



Rikshem AB (publ) Green Bond Second Opinion

February 16, 2022

Rikshem AB (Publ) (Rikshem) is a private Swedish real estate company. The company owns, develops and manages residential properties and properties for public use. The property portfolio is mainly located in selected growth areas in Sweden, and almost 50% of the property value is located in the greater Stockholm area and Uppsala. Approximately 70% of the value pertains to residential properties and 30% to properties for public use, such as nursing homes, other care facilities and schools.

The current green bond framework is wider in scope than the company's 2017 and 2020 frameworks, introducing new criteria for older existing buildings not covered in their previous framework. The eligible categories – Clean transportation, Energy efficiency, Green buildings, and Renewable energy – are well defined and provide important steps toward a low carbon future. More than 50% of the issuance over time will be used for new projects and 80-90% will be used on Green buildings. Less than 10% will be on operational expenditures, mainly within the categories Clean transportation and Energy efficiency. The criteria for eligible projects under the Green building category are good, but do not yet deliver the solutions needed in a low carbon 2050 perspective (passive house technology and similar). Rikshem works extensively with industrialized woodbased construction. A number of LCA studies show that wood-frame building can result in lower GHG emission compared to non-wood alternatives, but it is not automatic. Rikshem's significant new development activities makes their focus on material use highly relevant. It is a clear strength that the Green Bond Council of Rikshem will review information about potential projects and evaluate the overall environmental impact, which includes life cycle considerations, potential rebound effects, and resilience to physical climate risks.

Rikshem has a goal to reach climate neutral operations in 2030¹ and a road map towards this goal is under development. To support this, the company is actively monitoring energy use and carbon emissions. When it comes to purchasing, the goal for Rikshem is that all products, goods and services shall be based on fossil-free materials and fuels. Already today, transports to construction sites are fossil free and Rikshem requires that construction firms assess life cycle emissions. Rikshem reports in line with GRI standards, but do not currently follow TCFD recommendations regarding reporting and climate scenario analysis.

Based on the overall assessment of the eligibility criteria in this framework, governance and transparency considerations, and the prioritized use of proceeds, the framework receives a **CICERO Medium Green** shading and a governance score of **Excellent**. In order to achieve a darker green shading, the green bond framework would need stronger eligibility criteria in the Green buildings category.

SHADES OF GREEN

Based on our review, we rate the Rikshem's green bond framework **CICERO Medium Green**.

Included in the overall shading is an assessment of the governance structure of the green bond framework. CICERO Shades of Green finds the governance procedures in Rikshem's framework to be **Excellent**.



GREEN BOND PRINCIPLES

Based on this review, this framework is found in alignment with the principles.



°CICERO
Medium Green

¹ Scope 1 and 2, and climate compensation is only made when all other possible climate reduction measures have been taken.



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1 Terms and methodology

This note provides CICERO Shades of Green's (CICERO Green) second opinion of the client's framework dated February 2022. This second opinion remains relevant to all green bonds and/or loans issued under this framework for the duration of three years from publication of this second opinion, as long as the framework remains unchanged. Any amendments or updates to the framework require a revised second opinion. CICERO Green 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.

The second opinion is based on a review of the framework and documentation of the client's policies and processes, as well as information gathered during meetings, teleconferences and email correspondence.

Expressing concerns with 'shades of green'

CICERO Green second opinions are graded dark green, medium green or light green, reflecting a broad, qualitative review of the climate and environmental risks and ambitions. The shading methodology aims to provide transparency to investors that seek to understand and act upon potential exposure to climate risks and impacts. Investments in all shades of green projects are necessary in order to successfully implement the ambition of the Paris agreement. The shades are intended to communicate the following:

CICERO Shades of Green	Examples
 Dark green is allocated to projects and solutions that correspond to the long-term vision of a low carbon and climate resilient future. Fossil-fueled technologies that lock in long-term emissions do not qualify for financing. Ideally, exposure to transitional and physical climate risk is considered or mitigated.	 Wind energy projects with a strong governance structure that integrates environmental concerns
 Medium green is allocated to projects and solutions that represent steps towards the long-term vision, but are not quite there yet. Fossil-fueled technologies that lock in long-term emissions do not qualify for financing. Physical and transition climate risks might be considered.	 Bridging technologies such as plug-in hybrid buses
 Light green is allocated to projects and solutions that are climate friendly but do not represent or contribute to the long-term vision. These represent necessary and potentially significant short-term GHG emission reductions, but need to be managed to avoid extension of equipment lifetime that can lock-in fossil fuel elements. Projects may be exposed to the physical and transitional climate risk without appropriate strategies in place to protect them.	 Efficiency investments for fossil fuel technologies where clean alternatives are not available

Sound governance and transparency processes facilitate delivery of the client's climate and environmental ambitions laid out in the framework. Hence, key governance aspects that can influence the implementation of the green bond are carefully considered and reflected in the overall shading. CICERO Green considers four factors in its review of the client's governance processes: 1) the policies and goals of relevance to the green bond framework; 2) the selection process used to identify and approve eligible projects under the framework, 3) the management of proceeds and 4) the reporting on the projects to investors. Based on these factors, we assign an overall governance grade: Fair, Good or Excellent. Please note this is not a substitute for a full evaluation of the governance of the issuing institution, and does not cover, e.g., corruption.



2 Brief description of Rikshem's green bond framework and related policies

Rikshem AB (Publ) (Rikshem) is a private Swedish real estate company. The company owns, develops and manages residential properties and properties for public use. Rikshem is owned equally by the Fourth Swedish National Pension Fund and AMF Pensionsförsäkring AB. The property portfolio is concentrated to selected growth areas in Sweden, and approximately 45% of the property value is located in the greater Stockholm area and Uppsala. Approximately 70% of the value pertains to residential properties and 30% to properties for public use, such as nursing homes, other care facilities and schools.

Rikshem issued its first green bond in 2014 as one of the first corporate and real estate companies to do so. The original green bond framework was updated in 2017 and again in 2020. The current (2022) framework is wider in scope than the previous one by including new criteria for eligible existing buildings.

Environmental Strategies and Policies

Rikshem has in place an ambitious long-term environmental goal of becoming carbon neutral by 2030 in scope 1 and 2, and all three scopes by 2045 (climate compensation is only made when all other possible climate reduction measures have been taken) and a road map towards this goal is under development. To support this, the company is actively monitoring energy use and carbon emissions annually with the goal of reducing emissions by an average of 1 kgCO₂/m²/yr and energy use (landlord energy) in its properties by at least 2.5% annually. The reduction target for the existing portfolio has been tightened from 1 kgCO₂/m²/yr for 2020 to 2 kgCO₂/m²/yr from 2021 to support developments to reach climate-neutrality in 2030. When it comes to purchasing, the goal for Rikshem is that through dialogue with suppliers, all Rikshem's products, goods and services can be based on fossil-free materials and fuels. Rikshem purchases services for construction projects and renovations. When choosing contractors, Rikshem considers it to be essential that they have environmental and quality management systems in place and comply with UN Global Compact principles. Thus, Rikshem requires that all goods that are built into the house must be entered and assessed in something called the building product assessment. They require, for example, that all transport to the construction site must be with fossil-free fuels. They also set requirements in the design of the technical installations, for example non-toxic environments, energy efficiency, moisture safety, a good indoor environment and that the properties can be managed and operated in an efficient manner. In addition, LCA analyzes are performed that aim to provide an overall picture of how large the total environmental impact is during a building's life cycle. The aim is to choose products where all stages are fossil-free and have as low a climate impact as possible.

In 2019 Rikshem allocated resources to more extensively use Byggsvarubedömningen, an assessment protocol of construction materials, as well as a review of how they use and recycle material in construction projects and renovations, as well as efforts related to sorting at source of materials and waste.

Carbon emissions in 2020 amounted to 8.9 kgCO₂/m² Atemp in existing properties (scope 2 and heating in scope 1, normal year corrected). This represented a decrease of 7.4% or 0.7 kgCO₂/m² compared with 2019. Rikshem exclusively uses district heating to heat its buildings. For existing properties, the average energy use per square meter for 2020 was 127.8 kWh/m² heated area (normal year corrected), down 8% compared with the 2019 value.



Rikshem works extensively with industrialized wood-based construction. Rikshem also reviews the possibilities of building in concrete, but then the material's climate impact needs to be taken into account, since carbon emissions from use of concrete are generally higher than from use of wood.

In 2021, Rikshem decided to certify all new constructed properties according to Miljöbyggnad Silver, to join SBTI² (Science Based Target Indicators) and join LFM30³ (Local Roadmap Malmö 2030) with the towns of Helsingborg and Malmö.

One comprehensive climate investment that Rikshem decided on in 2018 was that energy use is to be monitored in real time. The work, which is long-term and constitutes a major step for Rikshem, will involve the digitization of several substations on properties. Per January 2022, 22% of the properties were connected to the monitoring system. Progress has also taken place when it comes to Rikshem's aim to phase out and replace their cars with leased electric or hydrogen cars.

Rikshem reports in line with GRI standards. Rikshem does not currently follow the TCFD recommendations regarding reporting and climate scenario analysis, but does carry out climate scenario analyses at the company level.

Use of proceeds

An amount equal to the net proceeds will be used to fully or partly finance or refinance investments and expenditures that promote the transition to low-carbon, climate resilient and sustainable economies within the following categories: Clean transportation, Energy efficiency, Green buildings, and Renewable energy and with criteria shown in table 1 below. Rikshem assumes that 80-90% will be allocated to Green buildings and the remaining part to Clean Transportation (approx. 1-2%), Energy Efficiency (5-10%) and Renewable energy (4-8%). More than 50% of the issuance over time will be used for new projects.

Both financing or refinancing of tangible assets (without age restriction) and operational expenditure (up to 3 years backwards looking) can qualify. Rikshem expects that less than 10% will be on operational expenditures, mainly within the categories Clean transportation and Energy efficiency. The combined allocated amount to a specific green asset, by one or several sources of financing with specified use of proceeds, may not exceed its value. Rikshem only operates in the Swedish market and the net proceeds will therefore be used exclusively to finance or refinance investments in Sweden.

The long-term ambition is to allocate the majority of the net proceeds to new projects and assets (defined as projects and assets financed within 12 months from completion). The proportion of net proceeds allocated to new projects and assets will be disclosed in the annual reporting.

The net proceeds will not be allocated or linked to fossil-based energy generation or infrastructure, nuclear energy generation, research and/or development within weapons and defence, potentially environmentally negative resource extraction (such as rare-earth elements or fossil fuels), gambling or tobacco.

Selection

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

² <https://sciencebasedtargets.org>

³ <https://lfm30.se>



can qualify for green finance funding. The broader the project categories, the more importance CICERO Green places on the governance process.

Projects and assets potentially eligible for green bond financing will be identified as part of the ongoing operations. Identified projects and assets will be evaluated by the Green Business Council (“GBC”), which currently has the following members: Head of Sustainability, Group Treasurer, Head of Projects, and Head of Transactions. The Head of Sustainability has good overall knowledge in all sustainability aspects.

The GBC will evaluate the nominated projects and assets to ensure compliance with the framework. It will review the overall environmental impact of assets, which includes some life cycle considerations through the Miljöbyggnad certification, potential rebound effects, resilience and contribution to at least one of the five environmental objectives: Climate change mitigation, climate change adaptation, natural resource conservation, biodiversity conservation and pollution prevention and control. The projects and assets must also be compliant with policies and guidelines at Rikshem. Controversial projects will be identified and excluded by the GBC. The GBC can request additional information and consult with internal parties, but the mandate to make decisions is held by the group. A decision to allocate net proceeds will require a consensus decision by the GBC, whereby the Head of Sustainability effectively holds a veto. Decisions made by the council will be documented.

An updated list of all green assets will be kept by Rikshem’s treasury department. If a project or asset ceases to meet the green terms, it will be removed from the list (and the funds will be recycled). The list will also be used as a tool to determine if there is a current or expected capacity for additional green bond financing.

Management of proceeds

CICERO Green finds the management of proceeds of Rikshem to be in accordance with the Green Bond Principles (2021).

The net proceeds of any green bond financing will be credited to a dedicated account (the “Green Account”) or otherwise tracked by Rikshem (together, the “Green Portfolio”). Deductions will be made from the green portfolio by an equivalent amount corresponding to the financing, refinancing, investment or expenditure of eligible green assets or at repayment of any green bond financing. The auditor of Rikshem will ascertain that repaid green bond financing fulfil the criteria of the new framework. If an eligible green asset no longer qualifies or if the underlying project or asset is divested or lost, an amount equal to the funds allocated towards it will be re-credited to the green portfolio. Funds may also be reallocated to other green assets during the term of any green bond financing, unless otherwise agreed in the loan documentation. The treasury department will keep a record of the purpose of any change in the green portfolio and ensure that the combined funds directed towards a specific green asset, by one or several sources of green bond financing or other financing with specific use of proceeds, does not exceed its value. Pending fund disbursement to green assets and while the green portfolio has a positive balance the proceeds may be invested or utilised by the treasury in accordance with Rikshem financial policy. Such unallocated funds may for instance be invested in short-term interest-bearing securities, such as Swedish treasury bills (and related entities) or Swedish municipal notes (including related entities).

The allocation of net proceeds will be verified by Rikshem’s external auditor.

Reporting

Transparency, reporting, and verification of impacts are key to enable investors to follow the implementation of green finance programs. Procedures for reporting and disclosure of green finance investments are also vital to



build confidence that green finance is contributing towards a sustainable and climate-friendly future, both among investors and in society.

In order to be fully transparent towards the Green Bond investors and other market stakeholders, Rikshem will publish an annual green bond report on its website (www.rikshem.se/gronfinansiering) that will detail the allocation of green funds. The GBC will be responsible for the reporting. The first such reporting under this framework is expected to take place in April 2023, in proximity to the company's Annual Report, and will be available in English.

The reporting will contain information on all green assets that have been financed with green bonds, a summary of Rikshem activities in the past year as pertains to green bond financing as well as information, including examples, of the financed green asset's adherence to the relevant criteria.

Rikshem will provide allocation reporting and emphasis will be placed on providing examples to single projects based on size. Allocation disclosure will cover (all data is to be as of the end of the previous year): The sum of outstanding green bonds and the sum of the green portfolio balance, including any short-term investments or funds managed within Rikshem liquidity portfolio, and the proportion of net proceeds allocated to new investments.

The reporting will also contain a disclosure of asset level performance indicators and will cover the combined effect of financed eligible green assets. The reporting will strive to disclose the impact based on the green bond financings share of the total investment. For financed green assets that are not yet operational, Rikshem will strive to provide estimates of future performance levels. The performance indicators will be as in the previous (2020) framework and Rikshem will emphasise energy savings and greenhouse gas reductions as the most relevant performance metrics for most projects.

To calculate greenhouse gas (GHG) emission reductions, Rikshem gathers the GHG emission values presented by its energy suppliers in its energy monitoring system. Two grid factors are calculated from the total use of energy in Rikshem's property portfolio, one for heat and one for building electricity. These numbers vary from year to year. To assure consistency, the emission factor(s) used in Rikshem's green bond reporting will equal the emission factor(s) used in the company's sustainability reporting. It should be noted that the grid emission factors Rikshem uses is considerably lower than what has been outlined in the "Nordic Public Sector Issuers: Position Paper on Green Bonds Impact Reporting" (2020), which currently states 319 gCO₂e/kWh.

The external auditor of Rikshem, or a similar party appointed by Rikshem with the relevant expertise and experience, will investigate and report whether the net proceeds have been allocated to the eligible green projects and assets that Rikshem has communicated in the reporting. The conclusions will be provided in a signed statement, which will be published on Rikshem website (www.rikshem.se/gronfinansiering).



3 Assessment of Rikshem's green bond framework and policies



The framework and procedures for Rikshem'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; weaknesses are typically areas that are unclear or too general. Pitfalls are also raised in this section to note areas where Rikshem should be aware of potential macro-level impacts of investment projects.

Overall shading

Based on the project category shadings detailed below, and consideration of environmental ambitions and governance structure reflected in Rikshem's green bond framework, we rate the framework **CICERO Medium Green**.

Eligible projects under the Rikshem's 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 investors with certainty 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
Clean transportation 	Financing of supportive infrastructure such as charging stations for all types of electric vehicles, bicycle garages, or other investments that support and emphasize the use of environmentally sound and low carbon solutions, as well as electric vehicles used in our operations, such as bicycles and fully electric service cars. Low Carbon Vehicles: Fully electric or hydrogen vehicles.	Dark green <ul style="list-style-type: none">✓ Electrification and the use of hydrogen are key avenues for decarbonizing the transport sector.✓ Supporting infrastructure can potentially be used by plug-in hybrid cars, containing elements of fossil fuels.✓ For infrastructure projects, efforts should be made to reduce construction phase emissions as well as life cycle impacts of chosen materials.
Energy efficiency 	Financing of investments in the existing portfolio of buildings that target a lower overall energy use and an improved environmental footprint. This could include, for instance, the installation of geothermal heating/cooling, energy-efficient	Dark green <ul style="list-style-type: none">✓ Energy efficiency investments, such as smart technology aimed at reducing energy consumption, are key to reducing emissions. Smart



lighting, IT-technology (monitoring, efficiency management and remote operation), energy efficient windows or an upgraded ventilation system. Only directly associated expenditure (e.g. material, installation and labour) is eligible for financing. Rikshem will ascertain the following:

- a) High estimated energy savings in the targeted area for physical installations (minimum 20%).
- b) Minimize long term negative climate impact and potential rebound effects.
- c) Minimal negative climate impact from the technology used.

grids and grid upgrades are necessary to manage and increase the share of intermittent and decentralized renewable energy.

- ✓ Be aware of potential rebound effects. Lock-in of fossil fuel equipment is avoided since Rikshem informed CICERO Green that the net proceeds will not be allocated or linked to fossil-based energy generation, hence properties with such equipment will not be included in the framework.

Green buildings



Environmentally certified buildings: Financing of development, acquisition or otherwise completed low energy buildings that have, or will, receive (i) a design stage certification or (ii) a post-construction certification or (iii) an in-use certification in any of the following building certification schemes at the defined threshold or better: Miljöbyggnad “Silver”, BREEAM “Very Good” or Svanen, as well as achieve at least 15 % lower energy use than required by the applicable national building code (BBR).

Wooden buildings: Financing of development, acquisition or otherwise completed low energy buildings that have, or will, use FSC or PEFC certified wood as the main building component and thereby minimize the use of cement and steel, as well as achieve at least 15 % lower energy use than required by the applicable national building code (BBR).

Energy efficient residential buildings: New or existing residential buildings that achieve at least 15 % lower energy use per square meter than required by the applicable national building code (BBR).

Renovated buildings with decreased energy use: Financing of renovation, acquisition or otherwise completed low energy buildings that have, or will, achieve at least a 30% decrease in overall energy use or achieves an energy use in line with the

Medium green

- ✓ In 2021, the share of new construction was approximately 60%, while acquisitions represented 40%. Going forward, Rikshem expects that more than 50% of the issuance over time will be used for new projects.
- ✓ Rikshem has informed CICERO Green that they foresee that the most significant use of proceeds in the Green Building category is for wooden buildings with a relatively low carbon footprint.
- ✓ Rikshem is taking key steps towards low carbon buildings through a combination of energy efficiency criteria, environmental certifications and consideration for material use in buildings. However, a dark green shading would require passive or plus house technologies.
- ✓ In the eligibility criteria, “Applicable national building code” refers to the building code in the year of construction.
- ✓ For new buildings, access to public transport is important, as well as bicycle parking and charging facilities for electric cars. Rikshem’s whole portfolio has good access to public transportation and this is an



applicable national building code (BBR) for newly built properties.

Other existing buildings with low energy use:

<u>Value year⁴</u>	<u>Energy use per m²</u>
Before 1971:	135 kW/m ²
1971-1999:	125 kW/m ²
2000-2006:	115 kW/m ²
After 2006:	At least 20% lower than the applicable national building code

important factor for site selection for new development.

- ✓ We note that from a climate perspective, refurbishment is preferred before new constructions. In refurbishment of existing buildings, according to IEA, efficiency of building envelopes needs to improve by 30% by 2025 to keep pace with increased building size and energy demand – in addition to improvements in lighting and appliances and increased renewable heat sources. In the IEA Net Zero Emissions by 2050 Scenario, retrofit rates for buildings to a “zero carbon ready” standard – that will be fully decarbonised by 2050 without any further changes to the building or its equipment – must reach about 2.5% a year by 2030 in advanced economies. In addition, the scenario includes a milestone that all new buildings constructed from 2030 are zero carbon ready.
- ✓ The absolute energy intensity criteria relates to landlord energy, not calculated as primary energy, according to the issuer.
- ✓ According to the issuer, older buildings have higher thresholds since technical and legal limitations as well as building standards make it more difficult to reduce the energy use for these buildings.

Renewable energy



Financing of renewable energy production, such as on-site solar power installations or stand-alone solar farms, geo-energy (ground and surface systems) as well as related infrastructure investments for example grid connections, electric substations or networks.

Dark green

- ✓ While renewable energy is generally low-carbon, local environmental impacts such as on biodiversity and landscape, and lifecycle emissions from construction and operation can be of concern for these projects.

⁴ ‘Value year’ is equal to year of construction if no major alteration or extension has been carried out. If a conversion or extension has been carried out, the value year is moved forward.



- ✓ Rikshem do not foresee any investments in either wind or hydro power projects.
- ✓ Be aware that purchase of renewable energy does not necessarily imply more renewable energy overall.

Table 1. Eligible project categories

Background

The construction and real estate sector have a major impact on our common environment. According to the National Board of Housing, Building and Planning's environmental indicators, it accounts for 32% of Sweden's energy use, 31% of waste and 19% of domestic greenhouse gas emissions. Calculations from Sveriges Byggindustrier indicate that the climate impact of new production of a house is as great as the operation of the house for 50 years.

The building sector accounts for a large share of primary energy consumption in most countries, and the IEA reports that to reach IEA's 2050 Net Zero Emission Scenario, retrofit rates of current buildings need to increase from the current 1% to 2.5% per year by 2030, while the average energy consumed per square metre in 2030 must be 45% less than in 2020 (to keep pace with increased building size and energy demand), in addition to improvements in lighting and appliances and increased renewable heat sources. To achieve a zero-carbon-ready building envelope, tackling embodied carbon (emissions from building materials and equipment) is just as important as energy efficiency.⁵ The energy efficiency of buildings is dependent on multiple factors including increasing affluence and expectations of larger living areas, growth in population and unpredictability of weather, and greater appliance ownership and use. Additionally, in the Nordics, approximately half of life-cycle emissions from buildings stem from materials/construction⁶. The other half stems from energy use, which becomes less important over time with the increasing adoption of off-grid solutions such as geothermal and solar. All of these factors should therefore be considered in the project selection process. In addition, voluntary environmental certifications such as BREEAM or equivalents measure or estimate the environmental footprint of buildings and raise awareness of environmental issues. These points-based certifications, however, fall short of guaranteeing a low-climate impact building, as they may not ensure compliance with all relevant factors e.g., energy efficiency, access to public transport, climate resilience, sustainable building materials. Many of these factors are covered under the World Green Building Council's recommendations for best practices for developing green buildings.⁷

The Exponential Roadmap⁸ lays out a trajectory for reducing emissions by 50% by 2030 and requires that emissions reductions strategies within the buildings sector be rapidly scaled up. The roadmap advocates for standardised strategies that are globally scalable within areas such as new procurement practices for construction and renovation that require dramatically improved energy and carbon emission standards, developing new low-carbon business models for sharing space and smart buildings to achieve economies of scale, and allocating green bond funding for sustainable retrofitting and construction.

⁵ <https://www.iea.org/reports/building-envelopes>

⁶ Sustainable Edge Sector Brief: Real Estate, https://cicero.oslo.no/file/2/sectorbriefs_realestate_17_12.pdf/download

⁷ <https://www.worldgbc.org/how-can-we-make-our-buildings-green>

⁸ https://exponentialroadmap.org/wp-content/uploads/2020/03/ExponentialRoadmap_1.5.1_216x279_08_AW_Download_Singles_Small.pdf



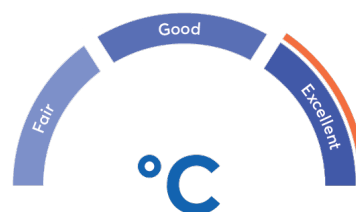
A large number of LCA studies show that wood-frame building results in lower primary energy and GHG emission compared to non-wood alternatives including concrete and steel. Less energy, in particular fossil fuels, is needed to manufacture wood-based building materials compared with alternative non-wood materials. Wood-based materials use primarily biomass residues for processing energy. Wooden materials also store carbon during their lifetime, temporary sequestering carbon from the atmosphere. Large amounts of biomass residues are produced during the manufacture and end-of-life of wood products, and these can be used to replace fossil fuels. Hence, wood-based buildings are appropriate for long-term strategies for reducing fossil fuel use and GHG emissions when combined with sustainable forestry⁹. Quantitative estimates are imprecise, but some studies indicate energy savings of the order of one third in the construction phase of wood buildings compared to buildings using mainly other materials.

Governance Assessment

Four aspects are studied when assessing the Rikshem's governance procedures: 1) the policies and goals of relevance to the green bond framework; 2) the selection process used to identify eligible projects under the framework; 3) the management of proceeds; and 4) the reporting on the projects to investors. Based on these aspects, an overall grading is given on governance strength falling into one of three classes: Fair, Good or Excellent.

Rikshem has in place an ambitious long-term environmental goal of becoming carbon neutral by 2030 in scope 1 and 2, and all three scopes by 2045. When it comes to purchasing, the goal for Rikshem is that through dialogue with suppliers, all Rikshem's products, goods and services can be based on fossil-free materials and fuels. Thus, they already require, for example, that all transport to construction sites must be fossil-free. They do have a sound selection process with veto power for the environmental expertise in the Green Bond Council. According to Rikshem, the risk of controversial projects is minimal. Management of proceeds are in accordance with the Green Bond Principles (2021)¹⁰. Rikshem are climate reporting according to GRI. While Rikshem carry out climate scenario analyses at the company level, we note that Rikshem does not yet carry out climate scenario analysis or risk assessments in alignment with the methodology recommended by TCFD. One part of the strategic development of Rikshem is to extend the reporting standards compliance and TCFD¹¹ is at the top of the list. The impact reporting, which is on a portfolio level, is good.

The overall assessment of Rikshem's governance structure and processes gives it a rating of **Excellent**.



Strengths

The framework of Rikshem is well aligned with the Green Bond Principles (2021). The eligible categories are defined and provide important steps toward a low carbon future. It should be noted with appreciation that the grid emission factor(s) Rikshem uses in their impact reporting (local values from energy suppliers) is considerably lower than what has been outlined in the "Nordic Public Sector Issuers: Position Paper on Green Bonds Impact Reporting" (2020), which currently states 319 gCO₂e/kWh. This reduces the risk of overestimating the impact of green investments.

⁹ R&D Fund for public real estate, The Swedish Association of Local Authorities and Regions (2016): Climate impacts of wood vs. non-wood buildings. <https://webbutik.skl.se/bilder/artiklar/epub/7585-377-2.epub>

¹⁰ <https://www.icmagroup.org/assets/documents/Sustainable-finance/2021-updates/Green-Bond-Principles-June-2021-140621.pdf>

¹¹ <https://www.fsb-tcf.org/publications/final-recommendations-report/>



It is a clear strength that the Green Bond Council of Rikshem will review information about potential projects and evaluate the overall environmental impact, which includes life cycle considerations, potential rebound effects, resilience and adherence to at least one of the five environmental objectives. A focus on wooden building materials is also a strength.

Efficiency improvements may lead to rebound effects. When the cost of an activity is reduced there will be incentives to do more of the same activity. Rikshem is aware of such effects and takes actions to avoid green bond funding of projects where the risk of rebound effects is particularly high.

Weaknesses

We find no material weaknesses in the green bond framework of Rikshem.

Pitfalls

In a low carbon 2050 perspective, the energy performance of buildings is expected to be improved, with passive house technology becoming mainstream and the energy performance of existing buildings greatly improved through refurbishments. According to IEA, efficiency of building envelopes needs to improve by 30% by 2025 to keep pace with increased building size and energy demand – in addition to improvements in lighting and appliances and increased renewable heat sources. In the IEA Net Zero Emissions by 2050 Scenario, retrofit rates for buildings to a “zero carbon ready” standard – that will be fully decarbonised by 2050 without any further changes to the building or its equipment – reach about 2.5% a year by 2030 in advanced economies and 2% a year by 2030 in emerging economies. In addition, the scenario includes a milestone that all new buildings constructed from 2030 are zero carbon ready. Building energy codes are the central policy mechanism to meet this goal. However, only 5% of new buildings constructed globally currently meet this standard. The criteria for eligible projects under the Green buildings category are good, but do allow for buildings not yet delivering the solutions needed in a low carbon 2050 perspective (passive house technology and similar). The issuer is taking a step in this direction with the energy efficiency criteria.

Although voluntary environmental certifications such as BREEAM, Miljöbyggnad and Svanen or equivalents can measure or estimate the environmental footprint of buildings and raise awareness of environmental issues, they fall short of guaranteeing an environmentally friendly building. Thus, they do not always guarantee a reduction in energy use or greenhouse gas emissions, nor do they necessarily include considerations of climate change resiliency and transport solutions associated with the buildings. Rikshem’s energy efficiency criteria mitigates this.

To the extent that the buildings rely on district heating, there is an inherent probability that some fossil fuel fractions (e.g., plastic fractions in waste-to-energy plants) will be involved, although Swedish district heat providers generally are good at tracking and reducing fossil fractions.



Appendix 1: Referenced Documents List

Document Number	Document Name	Description
1	GB Framework utkast 2022-01-31	Rikshem's green bond framework dated January, 2022
2	rh_ahr_eng_enkel	Annual report 2020, https://www.rikshem.se/media/3419/rh_ahr_eng_enkel.pdf
3	green-bonds-investor-report-2020	Rikshem's Green bond investor report 2020, https://www.rikshem.se/media/3445/green-bonds-investor-report-2020.pdf



Appendix 2: About CICERO Shades of Green

CICERO Green is a subsidiary of the climate research institute CICERO. CICERO is Norway's foremost institute for interdisciplinary climate research. We deliver new insight that helps solve the climate challenge and strengthen international cooperation. CICERO has garnered attention for its work on the effects of manmade emissions on the climate and has played an active role in the UN's IPCC since 1995. CICERO staff provide quality control and methodological development for CICERO Green.

CICERO Green provides second opinions on institutions' frameworks and guidance for assessing and selecting eligible projects for green bond investments. CICERO Green is internationally recognized as a leading provider of independent reviews of green bonds, since the market's inception in 2008. CICERO Green 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 Green operates independently from the financial sector and other stakeholders to preserve the unbiased nature and high quality of second opinions.

We work with both international and domestic issuers, drawing on the global expertise of the Expert Network on Second Opinions (ENSO). Led by CICERO Green, ENSO contributes expertise to the second opinions, and is comprised of a network of trusted, independent 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, the International Institute for Sustainable Development (IISD) and the School for Environment and Sustainability (SEAS) at the University of Michigan.

