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‘Second Opinion’ on Modern Land’s Green Bond Framework

26 February 2018

Summary

Overall, Modern Land (China)'s Green Bond Framework and supporting energy saving and greenhouse gas mitigation strategic framework provide a transparent and robust approach to investments in projects that promote a transition to low-carbon and climate-resilient growth. Modern Land (China) takes a holistic view of climate change impacts in its corporate low-carbon and climate mitigation policies, incorporating life-cycle analysis of design, construction and operation of buildings. The Green Bond Framework lists energy efficient building projects that are eligible for support from proceeds of the issue of the Green Bond Notes. The framework is in compliance with the Green Bond Principles (2017).

For a project (either new or renovation) to be financed through the Green Bond, it will need to meet one of the following specific minimum standards as determined by Modern Land (China); 2 Star for Chinese Green Building Label (Chinese Green Building Design Label or Chinese Green Building Operation Label), or Gold for LEED. Additional energy performance improvement targets of 15% for new construction and 30% for renovations shall be included. Such data may be anticipated by the management team before project completion and evidenced through third party energy reports as soon as practicable following the completion of the relevant project. To achieve these standards, eligible Projects will be selected by Modern Land (China)'s Treasury Department together with the Green Building Research and Development Department. Life-cycle analysis and carbon emissions are considered. Operation of the supported buildings will be assisted by the technical team of Modern Land (China) and monitored and improved continuously.

To ensure the transparency of the use of proceeds of the issue of the Green Bond Notes, Modern Land (China) will publish on its webpage or include in its annual report an annual update report including a list of projects financed and their energy performance data, and a summary of Modern Land's Green Bond development. Although effective energy saving and greenhouse gas mitigation policies have been established within Modern Land (China), it is clear that the highest possible ratings are not always the objective of Modern Land (China). Improvements could also be made to tighten energy performance targets to aim towards passive buildings in the future.

Based on the overall assessment of the project types that will be financed by the green bond and governance and transparency considerations, Modern Land's Green Bond Framework gets a Medium Green shading. We recommend that Modern Land (China) seek the highest building certification ratings possible to further support climate-friendly buildings.

Contents

1 Introduction and background

As an independent, not-for-profit, research institute, CICERO (Center for International Climate and Environmental Research - Oslo) provides Second Opinions on institutions' framework and guidance for assessing and selecting eligible projects for green bond investments and assesses the framework's robustness in meeting the institutions' environmental objectives. The Second Opinion is based on documentation of rules and frameworks provided by the institutions themselves (the client) and information gathered during meetings, teleconferences and e-mail correspondence with the client.

CICERO is independent of the entity issuing the bond, its directors, senior management and advisers, and is remunerated in a way that prevents any conflicts of interests arising as a result of the fee structure.
CICERO has established the global Expert Network on Second Opinions (ENSO), a network of independent non-profit research institutions on climate change and other environmental issues, to broaden the technical expertise and regional experience for Second Opinions. CICERO works confidentially with other members in the network to enhance the links to climate and environmental science, building upon the CICERO model for Second Opinions. In addition to CICERO, ENSO members currently include Basque Center for Climate Change (BC3), International Institute for Sustainable Development (IISD), Stockholm Environment Institute (SEI), and Tsinghua University's Institute of Energy, Environment and Economy. A more detailed description of CICERO and the 3E Institute of Tsinghua University can be found at the end of this report.

The second opinion is based on documentation of rules and frameworks provided by the institution themselves (the client) and information gathered during meetings, teleconferences and email correspondence with the client. ENSO encourages the client to make this Second Opinion publically available. If any part of the Second Opinion is quoted, the full report must be made available.

ENSO's Second Opinions are normally restricted to an evaluation of the mechanisms or framework for selecting eligible projects at a general level. ENSO does not validate or certify the climate effects of single projects, and thus, has no conflict of interest in regard to single projects. ENSO is neither responsible for how the framework or mechanisms are implemented and followed up by the institutions, nor the outcome of investments in eligible projects.

This note provides a Second Opinion of Modern Land's Green Bonds Framework and policies for considering the environmental impacts of their projects. The aim is to assess Modern Land's Green Bonds Framework as to its ability to support its stated objective of promoting the transition to low-carbon and climate resilient growth.

ENSO takes a long-term view on activities that support a low-carbon climate resilient society. In some cases, activities or technologies that reduce near-term emissions result in net emissions or prolonged use of high-emitting infrastructure in the long-run. ENSO strives to avoid locking-in of emissions through careful infrastructure investments, and moving towards low- or zero-emitting infrastructure in the long run. Proceeds from green bonds may be used for financing, including refinancing, new or existing green projects as defined under the mechanisms or framework. ENSO assesses in this Second Opinion the likeliness that the issuer's categories of projects will meet expectations for a low carbon and climate resilient future.

Expressing concerns with 'shades of green'

ENSO Second Opinions are graded dark green, medium green or light green, reflecting the climate and environmental ambitions of the bonds and the robustness of the governance structure of the Green Bond

Framework. The grading is based on a broad qualitative assessment of each project type, according to what extent it contributes to building a low-carbon and climate resilient society.

This Second Opinion will allocate a 'shade of green' to the green bond framework dated February 2018 of the issuer:

- **Dark green** for projects and solutions that are realizations today of the long-term vision of a low carbon and climate resilient future. Typically, this will entail zero emission solutions and governance structures that integrate environmental concerns into all activities.
- **Medium green** for projects and solutions that represent steps towards the long-term vision but are not quite there yet.
- **Light green** for projects and solutions that are environmentally friendly but do not by themselves represent or is part of the long-term vision (e.g. energy efficiency in fossil-based processes).
- **Brown** for projects that are irrelevant or in opposition to the long-term vision of a low carbon and climate resilient future.

The project types that will be financed by the green bond primarily define the overall grading. However, governance and transparency considerations also factor in, as they can give an indication whether the institution that issues the green bond will be able to fulfil the climate and environmental ambitions of the investment framework.

Buildings sector considerations

Modern Land (China)'s business focuses on the buildings sector, with energy efficient buildings as the key component to the Green Bond Framework. The buildings sector consumes 32% of world's total final energy consumption and accounts for over 40% of primary energy consumption in most International Energy Agency (IEA) member countries[1]. Energy efficiency improvements in buildings are thus important building blocks towards reaching the 2°C goal.

Many energy efficiency designs and technology options are cost-efficient in theory, but face practical challenges to implementation, including huge initial investment costs and long payback periods. According to the World Energy Outlook[2], over 80% of the economic potential to improve energy efficiency will remain unrealized in the next two decades. This untapped potential is largely due to non-technical barriers, such as ownership structure – a building owner does not face the same incentives for efficiency improvements as tenants that are responsible for paying electricity bills.

Another consideration is that energy efficiency improvements can reduce greenhouse gas emissions in the short-term, but can also have the counter-effect of increasing emissions over the long-term, by depressing prices that trigger increased demand and emissions from energy use. This effect is known as the 'rebound effect'. ENSO takes a long-term view on energy efficiency, which encourages energy efficiency improvements but with careful consideration of projects where the potential for rebound effects is high.

Environmental certification systems for buildings

Several voluntary environmental certification systems provide some level of measurement of the environmental footprint of a building, including energy efficiency measures, with Leadership in Energy and Environmental Design (LEED) possibly the most widely used certification system. A LEED rating is determined by the number

[1] IEA/UNDP (2011). "Modernizing Building Energy Codes", International Energy Agency and United Nations Development Programme.
[2] IEA (2013). World Energy Outlook 2013, International Energy Agency.

points earned in the project check-list. A higher number of points earns a higher rating, with some requirements for each rating level. Although the LEED certification system does not have a site selection prerequisite, the sustainability of building site selection, including the urban density and access to public transportation, accounts for 10% of the total points possible.

In China, several domestic voluntary green certification systems are widely used to assess the performance of buildings, including Chinese Green Building Label, Chinese Green Design Building Label and Chinese Energy Performance Certification Standard of Buildings. The development of China's Green Label Systems was initiated in 2006, drawing on experiences with LEED of the US, CASBEE of Japan and BREEAM of the UK and focusing on China's special circumstances. The general framework of China's Green Labels is very similar to that of LEED, with the major difference being that there is an innovation and design item in LEED while there is an operational management item in the Chinese systems. For ease of comparison, the 2-star level requirements of Chinese Green Labels lie between the silver and gold levels of LEED while the 3-star level is between the gold and platinum levels of the LEED. The major difference between the Chinese Green Building Label and the Chinese Green Design Building Label is that the former one assesses both design and operation of buildings while the latter focuses only on the design.

In the Chinese Green Labels, there is one item dedicated to carbon emissions of the buildings with the value of 1 point out of the total points of 100. The analysis covers emissions arising both from construction and operation of the building under normal conditions. The greenhouse gas emissions will be calculated according to Measurement Standards for Carbon Emissions from Buildings, which was put into operation on December 1, 2014 in China.

2 Description of Modern Land's Green Bond Framework and Rules and Procedures for Climate-Related Activities

Modern Land (China) is a company listed on the Main Board of The Stock Exchange of Hong Kong Limited from July 12, 2013 with Class 1 qualification in real estate development in the People's Republic of China. Established in 2000, Modern Land is a leading property developer focusing on developing Green Technology + Comfort & Energy-saving + Digital Interconnecting Full-life Cycle Communities in China. Modern Land's unique MOMΛ technology system integrates both energy-saving and green technology for comfortable living experience. With the unique technologies of MOMΛ, Modern Land not only fulfils customers' needs for high comfort living standard, but also satisfy their requirements for education, medical treatment, working, culture, shopping and living experience in internet age.

Policies

To achieve its stated targets, Modern Land (China) has an energy efficiency and mitigation strategic framework comprised of two components: an internal management framework and a technology realization framework.

From the management perspective, Modern Land (China) has a wholly-owned subsidiary, supported by more than 40 people, which is responsible for the total management of energy systems in all buildings developed by itself, including providing services related to green building management, energy solutions, energy auditing and energy system construction, etc. Through this subsidiary, Modern Land (China) has been able to control the design of systems that have significant impact on energy consumption, for example the heating, ventilation and air conditioning systems, and to consider innovative design from a life-cycle perspective.

From a technical perspective, property management companies closely connected to the company itself operates all residential buildings developed by Modern Land (China). During the design phase, the energy system is constructed taking into consideration initial investments, operational efficiency and greenhouse gas mitigation benefits. The property management companies will strictly follow the energy solution and operation strategies as determined in the design phase. All residential buildings developed by Modern Land (China) have been following energy efficiency standards higher than the mandatory national or local standards. In addition, the energy consumption from the operation of the buildings developed by Modern Land (China) is monitored annually for the purpose of continuously improving the energy systems and thus reducing greenhouse gas emissions.

Use of proceeds

With reference to the *Green Bond Principles (GBP), 2017*, the proceeds of each Green Bond will be used exclusively for the financing or the re-financing of "Eligible Projects", including without limitation, the refinancing of existing debt in relation to such projects.

"Eligible Projects" refer to projects funded, in whole or in part, by Modern Land that promotes the transition to low-carbon and climate resilient growth as determined by Modern Land. Eligible Projects target climate mitigation and include investment in the development of sustainable properties. Eligible Projects are any project that fulfils criteria 1 and 2 below.

1. Commercial and residential buildings environmentally certified in accordance with any one of the following selected certification systems: ('Environmental certification')

    ✓ New construction or renovation of existing buildings

        - Chinese Green Building Label (minimum certification "2 Star" for Green Building Design Label or Green Building Operation Label); or

        - LEED (minimum certification "Gold")

2. Additional energy saving / performance data for projects mentioned above. Such data shall be anticipated by the management team before project completion and may be evidenced through 3rd party energy reports as soon as practicable following the completion of the relevant project. Such energy saving / performance data shall provide at least: ('Energy performance data')

    ✓ New construction of buildings

        - 15% energy performance improvement or greater

    ✓ Renovation of existing of buildings

        - 30% energy performance improvement, depending on location and other justifiable building benefits

Selection

Eligible Projects are selected by the Modern Land Treasury department together with the Green Building Research and Development department.

Modern Land will review Green Building certification and energy performance data for its projects. If such project is compliant with the criteria listed above, it may be earmarked as the use of proceed of Green Bonds issued under this framework, including by way of using the proceeds of the Green Bonds to refinance debt in relation to such projects.

Modern Land may commission a qualified third party to investigate and report on building energy performance and therefore determine eligibility for Modern Land Green Bond.

Management of proceeds

Modern Land will establish a Green Bond eligible investment Register for the Green Bond(s) issued. The Register will contain, for each Green Bond issued, information including:

1. Green Bond details: Including details such as ISIN, issue date, maturity date, principal amount and coupon.
2. Eligible green investment project list: information including:
    - Confirmation that earmarked projects conform to Modern Land Green Bond Framework
    - Member within Modern Land (China) Co Ltd group that owns the project
    - Environmental certification (including source and date)
    - Energy Performance data (including source and date)
    - Project location

- Amount of investment (state currency)
- Date of investment
- Progress / construction status
- Any other necessary information so that the aggregate of issuance proceeds earmarked to Eligible Projects is recorded.

Any balance of issuance proceeds not earmarked to fund eligible green investments will be held in accordance with Modern Land's normal treasury or liquidity management policy.

Reporting

Modern Land will provide an annual update report including (if applicable):

1. Details of the Green Bonds issued including details such as ISIN, issue date, maturity date, principal amount and coupon.
2. Confirmation of aggregate amount of proceeds earmarked to Eligible Projects;
3. The remaining balance of Green Bond proceeds yet to be earmarked;
4. A list of Eligible Projects earmarked to be funded by the proceeds of the Green Bonds, including information such as building certifications and energy performance data; and
5. A selection of more detailed project examples (where competition and confidentiality considerations allow)

The green bond update report will be internally audited and available on Modern Land's webpage or included in its annual report.

The table below lists the documents that formed the basis for this Second Opinion:

Document Number	Document Name	Description
1	"Modern Land (China) Co., Limited - Green Bond Framework", 2018	Green bond framework
2	"Achievement on Green Buildings by Modern Land (China)", 2015	Green buildings achievements
3	Modern Land "Green Projects Summary"	List of eligible green bond projects for refinancing
4	Chinese Ministry of Housing and Urban-Rural Development (2013), "Standards for Building Energy Performance Certification"	Performance standards

Table 1 Documents Reviewed

3 Assessment of Modern Land's Green bond framework and environmental policies

Overall, the Modern Land's green bond framework provides a detailed and sound framework for climate-friendly investments.

The framework and procedures for Modern Land's green bond investments are assessed and their strengths and weaknesses are discussed in this section. The strengths of an investment framework with respect to environmental impact are areas where it clearly supports low-carbon projects, whereas the weaknesses are typically areas that are unclear or too general. Pitfalls are also raised in this section to note areas where issuers should be aware of potential macro-level impacts of investment projects.

Eligible projects under the Green Bond Framework

At the basic level, the selection of eligible project categories is the primary mechanism to ensure that projects deliver environmental benefits. Through selection of project categories with clear environmental benefits, green bonds aim to provide certainty to investors that their investments deliver environmental returns as well as financial returns. The Green Bonds Principles (GBP) state that the "overall environmental profile" of a project should be assessed and that the selection process should be "well defined".

Eligible project types	Specific requirements	Likelihood of Meeting Objective
Energy efficient commercial and residential buildings	• New construction and renovation of existing buildings meeting one of two following standards: – Chinese Green Building Label (minimum 2-Star for Green Design Building Label or Green Building Operation Label) – LEED (minimum "Gold"), • New construction may additionally have energy saving/performance data evidenced through 3rd party energy reports, or equivalent sources and provide at least: – For new construction of buildings, 15% energy performance improvement or greater – For renovation of existing buildings: 30% energy performance improvement, depending on location and other justifiable building benefits	**Medium Green.** The certifications include aspects important for energy efficiency improvement and greenhouse gas mitigation, e.g. carbon emissions calculation. Modern Land (China), as the pacesetter of energy efficiency buildings in China, has already established internal procedures for optimizing the energy systems, with carbon emissions as one of the major considerations in investment decision making. However, the highest possible ratings are not sought by Modern Land (China).

Table 2 Eligible assets categories

Strengths

Modern Land (China)'s energy saving and GHG mitigation policies are characterized by a life-cycle approach, with attention given to not only the design phase but also the operational phase of the buildings supported by a technical team in one of its wholly-owned subsidiary. In making investment decisions, operation energy consumption and greenhouse gas emissions will also be considered, not only the energy consumption in the construction phase. Emissions of the buildings are calculated in accordance with Measurement Standards for Carbon Emissions from Buildings of China. Under the framework, energy performance improvement targets will be applied to each eligible building project. Additionally, all residential buildings developed by Modern Land (China) are operated by property management companies closely connected to the company itself that will follow strictly the energy solution and operation strategies as determined in the design phase. During the operational phase, energy auditing will be done twice a year for projects supported under the Green Bond Framework, based on which further improvement of the energy systems could be made. Annual reporting on changes in energy performance is a good step towards impact reporting.

The effectiveness of this approach is demonstrated by the achievement of Modern Land (China) with respect to energy efficiency/green buildings up until now.

- Three projects developed by Modern Land (China) (Modern MOMA Building 1-3, 5, 7-10, Wan Guo Cheng MOMA (Changsha) Phase I Building No.18 and 19 and Basement of No.2, and Nanchang Man Ting Chun MOMA Phase I Residential) have been awarded 3-star Chinese Green Building Label;
- Four projects developed by Modern Land (China) (Nanchang Man Ting Chun MOMA Phase I Residential, Modern MOMA (Hefei), Jiujiang Man Ting Chun Building No.5, and Han Kou Wan Guo Fu MOMA (Wu Han)) have been awarded 3-star Chinese Green Building Design Label;
- Twelve other projects developed by Modern Land (China) have been awarded 2-star Chinese Green Building/Green Building Design Label.

This is a clear demonstration of the leadership position of Modern Land (China) in China's green and energy efficiency building sector.

Weaknesses

We find no obvious weaknesses with the Modern Land Green bond framework.

Pitfalls

The building certification schemes measures a number of environmentally related elements of buildings. Theoretically, it is possible to achieve a LEED "Gold" or a 2-star Chinese Green Building Label without substantial energy savings. However, the energy saving targets will alleviate this concern somewhat.

Due to the complexity of how socio-economic activities impact the climate, a specific project is likely to have interactions with the broader community beyond the project borders. These interactions may or may not be climate-friendly, and thus need to be considered with regards to the net impact of climate-related investments.

Modern Land (China) uses a life-cycle approach to the design, construction, and operation of its buildings. This approach incorporates impacts beyond the immediate project border.

Another macro-level concern is the potential for rebound effects. This can occur when small-scale GHG reductions result in a net uptake of emitting activities. For example, energy efficiency improvements in

appliances can lower energy costs, and drive higher demand for appliances. This can have the end result of a net increase in GHG emissions, negating the climate-friendly aspects of the initial activity. While these effects can never be entirely avoided, it is recommended to be aware of possible rebound effects and avoid investing in projects where the risk of such effects is particularly high. For energy use in buildings, the rebound effect mainly applies to the potential for increased energy use by tenants. Tenants often face different incentives to reduce their environmental and energy-use footprint than property owners do.

As a real-estate company, Modern Land (China) is not technically responsible for tenants' energy use. However, the company works closely with its property managers, which follow the energy solution and operation strategies as determined in the design phase. Energy audits are used to follow up in the operational phase.

Appendix: About CICERO and 3E Institute, Tsinghua University

CICERO Center for International Climate Research is Norway's foremost institute for interdisciplinary climate research. We deliver new insight that helps solve the climate challenge and strengthen international climate cooperation. We collaborate with top researchers from around the world and publish in recognized international journals, reports, books and periodicals. CICERO has garnered particular attention for its work on the effects of manmade emissions on the climate and the formulation of international agreements and has played an active role in the UN's IPCC since 1995.

CICERO is internationally recognized as a leading provider of independent reviews of green bonds, since the market's inception in 2008. CICERO received a Green Bond Award from Climate Bonds Initiative for being the biggest second opinion provider in 2016 and from Environmental Finance for being the best external review provider (2017).

CICERO Second Opinions are graded dark green, medium green and light green to offer investors better insight in the environmental quality of green bonds. The shading, introduced in spring 2015, reflects the climate and environmental ambitions of the bonds in the light of the transition to a low-carbon society.

CICERO works with both international and domestic issuers, drawing on the global expertise of the Expert Network on Second Opinions. Led by CICERO, ENSO is comprised of trusted research institutions and reputable experts on climate change and other environmental issues, including the Basque Center for Climate Change (BC3), the Stockholm Environment Institute, the Institute of Energy, Environment and Economy at Tsinghua University and the International Institute for Sustainable Development (IISD). ENSO operates independently from the financial sector and other stakeholders to preserve the unbiased nature and high quality of second opinions.

cicero.oslo.no/greenbonds

Institute of Energy, Environment, and Economy, Tsinghua University (3E Institute), established in 1980, is a university-wide interdisciplinary research and education institution. 3E Institute is one of the pioneers in terms of research on energy systems analysis and climate changes among Chinese universities. The mission of 3E Institute is to create, develop and disseminate the knowledge, ideas and methodologies needed for building sustainable energy systems and climate change mitigation, and to provide scientific solutions to sustainable energy system transformation and low carbon development for China and the world.