform an overall assessment that runs from GB1 (Excellent) to GB5 (Poor). After a GBA is initially assigned, it may be refreshed periodically, based on information provided in the issuer's subsequently issued periodic reports.

Introduction

Green Bond Assessments¹ are not credit ratings and they apply to bond issues rather than to the bond issuers. They are forward-looking opinions of the relative effectiveness of the issuer's approach for managing, administering, allocating proceeds to and reporting on environmental projects financed by green bonds. As such, GBAs assess the relative likelihood that bond proceeds will be invested to support environmentally beneficial projects as designated by the issuer. GBAs provide a relative assessment of green bonds with the intention of assisting investors in their evaluation of various bond offerings across the universe of Moody's rated bonds as well as non-Moody's rated bonds.

This assessment methodology article explains Moody's approach to assessing green bonds issued by corporations, financial institutions, governments, supranational organizations, municipals as well as other entities. Also included are project finance, as well as structured finance transactions, such as asset backed securities (ABS). This methodology is intended to inform issuers, investors, financial intermediaries and other interested market participants about Moody's GBA definitions and symbols, assessment process, information sources, the key factors and sub-factors, and how these are scored to derive a GBA.

The initial assessment of green bonds and their use of proceeds involves an examination of relevant offering documentation, regulatory filings, issuer reports and presentations, if any, as well as all other publicly available information. Information derived from these sources is informed by a direct engagement and dialogue with the issuer along with any applicable documents that may be supplied in the engagement process.

¹ A Green Bond Assessment is not a credit rating and is considered an Other Permissible Service (OPS).

The combined inputs are used to evaluate the transaction, via a scorecard, the details of which are set forth herein, and assign the GBA. GBAs are expressed using a five-point relative scale, ranging from GB 1 (Excellent) to GB5 (Poor). Once assigned and communicated to the issuer, the GBA is disseminated publicly via a press release distributed through various newswire services. It is also maintained on Moodys.com. This is followed by the publication of a Green Bond Assessment Report that is also available to investors on www.moodys.com.

Once an assessment has been issued and published the assessment may be refreshed periodically to take into consideration the application of proceeds, reported progress against the initial plans for project investments and their environmental impacts, and continuing issuer disclosures, if any.

Assessment Symbols and Scale

GBAs are forward-looking opinions on the relative effectiveness of the approach adopted by green bond issuers to manage, administer, allocate proceeds to and report on environmental projects financed with proceeds derived from green bond offerings. The GBAs are intended to offer investors a more granular transparent view into these practices across various issues.

EXHIBIT 1

Assessment Scale and Definitions

Grade	Detail	Definitions
GB1	Excellent	Green bond issuer has adopted an excellent approach to manage, administer, allocate proceeds to and report on environmental projects financed with proceeds derived from green bond offerings. Prospects for achieving stated environmental objectives are excellent.
GB2	Very Good	Green bond issuer has adopted a very good approach to manage, administer, allocate proceeds to and report on environmental projects financed with proceeds derived from green bond offerings. Prospects for achieving stated environmental objectives are very good.
GB3	Good	Green bond issuer has adopted a good approach to manage, administer, allocate proceeds to and report on environmental projects financed with proceeds derived from green bond offerings. Prospects for achieving stated environmental objectives are good.
GB4	Fair	Green bond issuer has adopted a fair approach to manage, administer, allocate proceeds to and report on environmental projects financed with proceeds derived from green bond offerings. Prospects for achieving stated environmental objectives are fair.
GB5	Poor	Green bond issuer has adopted a poor approach to manage, administer, allocate proceeds to and report on environmental projects financed with proceeds derived from green bond offerings. Prospects for achieving stated environmental objectives are poor.

GBAs are expressed using a scale ranging from 1 (Excellent) to 5 (Poor) that encapsulates Moody's views, distilled from an evaluation of five broad factors that are weighted, as follows: Organization (15%), Use of Proceeds (40%), Disclosure on the Use of Proceeds (10%), Management of Proceeds (15%) and Ongoing Reporting and Disclosure (20%). Each factor is evaluated on the basis of various sub-factor considerations that are, in turn, scored.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moodys.com for the most updated credit rating action information and rating history.

Defining Green Bonds

Green bonds are defined as fixed-income securities, both taxable and tax-exempt, that raise capital for use in financing or refinancing projects and activities with specific climate or environmental sustainability purposes. These include debt obligations with direct recourse to issuers, project finance or revenue bonds,

with and without recourse to issuers, and securitizations collateralized by projects or assets whose cash flows provide the first source of repayment.

Regardless of structure, green bonds have generally been issued pursuant to a set of voluntary guidelines or framework known as the Green Bond Principles². The Green Bond Principles include criteria for the use of proceeds, the issuer's process for project evaluation, the management of proceeds, and reporting on a periodic basis. That said, there are variations around the interpretation and application of the Green Bond Principles, including the potential use of and reliance upon internal or external assurances in the form of second-party reviews and consultation, audits and third-party certifications which are recommended but not mandated by the Green Bond Principles.

Under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC), 196 nations were parties to the 12 December 2015 Paris Agreement, which aims to reduce greenhouse gas emissions to levels consistent with holding the increase in the global average temperature to well below 2° Celsius above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5° Celsius above pre-industrial levels. Meeting these targets will require an unprecedented allocation of capital, measured in trillions of dollars a year.

Green bonds have gained attention for their potential role in mobilizing capital toward environmental solutions. Capital market financing needs -- in combination with growing investor demand, standardization of offerings, and the issuance of benchmark-sized deals that are effectively priced, both investment grade and potentially speculative or non-investment grade -- are expected to lift green bond issuance in the years to come.

Assessment Approach and Methodology

We use a scorecard with the following five factors. With the exception of Use of Proceeds, each factor is comprised of five sub-factors.

1. Organization
2. Use of Proceeds
3. Disclosure on the Use of Proceeds
4. Management of Proceeds
5. Ongoing Reporting and Disclosure

Each of the five factors is weighted, as follows: Organization (15%), Use of Proceeds (40%), Disclosure on the Use of Proceeds (10%), Management of Proceeds (15%) and Ongoing Reporting and Disclosure (20%).

Each of the five factors is scored on a scale from 1 to 5. For factors 1, 3, 4, and 5, scoring is based on the number of sub-factors for which the stated criteria are satisfied. For example, in order to achieve a factor score of 1 the criteria for all five sub-factors must be satisfied. In the same way, in order to achieve a score of 2, four of the five sub-factors must be satisfied, etc. In contrast, scoring for factor 2 is based on qualitative and quantitative gradations that are shown in the scorecard.

The numerical score for each factor is multiplied by the weight for that factor with the results then summed to produce a composite weighted-factor score. The composite weighted factor score is then mapped back

² Refer to The Green Bond Principles, <http://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/green-bond-principles/>

to an overall score using the legend below. Due to its over-arching importance, scores of 4 and 5 in the Use of Proceeds factor will cap the scorecard outcome and will generally cap the GBA grade at the corresponding levels, i.e. GB4 and GB5.

Weighted Score Legend

GB1	GB2	GB3	GB4	GB5
≤ 1.5	1.5 - 2.5	2.5 - 3.5	3.5 - 4.5	> 4.5

The scorecard is an important reference tool that can be used to approximate the GBA of green bond issuances in most cases, and it provides summarized guidance for the factors that are generally most important in assigning GBAs. However, the scorecard is a summary that does not include every potential consideration. The weights shown for each factor in the scorecard represent an approximation of their importance, but actual importance may vary substantially. Please see the section below titled Assumptions and Limitations, and Assessment Considerations That Are Not Covered in the Scorecard.

Factor 1: Organization (15%)

Key Considerations: Most issuers of green bonds have a functionally oriented organization or unit and governance structure that relies on skilled dedicated or assigned personnel to set strategy and evaluate, qualify, select, and approve as well as monitor environmental projects and activities. The organization is aligned with the green bond issuance and it may rely on internal and/or external expertise as may be required.

We evaluate the organization's mission to set goals, develop a broad strategic framework for the deployment of green bond proceeds, evaluate, select and approve individual projects. This includes the organization's structure and decision-making process, its process for determining the eligibility of projects, as well as its framework for setting impact goals, measuring results relative to specific project-level objectives, and impact reporting.

We also consider the organization's engagements with or access to and/or consultation with internal or external environmental or related experts.

The sub-factors listed below frame our evaluation of the Organization factor. In scoring this factor, we attribute one point for meeting the criteria for each of the five sub-factors. For example, if the criteria for all five sub-factors are satisfied, the score for this factor would be "1" and if the criteria for three sub-factors are satisfied, the factor score would be "3".

Sub-Factor	1	2	3	4	5
	All 5 sub-factors	4 Sub-factors	3 Sub-factors	2 Sub-factors	1 Sub-factor or none
(1) Environmental governance and organization structure appears to be effective.					
(2) Policies and procedures enable rigorous review and decision making processes.					
(3) Qualified and experienced personnel and/or reliance on qualified third parties.					
(4) Explicit and comprehensive criteria for investment selection, including measurable impact results.					
(5) External evaluations for decision making in line with project characteristics.					

Factor 2: Use of Proceeds (40%)

Key Considerations: The deployment of green bond proceeds will be evaluated pursuant to the issuer's adopted policies and in conjunction with the explicitly recognized eight broad potential eligible project categories in the Green Bond Principles that "aim to address key areas of concern such as climate change, natural resources depletion, biodiversity conservation and/or pollution." Our evaluation of these and any additional categories will be further informed by one or more robust and widely recognized green bond frameworks or taxonomies that qualify eligible projects targeted at mitigation or adaptation of climate change. Such taxonomies may also be considered relative to regulatory guidelines, to the extent these have been promulgated by regulatory bodies. In evaluating the use of proceeds, we will use Green Bond Principles, and we may use additional applicable sector and regional taxonomies. For clarity, a project would need to be consistent with all of the applicable taxonomies/principles.

While various taxonomies have been promulgated to-date, to our knowledge a singular comprehensive, robust and universally accepted catalogue of eligible green bond categories does not as yet exist. That said, a range of taxonomies to define eligible green projects have been established by various organizations. These range from the broad set of green bond categories adopted by the Green Bond Principles (listed in Exhibit 2) to some that are considered more robust or more scientifically oriented. These include the Climate Bond Initiative's Green Bonds Taxonomy, the International Finance Corporation's Definitions and Metrics for Climate-Related Activities and the OECD Green Bonds Taxonomy, to mention a few. In China recently, the Peoples Bank of China (PBoC) introduced yet another taxonomy into the recently issued Green Financial Bond Directive and other regulatory bodies may take similar actions. Some of these taxonomies are still in draft form while others, due to complexities, have not been completed in their entirety. There are also more narrowly based sets of criteria for defining some narrowly focused green projects. Examples of these include the Leadership in Energy and Environmental Design (LEEDS), Building Research Establishment Environmental Assessment Methodology (BREEAM), Global Real Estate Sustainability Benchmark (GRESB), Green Star or Energy Star, to mention just a few.

EXHIBIT 2

The Green Bond Principles Categories of Potential Eligible Green Projects

- » Renewable energy
- » Energy efficiency (including efficient buildings)
- » Sustainable waste management
- » Sustainable land use (including sustainable forestry and agriculture)
- » Biodiversity conservation
- » Clean transportation
- » Sustainable water management (including clean and/or drinking water)
- » Climate change adaptation
- » Other³

Since the green bond market is in its early stages of development, green bond criteria are likely to continue to evolve over time, and additional classifications as well as refinements to classifications are expected to be promulgated. We can also envision some convergence around one or more taxonomies over time. We evaluate green bonds on the basis of taxonomies in effect at the time that the bonds are issued or reviewed. We recognize that the standards for what constitutes an environmentally sustainable project could change over time, for instance in light of new scientific understanding or new technologies. As a result, the definitions and parameters used to evaluate the Use of Proceeds factor could change accordingly. More specifically, our scoring for this factor and the overall assessment score of a particular bond issuance may be

³ Investments that fall in the GBP "Other" category would generally be evaluated pursuant to one or more additional robust and widely recognized green bond frameworks.

revised owing solely to changes over time in the standards of what constitutes an environmentally sustainable project⁴.

The scoring for the Use of Proceeds factor will be based upon our qualitative and quantitative assessment of the issuer's adopted policies, the project's eligibility based on the categories established under the Green Bond Principles and any additional taxonomies that are applicable, as described above, and the percentage of proceeds invested in such project categories (or to be invested in a reasonable timeframe, per the issuer's stated plans).

For example, in order to achieve a score of 1, an amount equal to or greater than 95% of proceeds needs to be allocated to eligible project categories that are determined based on the issuer's adopted policies, the categories established under the Green Bond Principles, further informed by one or more robust and widely recognized green bond frameworks or taxonomies that qualify eligible projects, including any applicable regulatory guidelines. Similarly, a score of 3 corresponds to the allocation of 80% - <90% of proceeds allocated to eligible projects which are determined based on the same criteria.

Use of Proceeds scores of 4 and 5 will generally cap the GBA grade at the corresponding levels, i.e. GB4 and GB5.

Score Sub-Factor

1	≥95% - 100% of proceeds allocated to eligible project categories that are determined based on the issuer's adopted policies and the categories established under the Green Bond Principles that will be further informed by one or more robust and widely recognized green bond frameworks or taxonomies that qualify eligible projects, including any applicable regulatory guidelines.
2	90% - <95% of proceeds allocated to eligible project categories that are determined based on the issuer's adopted policies and the categories established under the Green Bond Principles that will be further informed by one or more robust and widely recognized green bond frameworks or taxonomies that qualify eligible projects, including any applicable regulatory guidelines.
3	80% - <90% of proceeds allocated to eligible project categories that are determined based on the issuer's adopted policies and the categories established under the Green Bond Principles that will be further informed by one or more robust and widely recognized green bond frameworks or taxonomies that qualify eligible projects, including any applicable regulatory guidelines.
4	50% - <80% of proceeds allocated to eligible project categories that are determined based on the issuer's adopted policies and the categories established under the Green Bond Principles that will be further informed by one or more robust and widely recognized green bond frameworks or taxonomies that qualify eligible projects, including any applicable regulatory guidelines.
5	<50% of proceeds allocated to eligible projects that are determined based on the issuer's adopted policies and the categories established under the Green Bond Principles that will be further informed by one or more robust and widely recognized green bond frameworks or taxonomies that qualify eligible projects, including any applicable regulatory guidelines.

Factor 3: Disclosure on the Use of Proceeds (10%)

Key Considerations: The quality and transparency of project disclosures as well as project funding practices.

In addition to an assessment of the issuer's funding practices as well as investment time horizon for the allocation of bond proceeds, consideration of this factor will include the quality and transparency of

⁴ Hypothetically, the Use of Proceeds score for a particular bond issuance could be revised upward or downward over time even though the project itself was in all other respects unchanged and the proceeds were invested as expected, if the categories of eligible projects in the relevant taxonomy changed during that period. Changes in this factor score could impact the overall score as well as the assigned GBA. As example, we assume that there was a green bond taxonomy in the 1980s under which a power plant that utilized waste coal (which pollutes land and waterways) in a circulating fluidized bed boiler with low sulfur dioxide and nitrous oxide emissions was considered an eligible investment. If an issuer had sought a GBA for a 30 year bond solely used to finance such a project, the Use of Proceeds score could have been as high as 1. Decades later, when the standards for judgment would have placed greater weight on the project's carbon dioxide emissions, the same taxonomy might have excluded any coal-fired projects, such that the percentage of proceeds financing eligible projects would have been 0%. When the GBA was refreshed after the change in taxonomy, the Use of Proceeds factor would have been a 5, likely leading to an overall score and a GBA of 5.

disclosures provided in offering documents and/or any other available forms. These will be scored as indicated below:

Sub-Factor	1	2	3	4	5
	All 5 sub-factors	4 Sub-factors	3 Sub-factors	2 Sub-factors	1 Sub-factor or none
1. Description of green projects, including portfolio level descriptions, actual and/or intended.					
2. Adequacy of funding and/or strategies to complete projects.					
3. Quantitative and/or qualitative descriptions for targeted environmental results.					
4. Methods and criteria, both qualitative or quantitative, for calculating performance against targeted environmental results.					
5. Issuer relies on external assurances: Second party reviews, audits and/or third party certifications.					

Factor 4: Management of Proceeds (15%)

Key Considerations: Our evaluation focuses on practices and procedures applicable to the allocation and tracking of proceeds, temporary investment practices pending distribution or investment in eligible projects, as well as the robustness and clarity of proposed public disclosure methods around these processes. In the process, we positively consider any internal tracking methods that are reviewed or audited by an independent party, either within the broader organization or unit or via external third parties. These will be scored as indicated below:

Sub-Factor	1	2	3	4	5
	All 5 sub-factors	4 Sub-factors	3 Sub-factors	2 Sub-factors	1 Sub-factor or none
1. Bond proceeds are segregated and separately tracked on an accounting basis or via a method by which proceeds are earmarked.					
2. Application of proceeds is tracked by environmental category and project type.					
3. Robust process for reconciling planned investments against actual allocations.					
4. Clear eligibility rules for investment of cash balances.					
5. Audit by external organization or independent internal audit unit.					

Factor 5: Ongoing Reporting and Disclosure (20%)

Key Considerations: Transparency, quality and frequency of reporting and disclosure practices, as well monitoring methods.

At the time of issue, we evaluate the nature of expected periodic updates and their frequency – with regard to specific projects and the capital or amount invested in those projects – and which may be made available to investors via newsletters, website updates, or published financial reports. This is based on discussions with the issuer, and once issued, based on a combination of discussions with the issuer and a review of periodic reports that are actually issued.

In addition, our evaluation focuses on the issuer's expected disclosures regarding environmental impacts, including the adoption and reliance on objective metrics for measuring both positive and negative outcomes, if any, and/or qualitative descriptions.

Key considerations will be scored as indicated below:

Sub-Factor	1	2	3	4	5
	All 5 sub-factors	4 Sub-factors	3 Sub-factors	2 Sub-factors	1 Sub-factor or none
1. Reporting and disclosure post issuance provides/to be provided detailed and timely status update on projects.					
2. Ongoing annual reporting is expected over the life of the bond.					
3. Disclosures provide granular detail on the nature of the investments and their expected environmental impacts					
4. Reporting provides/to be provided a quantitative and/or qualitative assessment of the environmental impacts actually realized to-date.					
5. Reporting includes/to include quantitative and/or qualitative explanation of how the realized environmental impacts compare to projections at the time the bonds were sold.					

Assumptions and Limitations, and Assessment Considerations That Are Not Covered in the Scorecard

The scorecard used in this methodology represents a decision to favor simplicity that enhances transparency and to avoid greater complexity that would enable the scorecard to map more exactly to actual GBAs. Accordingly, the five rating factors in the scorecard do not constitute an exhaustive treatment of all of the considerations that are important for GBAs. In addition, our assessments incorporate expectations for future performance – for instance, the ability of an issuer to deploy green bond funds in accordance with its plan. In some cases, our expectations for future performance may be informed by confidential information that we are unable to disclose. In other cases, we estimate future results based upon past performance, trends across the peer group, or other factors. In either case, predicting the future is subject to the risk of substantial inaccuracy.

Assumptions that may cause our forward-looking expectations to be incorrect include unanticipated changes in any of the following factors: the macroeconomic environment and general financial market conditions, disruptive technology, regulatory and legal actions.

Other Assessment Considerations

GBAs may reflect a number of additional considerations. These include but are not limited to: our confidence level in an issuer's stated investment program, an issuer's corporate governance and financial controls, event risk (which may include mergers or other events that could cause an abrupt change in an issuer's environmentally sustainable investment strategy), and changes in market forces or regulations that have a material impact on investments and returns.

In addition, the relatively new nature of green investing could lead to rapid evolution in the sector. The character of green bond investments may in some circumstances be so unique that the scorecard may not adequately capture their aspects. Scientific study or other developments may lead to re-classifications regarding what constitutes a green bond investment, or such a change may be expected but not yet

implemented. These and other factors may cause a difference between the assigned GBA and the scorecard outcome.

Periodic Assessment Updates

Once an assessment has been issued and published via the issuance of a press release and research report, the assessment may be refreshed periodically to take into consideration the application of proceeds and to consider the environmental impacts of projects undertaken, based on issuer disclosures relative to the initial scorecard results. When assessments are refreshed, they will be based on the relevant taxonomies in place at that time.

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