‘Second Opinion’ on Industrial Bank Co., Ltd. (IB)’s Green Bond Framework

1st November, 2018

Summary

Industrial Bank Co. Ltd of China's (IB) Green Bond Framework provides a clear and sound framework for climate-friendly investment. The eligible project categories combined with sound governance processes are well structured to promote a transition to a low-carbon and climate-resilient economy.

IB has established itself as an early mover and a leader in green finance in China and has demonstrated strong commitment to environmental issues through its adoption of the Equator Principles in 2008 commonly known as the International Finance Corporation Performance (IFC) Standards on social and environmental sustainability. IB has not established environmental targets specific to its own operations but works towards contributing to environmental targets set by the Chinese government. The issuer does regular environmental training for employees across each of its 137 branches... Proceeds will be used to finance and refinance eligible new and existing projects and businesses, in whole or in part. The issuer expects the allocation of proceeds to be 20% refinance.

CICERO is encouraged to note IB's focus on solar and wind power generation, as well as electric public transportation systems and electric and hydrogen Bus Rapid Transit (BRT) fleets and sustainable water and waste water management. Power generation and transportation are the most significant sources of greenhouse gas emissions worldwide. Consequently, these investments will contribute substantially to the climate change mitigation target set by the Chinese government. IB excludes investment in large hydropower (over 20MW), and fossil fuel-related assets, including clean coal. IB has no immediate pipeline for overseas green projects but has indicated that international projects may be financed in the future. The issuer has not yet set the criteria or for overseas energy efficiency investments but will seek investments in countries with strict investment supervision procedures. The energy efficiency category is allocated a medium to light green shading, because uncertainty in future overseas implementation and the inclusion of buildings with not the highest standards.

Projects in all project categories can raise potential concerns regarding site selection, supply chain emissions, and local environmental impact during the construction phase and operations. IB has partially addressed this concern by applying the Equator Principles which helps safeguard against projects with significant negative environmental impacts. In addition, local Chinese environmental regulations require a third-party feasibility study. CICERO encourages IB to stringently follow up on established screening and reporting procedures and consider conducting life cycle analyses for all projects to ensure that the dark green ambitions of the categories are maintained. IB has outlined an ambitious impact reporting strategy that includes 10 quantitative impact indicators over four project categories

CICERO finds this Framework to be aligned with the Green Bond Principles. Based on the project category shadings detailed below combined with consideration of IB's governance structure, we rate the **IB Green Bond Framework Dark Green.** In the first issuance, IB expects all proceeds to finance projects in electric transportation, solar and wind energy generation, and sustainable water and wastewater management, which are considered Dark Green project categories. IB has informed us that they are IB committed to priorities allocation to dark green categories for future international Green bond issuances

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1 Introduction and background

As an independent, not-for-profit, research institute, CICERO Center for International Climate Research provides Second Opinions on institutions' framework and guidance for assessing and selecting eligible projects for green bond investments, while assessing the framework's ability of meeting the institutions' environmental objectives. The Second Opinion is based on documentation of rules and frameworks provided by the institutions themselves (the clients) and information gathered during meetings, teleconferences and e-mail correspondence with the client. CICERO encourages the client to make this Second Opinion publicly available. If any part of the Second Opinion is quoted, the full report must be made available.

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 regarding 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 can be found at the end of this report.

CICERO's Second Opinions are normally restricted to an evaluation of the mechanisms or framework for selecting eligible projects at a general level. CICERO does not validate or certify the climate effects of single projects, and thus, has no conflict of interest concerning single projects. CICERO 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. Any amendments or updates to the framework require that CICERO undertake a new assessment.

This note provides a Second Opinion of Industrial Bank Co. Ltd. (hereinafter "IB") October 2018 Green Bonds Framework and policies for considering the environmental impacts of their projects. The aim is to assess the IB Green Bonds Framework as to its ability to support IB`s stated objective of promoting the transition to low-carbon and climate resilient growth.

CICERO 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. CICERO 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. CICERO strives to avoid locking-in of emissions through careful infrastructure investments and moving towards low- or zero-emitting infrastructure. Proceeds from green bonds may be used for financing, including refinancing, new or existing green projects as defined under the mechanisms or framework.

Expressing concerns with 'shades of green'

CICERO 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. The shading methodology also aims at providing transparency to investors when comparing green bond frameworks exposure to climate risks. A dark green project is less exposed to climate risks than a lighter green investment.

This Second Opinion will allocate a 'shade of green' to the green bond framework of IB:

- **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 are also important because they 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. Investments in all shades of green projects are necessary in order to successfully implement the ambition of the Paris agreement. The overall shading reflects an ambition of having the majority of the project types well represented in the future portfolio, unless otherwise expressed by the issuer.

2 Brief Description of Industrial Bank Co., Ltd. (IB)'s Green Bond Framework and rules and procedures for climate-related activities

Industrial Bank Co. Ltd, founded in August 1988 and headquartered in Fuzhou, Fujian Province, is one of the first joint-stock commercial banks approved by the State Council and the People's Bank of China, and the first Equator Bank in China. The bank has been listed on the Shanghai Stock Exchange since 2007 (SH: 601166), and currently has registered capital of 20.8 billion yuan. State-owned shares make up the majority. As of December 31, 2017, IB's total assets are worth RMB 6.41 trillion, operating budgets hit RMB 139.98 billion and net profits attributable to the parent company across the year amounted to RMB 57.20 billion. The bank has 60 thousand employees, 137 branches and 2,064 sub-branches across China and correspondent banking relationships with over 1,600 banks around the world. It is a financial services group engaging in trust, lease, fund, consumer finance, futures, asset management, research, consulting, and digital finance.

Environmental Policies

IB was the first commercial bank in China to adopt sustainable development and green finance: it issued China's first green bond in 2016. In 2017, IB's Green Financing Portfolio totaled RMB 674.5 billion, invested in renewable energy, clean transportation, and sustainable water and waste water management. According to IB's 2017 sustainability report, investment in green finance has increased from 8,046 million RMB in 2015 to 14,562 million RMB in 2017. Each branch of IB has green finance professionals; nearly 30 branches set up a Green Finance Department and nearly 200 employees have green finance expertise.

IB serves as the Vice Secretary-General of the Green Finance Committee established under the China Financial Forum, and contributed to key policies such as the Green Bond Issuance Guidelines by the People's Bank of China.

IB works to achieve the quantitative targets for environmental protection set by the Chinese government. The Bank does not set additional environmental targets specific to its own operations. However, the Bank adopted and has been applying to the IFC's standards and Equator Principles since 2008. Additionally, IB has committed to keeping the growth rate of its green financial business the same as the average growth rate of the rest of the bank's business by 2020. It has also committed to exceeding 1 trillion Chinese Yuan in green financing and exceeding 10,000 financial customers by 2020.

IB does not have resiliency planning procedures in place but reviews climate resilience of commercial assets on a project-by-project basis. IB is exploring the recommendations made by the Financial Stability Board's (FSB) Taskforce for Climate-related Financial Disclosures (TCFD) by joining the China-UK Financial Institutions Environmental Information Disclosure Pilot.

IB has adopted five Sustainable Development Goals:

- SDG 6: Clean Water and Sanitation

- SDG 7: Affordable and Clean Energy
- SDG 9: Industry, Innovation and Infrastructure
- SDG 11: Sustainable Cities and Communities
- SDG 12: Responsible Consumption and Production
- SDG 13: Climate Action

Projects financed under IB's green bond framework are intended to further the Bank's sustainable development strategy and facilitate the implementation of environmental protection initiatives in line with China's 13th National Five-Year Plan.

Use of proceeds:

Proceeds will be used to finance and refinance eligible new and existing projects and businesses, in whole or in part. The issuer expects the allocation of proceeds to be 80% finance and 20% refinance. Although there are currently no international projects under negotiation, the issuer has indicated that projects in Europe, Australia, Korea or Japan – or other countries with strict investment supervision procedures – may be considered in the future. The issuer has informed us that international investments will strictly follow local regulation in the host countries in addition to the IFC's standards and Equator Principles. The Framework is designed to align with the ICMA's 2018 Green Bond Principles and the People's Bank of China's Green Bond Catalogue.

Eligible green assets include renewable energy, energy efficiency, clean transportation, and sustainable water and waste water management. In the first issuance, IB expects 100% of proceeds to finance projects in electric transportation, solar and wind energy generation, and sustainable water and wastewater management. For IB's overall portfolio, the same three categories are expected to account for 47.83%, which is over RMB300bn. Because green buildings are included under energy efficiency in the People's Bank of China's Green Bond Catalogue, IB has decided to include green buildings and related efficiency improvement projects under the Energy Efficiency category in this framework. The expected allocation of proceeds to this category is 0.15%.

Eligible green assets exclude the following:

- Fossil-fuel related assets, as well as infrastructure or rolling stock assets used for the transportation of fossil fuel and related products
- Hydropower plants whose installed capacity are over 20MWs
- Nuclear and nuclear related assets
- Biomass which is suitable for food sources
- Activity considered as illegal under host country laws or regulations or international conventions and agreements, or subject to international bans;
- Production or trade in weapons and munitions;
- Production or trade in tobacco, alcoholic beverages (excluding beer and wine);
- Gambling, casinos and equivalent enterprises;
- Production or trade in radioactive materials;
- Production or activities involving harmful or exploitative forms of forced labor or harmful child labor;
- Commercial logging operations for use in primary tropical moist forest;
- Production or trade in wood or other forestry products other than from sustainably managed forests.

Selection:

The selection process is a key governance factor to consider in CICERO's assessment. CICERO typically looks at how climate and environmental considerations are taken into account when evaluating whether projects can

qualify for green bond funding. The broader the project categories, the more importance CICERO places on the governance process. Proceeds can be allocated to projects according to local laws and regulations as well as project eligibility criteria.

IB has established a two-step selection process. The selection criteria are subject to routine, periodic in-house assessment.

Preliminary screening is done by Green Finance Product Managers in domestic and overseas branches of IB, in accordance with the criteria and standards set out in internal regulations. The Green Finance Product Managers receive periodic and specialized training from IB's headquarters.

According to the issuer, all projects funded under this framework are subject to environmental impact assessments conducted by a third party, in line with national regulations, and are subject to approval by official authorities (National Development and Reform Commission and Environmental Protection Department). Projects loans exceeding 10 million USD or loans related to certain projects that exceed 50 million USD are subjected to additional environmental and social assessment (in house), and an action plan if necessary (external review). These materials will be considered during the evaluation process. Selected projects are submitted to IB headquarters for review and approval.

IB has established a risk classification mechanism, called the "Golden Eye system", to help identify environmental risks of companies as part of its selection process. The system scans information about companies from multiple channels, including news outlets, social media, and financial reporting, to identify potential environmental risks and assign each company a risk score. This system helps identify environmental risk points and enhance risk prevention awareness.

At headquarters, a Green Bond Working Group comprised of green finance, environment, and industry experts from the Green Finance Department, review all potential projects to determine compliance with IB's internal regulation and the Eligible Green Asset categories as described in the Green Bond Framework. The resulting Eligible Green Asset List must be unanimously approved by the Working Group; each expert has veto power on the final selection decisions. Vetoed projects are excluded from the eligible project list. The Green Bond Working Group will review the Eligible Green Asset List on a quarterly basis and determine if changes are necessary, which may include changes in value of Eligible Green Assets due to asset amortization, prepayment or sales of changes in eligibility due to other reasons. The Working Group makes updates to the list, including replacement, deletion, or addition of projects, based on the review.

Management of proceeds:

Prior to issuing a green bond, IB will evaluate the recent and pipeline capital spending to develop a preliminary Eligible Green Asset List, as described in the Selection section.

IB will establish a separate "Green Bond Ledger" to record the source and allocation of proceeds, by project, to ensure that all net proceeds from Green Bonds are used to finance Eligible Green Assets. The proceeds of each IB Green Bond will be deposited in the general funding account and earmarked, pending allocation.

For each green bond issued, the Ledger will include details of the green bond and fund allocation to eligible green assets, including project categories and descriptions, initial balance, remaining balance, and estimated environmental impact. Finally, the ledger will also record the amount and use of proceeds of unallocated funds. The ledger will be reviewed and updated on a quarterly basis.

Unallocated proceeds will be allocated to eligible green assets in a timely manner. Unallocated proceeds will be held in accordance with IB's liquidity management policy. It could be temporarily invested in green bonds issued by non-financial institutions in domestic or international markets, or in money market instruments with good credit rating and market liquidity until they are allocated to eligible green projects. It will not be invested in energy intensive, highly polluting or greenhouse gas intensive projects, and will be subject to the Exclusionary List.

Transparency and Accountability:

Transparency, reporting, and verification of impacts are key to enable investors to follow the implementation of green bond programs. Procedures for reporting and disclosure of green bond investments are also vital to build confidence that green bonds are contributing towards a sustainable and climate-friendly future, both among investors and in society.

IB will publish a green bond report on an annual basis on its official website (www.cib.com.cn), alongside annual financial and sustainability reports, as long as the green bond is outstanding. The report will include information on allocation of proceeds and environmental impacts, at the portfolio level. According to the issuer, reporting will be done at the project level if the Eligible Green Asset is significant enough. The Green Finance Department will be responsible for producing the Report and IB's senior management will review and approve the Report.

For use of proceeds reporting, information on amounts equal to the net proceeds of the issued green bonds will include: 1) aggregate amount and percentage allocated to various eligible green asset categories; 2) remaining balance of unallocated funds and types of temporary investment, if applicable; and 3) description of significant eligible green assets, defined as projects that rank in the top 10% of remaining balance of eligible green assets, or with remaining balance larger than 50 million RMB, or with a remaining balance larger than 1% of the outstanding balance of the green bond.

For environmental impact reporting, IB aims to include the following impact indicators, when possible.

"Eligible Green Asset" Categories	Impact Indicator
Renewable Energy	• kWh of power generated from renewable Energy • Amount of CO_2 or standard coal equivalent avoided
Energy Efficiency	• kWh of energy saved per year • Percentage energy efficiency achieved
Low Carbon and Low Emission Transportation	• Amount of CO_2 or standard coal equivalent avoided • Km of tracks or dedicated lanes built (applicable to Rail Tram, Metro and Bus Rapid Transit Systems) • No. of passenger transported (applicable to Rail Tram, Metro and Bus Rapid Transit Systems) • Number of vehicles built or served (applicable to electric vehicles and hydrogen vehicles)
Sustainable Water and Wastewater Management	• Amount of water saved/recycled • Amount of waste water treated

IB will engage an independent third party to provide assurance on its Annual Green Bond Report, which will provide information on allocation and impacts. The Assessment Report will be published on IB's official global website together with the Annual Green Bond Report.

With regards to greenhouse gas accounting and reporting, the issuer will adhere to guidance given by the General Office of the China Banking Regulatory Commission, which has issued a Notice on Submission of Green Credit Statistics, for reporting energy savings and pollutant emissions associated with loans supporting green credit projects. The guidance stipulates that IB must estimate potential annual energy savings, energy-related CO_2 emissions reduction, emission reduction of other harmful pollutants, and other savings If the data is not already available in Environmental Assessment Reports or project feasibility reports, IB has to calculate them following a standard formula and report them in terms of Tonnes of standard Cola Equivalence (tce), which is used to calculate CO_2 reductions by a fixed emissions factor of 2.4 t CO_2/tce, which translates to 0.7824 kg per kwh. For context,

This Second Opinion will be made publicly available on the IB official global website (www.cib.com.cn).

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

Document Number	**Document Name**	**Description**
1	IB Green Bond Framework November 2018	Industrial Bank's Green Bond Framework, dated November 2018
2	IB Sustainability Report Jan 1, 2017 – December 31, 2017	Reviews IB's policies, targets and performance as they relate to sustainability
3	Product manual 2018 产品手册 2018	Describes green products operated by IB
4	兴业银行关于绿色金融业务认定流程的内部文件 Internal regulation on Attributes of Green Financial Business of IB	Describe the process for Defining the Attributes of Green Financial Business of IB
5	兴业银行关于更新绿色金融业务认定流程和要求的内部文件 Internal regulation on updates of Attributes and Requirements of Green Financial Business of IB	Updating the Standards to identify green financial business attributes and relevant requirements 2016
6	兴业银行关于优化完善绿色金融业务属性认定标准的内部文件 Internal regulation on optimizing and improving the standards for Green Financial Business of IB	Optimizing and improving the Standards for Green Financial Business Attributes
7	兴业银行绿色金融业务属性认定标准 2018 版（试行）	IB Certification Standard of Green Financial Business Attributes 2018 (Trial)

8	兴业银行关于环境金融部工作职责的内部文件 Internal regulation on Organizations and Job Responsibilities of the Environmental Finance Department of IB	Internal Organizations and Job Responsibilities of the Environmental Finance Department
9	兴业银行关于环境与社会风险管理政策的内部文件	IB Environmental and Social Risk Management Policy。 Describes internal management policy related to environmental and social risks.
10	境外绿色金融债储备项目清单	List of overseas green financial debt reserve projects (including 5 renewable energy and 4 clean transport projects worth 16.706 billion CNY)
11	企业绿色表现跟踪	A Chart of Corporate Green Performance Tracking
12	xx 地铁 市发改委 节能评估	Energy Conservation Assessment of xx Metro by City Development and Reform Commission
13	xx 风力发电有限公司 xx 大桥海上风电 x 期工程-赤道原则评估报告	19-2 Equator Principles Assessment Report for xx Bridge Offshore Wind Power Phase x Project by xx Wind Power Co., Ltd.
14	xx 花园绿色建筑标识三星	An example of Certificate of Green Building Design Label
15	XX LEED 金奖获奖证书 XX LEED (Leadership in Energy and Environmental Design) Gold Certification	The LEED Gold Certificate of XX Park 2015

3 Assessment of Industrial Bank Co., Ltd. (IB)'s Green Bond framework and environmental policies

Overall, the IB green bond framework provides a detailed and sound framework for climate-friendly investments. The framework and procedures for IB'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.

Overall shading

Based on the project category shadings detailed below, and consideration of the issuer's systematic sustainability work and governance structure of IB green bond framework in terms of management and use of proceeds, we rate the framework **CICERO Dark Green.**

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".

Category	Eligible project types	Green Shading and some concerns
Renewable Energy 	Generation and transmission of energy from the following: • solar, • onshore wind, • tidal, • biomass, and • hydropower.	**Dark Green** ✓ Solar and wind are key technologies in the transition to a low-carbon economy. ✓ Consider lifecycle pollution and potential environmental impacts for all technologies, e.g. disposal of solar panels and local biodiversity impacts of wind turbines. ✓ According to the issuer, feedstocks for biomass include local agriculture and forest

		remains, such as straw, sourced from a transport radius of less than 80km. ✓ Transportation of biowaste may include diesel vehicles. The issuer has informed us that IB tries to screen out the use of diesel transportation, if possible. ✓ The issuer has informed us that the construction of large hydropower projects over 20MW will not be funded. ✓ Consider potential impacts of hydropower projects on local environment, ecosystem services, and biodiversity. The issuer partially addresses this concern by adhering to the Equator Principles and complying with local government environmental impact assessments led by a third party before construction.
Energy efficiency  	Implementation, construction and corresponding development that enhance energy efficiency of underlying technology, product, asset or system, and achieve a minimum energy efficiency improvement of 20%.	**Medium to light Green** ✓ The issuer has informed us that green buildings are included in this category. ✓ According to the issuer, IB will only consider projects in buildings that have already achieved 2 or 3 stars under the Chinese Green Building standard. ✓ Retrofits introduces the possibility of locked in emissions and rebound effects; we encourage the issuer to manage for these risks.
Low-carbon and low-emissions transportation	Electric public transportation assets, systems, infrastructure, components and services, including rail, tram, metro, bus rapid transit systems	**Dark Green** ✓ Investment in public transportation systems and

	(BTR), electric vehicles and hydrogen vehicles.	electric vehicles are important climate mitigation projects. ✓ Construction of railway stations and platforms are included in this category; according to the issuer, railway stations contain few or no commercial facilities. The issuer has informed us that there is no specific attention to energy efficiency for these buildings. Climate science underscores the need for all housing and infrastructure investments to be energy efficient, including train stations. Consider emissions from construction and operation of buildings and platforms. ✓ Roads are excluded. ✓ The Chinese government has required all BRT projects to exclude diesel usage and develop the use of electric and hybrid as much as possible. Consider potential lock-in emissions from hybrid fleets.
Sustainable water and wastewater management 	Sustainable infrastructure for clean and/or drinking water, wastewater treatment, sustainable urban drainage systems and river training and other forms of flooding mitigation. Examples include • Water/rainwater collection pipes and facilities • Clean/drinking water pipe and treatment facilities • Wastewater treatment facilities, water recycling systems • Urban drainage systems • Dams, levees and other forms of flooding mitigation	**Dark Green** ✓ Well-conceived water and wastewater projects are important climate adaptation projects ✓ According to the issuer, construction and operation of existing facilities is included. Consider potential emissions from the construction phase. ✓ Flood mitigation projects are important for adaptation. However, projects that include the construction of dams and reservoirs might have negative impacts on the local environment, ecosystem services, and biodiversity. The issuer partially addresses this

	concern by adhering to the Equator Principles and complying with local government environmental impact assessments led by a third party before construction.

Table 2. Eligible project categories

Strengths

IB has established itself as an early mover and a leader in green finance in China, and has demonstrated strong commitment to environmental issues through its adoption of the IFC's standards and Equator Principles in 2008 and regular investment in environmental training for employees across each of its 137 branches; the resulting nearly 30 branches with a Green Finance Department and nearly 200 employees with green finance expertise is a clear strength and lends IB's project selection process considerable credibility.

According to the IB Sustainability Report 2017, the Bank issues low-carbon credit cards, the first of its kind in China, that purchased 260,000 tons of voluntary carbon emissions reduction cumulatively. IB has set up a carbon emissions reductions fund (the "fund") and committed to donate 1 cent in RMB to the fund for each transaction paid by IB's Low-Carbon Credit Card. The fund uses its balance to purchase carbon emission reduction credits on every April 22nd, Earth Day. This is a good example of its innovation and leadership in green finance in China. Other example is the issuer's "Golden Eye system," which scans information about companies from multiple channels, including news outlets, social media, and financial reporting, to identify potential environmental risks and assign each company a risk score. This system is innovative and may help enhance environmental risk prevention and management.

The framework includes mitigation and adaptation project categories that are key to the transition to a low carbon, climate resilient future. Eligible green assets include renewable energy, energy efficiency, clean transportation, and sustainable water and waste water management. It is a clear strength that IB's Framework eliminate potential investments in all fossil-fuel related assets, including clean coal. IB expects 100% of proceeds of the first issuance to finance dark green projects. IB is committed to prioritizing allocation to dark green categories also for future issuances.

The project selection procedure at IB is considered a strength. IB has a two-step selection process: projects are initially identified by Green Finance Product Managers that receive regular and specialized training on environmental issues from headquarters. All projects are subject to a third-party feasibility study; large projects receive additional screening before review by the Green Bond Working Group. The Working group has strong technical expertise in finance and environmental issues, each one of which has veto power. The Golden Eye system that uses broadscale datamining to flag environmental risks during the selection process is progressive. This and the requirement for unanimous approval of projects is also considered a strength and effective safeguards for the environmental integrity of the portfolio.

Under management of proceeds, unallocated proceeds are still held subject to the exclusionary criteria. This is noted as a strength.

IB has an ambitious impact reporting structure outlined in the Framework. It has identified 10 quantitative impact indicators across the four eligible project categories. IB will hire an independent third party to provide assurance on its Annual Green Bond Report. Regarding IB's GHG reporting methodology, CICERO finds the approach is plausible and well supported by publicly available documentation. IB could report emissions avoided using other internationally recognized methodologies –as well as the methodology mandated by the Chinese government to make the data more readily comparable and digestible for investors. We encourage IB to include a brief description of its approach in the impact report.

Under the renewable energy project category IB reduces its exposure to negative environmental risks by focusing on solar and wind power generation, as well as the exclusion of large hydro (over 20MW) and limit sourcing of biomass feedstocks to transport radius of 80km. The latter helps to limit emissions from transportation of feedstocks, which may include diesel-powered vehicles.

Transportation is among the most important sources of greenhouse gas emissions worldwide. To meet global goals, direct transport emissions must peak around 2020 and then fall by more than 9% by 2030.[1] Consequently, electric public transportation systems is amongst the most environmentally friendly methods of transportation available, especially when compared to alternatives such as air and road transport. Investment into electric public transportation systems will contribute substantially to the climate change mitigation target set by the Chinese government.

The Chinese government has required all BRT projects to exclude diesel usage and develop the use of electric and hybrid as much as possible. CICERO encourages IB to consider potential emissions from hybrid fleets.

Weaknesses

CICERO has not perceived any weaknesses at this time.

Pitfalls

IB works to achieve the quantitative targets for environmental protection set by the Chinese government, but does not have environmental targets specific to its own operations and does not currently have an established procedure to consider resiliency in project planning. CICERO encourages IB to set environmental targets specific to its own operation, including environmental policies for procurement, and incorporate resiliency planning into its standard operating procedures to enhance its performance as a leading green financial institution in China and worldwide.

The Energy Efficiency category is a very broad category that can raise some concerns: efficiency improvements may lead to rebound effects and lock-in of inefficient technologies. The issuer has informed us that the energy efficiency category could also include construction of and investments in buildings defined as green by the People's Bank of China's Green Bond Catalogue. According to the catalogue, new buildings need to have no less than a 2-star level of the Evaluation Standard for Green Building. 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. A 20 percent improvement falls short of the International Energy Agency's (IEA) recommendations that efficiency of buildings needs to improve by 30% by 2025 in order to reach the Paris Agreement's goal of well below 2°C global warming. CICERO Dark Green shading is particularly difficult to achieve in the building sector because buildings have a long lifetime. CICERO encourages the issuer to also consider and implement additional environmental safeguards in this project category such as resiliency planning to protect against potential impacts from more extreme weather events, such

[1] https://www.iea.org/tcep/transport/

as flooding; transportation solutions such as charging stations for electric vehicles in or in close proximity of the building; and management of environmental impacts in the construction phase of the building (building material and waste considerations).

Although there is no immediate pipeline for overseas green projects, IB has indicated that the framework may be used for international project financing in the future. According to the issuer, IB will seek investments in countries with strict investment supervision procedures – such as Japan, Korea, Australia and the EU – and will apply the Equator Principles, and any relevant regulation to protect the environmental integrity of the portfolio. The issuer has not yet set the criteria for overseas energy efficiency investments or GHG reporting methodology for international investments. Because of the broad category and uncertainty in future implementation and the inclusion of buildings with not the highest standards, the energy efficiency category is allocated a medium to light green shading.

The project category "low-carbon and low-emissions transportation" is quite broad. IB has informed us that it includes the required stations, buildings, and other installations required to support the expansion of the rail network, but that there is no focus on energy efficiency for these buildings. Climate science underscores the need for all housing and infrastructure investments to be energy efficient, including railway stations. Considering the long lifetime of assets like railway stations, it is important to be aware of potential lock-in effects. We recommend that when constructing new infrastructure, IB consider exceeding simple compliance with the relevant legislation by investing additional efforts in energy efficiency, considering supply chain and life cycle emissions, and avoiding long-term locked-in emissions.

The Framework includes sustainable water and wastewater management projects, which are important for adaptation and resilience to the impacts of climate change. Potential projects include the construction and operation of urban drainage systems for flood mitigation. It must be noted that all project categories that involve construction have potential adverse local environmental impacts that span site selection, construction, and operation phases. For example, reservoirs or dams might change hydrologic systems that negatively affect fragile local ecosystems and biodiversity. The materials used in construction – cement and steel – also represent significant emissions, as well as the equipment used to transport materials. The issuer does not conduct life cycle analyses to identify and assess these emissions; however, IB partially addresses this concern by adhering to local Chinese environmental regulations which require a third-party feasibility study for approval, and by applying the IFC's standards and Equator Principles which helps safeguard against projects with significant negative environmental impacts. CICERO encourages IB to consider conducting life cycle analyses for all projects to help assess and avoid associated and long-term locked in emissions.

Appendix:
About CICERO

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 inter-national 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 inter-national 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-car-bon 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