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Center for International  
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# ‘Second Opinion’ on Modern Land’s Green Bond Framework

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## Summary

***Overall, Modern Land (China)'s Green Bond Framework and supporting energy saving and GHG 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, and incorporating life-cycle analysis of design, construction and operation of buildings. The Green Bond Framework lists energy efficient building projects as well as research and development for energy efficient building design and technologies that are generally eligible for support from proceeds of the issue of the Green Bond Notes. A limit (maximum of 10% of issuance) has been established for supporting energy efficient building design and technologies through research and development.***

***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), including 2 Star for Chinese Green Building Label (Chinese Green Building Design Label or Chinese Green Building Operation Label), Gold for LEED, or any other equivalent green building label. Additional energy performance improvement targets of 15% for new construction and 30% for renovations are included. 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.***

***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.***

## 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 CICERO-led ENSO 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 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 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 (IEA/UNDP, 2011). Energy efficiency improvements in buildings are thus important building blocks towards reaching the 2°C goal.

Many energy efficiency design 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 (IEA, 2013), 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.

LEED ratings originated in the United States but are the most widely used globally. A LEED rating is determined by the number 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 were 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. Brief Description of Modern Land's Green Bond Framework and Rules and Procedures for Climate-Related Activities**

Modern Land (China), 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, has always adhered to the development of buildings characterized by "Green + Comfort + Energy-saving + Full life cycle residential properties with mobile internet".

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, all residential buildings developed by Modern Land (China) are operated by property management companies closely connected to the company itself. 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.

Modern Land (China)'s Green Bond Framework, supported by the company's energy saving and greenhouse gas mitigation policies, is characterized by an earmarked account. A Green Bond eligible investment Register will be established to track investment project information including energy performance data. With this approach, an amount equal to the net proceeds of the issue of the green bond notes will be credited to the account that will support Modern Land (China)'s lending to eligible projects. The initial transaction will be used to refinance existing debt supported by eligible existing projects. Going forward, the proceeds can be disbursed from the earmarked account to eligible projects at any time. The flows will be tracked by Modern Land (China) treasury. Any balance of issuance proceeds not allocated to fund eligible green investments will be held in accordance with Modern Land's normal treasury or liquidity management policy.

Modern Land (China) has a list of eligible projects that shall be funded, in whole or in part, by Modern Land (China) and promote the transition to low-carbon and climate resilient growth. More specifically, eligible projects can be divided into specific commercial and residential buildings as well as research and development covering energy efficiency design and technologies for housing and construction. A maximum 10% limit has been established for financing R&D on energy efficiency design and technologies for housing and construction.

For those buildings to be supported under the Green Bond Framework, they will need to meet one of the following standards of selected certification systems, i.e. 1) 2 Star of Chinese Green Building Label (Green Building Design Label or Green Building Operation Label, 2) Gold for LEED, or 3) any other equivalent green building label.

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. Energy performance data will be reviewed for eligibility, commissioned by qualified third parties when public data is not available. Operation of the supported buildings will be assisted by a technical team from Modern Land (China) and monitored and improved continuously.

To ensure the transparency of the utilization of proceeds from the Green Bond, Modern Land (China) will publish on its webpage or include in its annual report an annual update report including a list of projects financed, a selection of project examples, and a summary of Modern Land's Green Bond development.

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

**Table 1: Documents Reviewed**

Document Number	Document Name	Description
1	"Project Jade Modern Land Green Bond Framework", 2016	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

### 3. Assessment of Modern Land's Green Bond framework and environmental policies

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".

The eligible project types listed in the Green Bond Framework of Modern Land (China) are clearly supportive of Modern Land (China)'s identified objective of promoting a transition to low-carbon and climate-resilient growth. Table 1 shows the eligible project types and the likelihood of meeting greenhouse gas mitigation objective for each project type.





**Table 2 Eligible assets categories**

Eligible project types	Specific requirements	Likelihood of Meeting Objective
Energy efficient commercial and residential buildings	<ul style="list-style-type: none"> <li>New construction and renovation of existing buildings meeting one of two following standards: <ul style="list-style-type: none"> <li>Chinese Green Building Label (minimum 2-Star for Green Design Building Label or Green Building Operation Label)</li> <li>LEED (minimum “Gold”),</li> <li>Or any other equivalent green building label, that is an equivalent of the standard as above</li> </ul> </li> <li>New construction must additionally have energy saving / performance data evidenced through 3rd party energy reports, or equivalent sources and provide at least: <ul style="list-style-type: none"> <li>For new construction of buildings, 15% energy performance improvement or greater</li> <li>For renovation of existing buildings: 30% energy performance improvement, depending on location and other justifiable building benefits</li> </ul> </li> </ul>	Medium – Dark Green. Those 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 always sought by Modern Land (China).
Research and development on energy efficiency design and technologies for housing and construction		Medium Green. Research and development on energy efficiency design and technologies will indirectly facilitate the use of such technologies in the building and facilitate energy efficiency improvement and GHG mitigation. These project types are limited to 10% of the bond financing.

The energy performance improvement targets of 15% for new construction and 30% for renovations will be applied to each building investment allocated to the green bond, as has been clarified via personal communication with Modern Land.

Proceeds from the green bond will initially be used to refinance existing green buildings projects. The list of eligible new construction projects provided by Modern Land indicate an energy savings rate of greater than 15% for each building, and Chinese Green Building Labels or Chinese Green Design Building Labels of 2 and 3 stars. Further, personal communication with Modern Land clarified that a comprehensive energy saving co-efficiency will be the basis for evaluating the eligible existing projects for financing, with comparison parameters including e.g. heating and cooling operation time, ventilation rate, indoor heat gain intensity, and thermal performance.

## 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.

- Two buildings developed by Modern Land (China) (Nanchang Mantingcun MOMA and Dangdai MOMA) have been awarded 3-star Chinese Green Building Label;
- Two buildings developed by Modern Land (China) (Jiujiang Mantingcun 5# and First Phase of Nanchang Mantingchun MOMA) have been awarded 3-star Chinese Green Building Design Label;
- Six other buildings developed by Modern Land (China) have been awarded 2-star Chinese 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

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.

## Pitfalls

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.

### **Transparency, monitoring, reporting and verification**

Modern Land (China) will update regularly and transparently to investors and the public on the progress of its Green Bond Framework through the publication on its webpage of an annual investor letter including a list of projects financed, a selection of project examples and a summary of Modern Land's Green Bond development. Energy auditing will also be conducted twice a year during the operational phase for projects supported under the Green Bond Framework. Energy performance data from the initiation of the project will be made available for eligible projects in the annual report, with a statement referring to any changes in the performance.

For the ease of monitoring, Modern Land (China) will create an earmarked account to which an amount equal to the net proceeds of the issue of the green bond notes will be credited for the purpose of supporting Modern Land (China)'s lending to eligible projects. The flows will be tracked by Modern Land (China) treasury.

## References

Chinese Ministry of Housing and Urban-Rural Development (2013). Standards for Building Energy Performance Certification.

IEA (2013). *World Energy Outlook 2013*, International Energy Agency.

IEA/UNDP (2011). “Modernizing Building Energy Codes”, International Energy Agency and United Nations Development Programme.

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## Appendix: About 3E Institute of Tsinghua University and CICERO

### 3E Institute of Tsinghua University

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.

### CICERO

The Center for International Climate and Environmental Research – Oslo (CICERO) is an independent research center associated with the University of Oslo. CICERO conducts interdisciplinary research on, and provides information and expert advice about, national and international issues related to climate change and climate policy. CICERO's mission is to conduct research and provide reports, information and expert advice about issues related to global climate change and international climate policy with the aim of acquiring knowledge that can help mitigate the climate problem and enhance international climate cooperation.