



Municipality of Linköping Green Bond Second Opinion

September 9, 2019

Linköpingsgruppen was established by the Municipality of Linköping, Linköpings Stadshus, Tekniska verken i Linköping, Stångåstaden and Lejonfastigheter in 2017 to increase cooperation and create new financial solutions by e.g. establishing a common green bond framework. The municipality of Linköping is the fifth largest municipality in Sweden with nearly 160 000 inhabitants. As a fast-growing community, the municipality and its subsidiaries are investing at a high rate and will continue to do so in the future. The Municipality of Linköping cooperated closely with the university and the business community and together with its subsidiaries, employs around 8000 of its citizens. The Municipality of Linköping offers a loan guarantee for its subsidiaries under the recently introduced medium term note (MTN) programme.

Linköpingsgruppen's green bond framework as applied by the Municipality of Linköping, provides a progressive, clear and sound framework for investments into projects that well align with the green bond principles of 2018 (GBP). The green bond framework contains nine eligible project types. Only a subset is, however, of relevance for the Municipality of Linköping. The main category is green buildings (a new water sport arena), but the municipality of Linköping may also to a smaller extent use the categories clean transportation (e.g. charging stations for electric vehicles, foot and bicycle paths, etc.), climate adaptation measures, and environmental measures (e.g. establishment of green recreational parks). Eligibility in the green building category will require fulfilling Miljöbyggnad Silver or equivalent. Proceeds will not be used to finance investments in fossil fuels or nuclear power. Final decision is yet to be made regarding the issuance of green bonds and to build a new water sport arena.

Linköping municipality has in place strong environmental goals and targets, reasonable mitigation plans, a sound selection process and comprehensive and transparent reporting. Nevertheless, methods and parameters used for estimating CO₂ emission reductions from eligible projects are somewhat unclear at this stage. We further note that the municipality does not seem to carry out climate scenario analysis or risk assessments in alignment with the methodology recommended by TCFD. On the other hand, the Climate Adaptation program of Linköping municipality is comprehensive and cover a broad set of potential future risks under climate change.

Based on the overall assessment of the project types utilized by the Municipality of Linköping, governance and transparency considerations, the municipality's green bond framework receives an overall **Medium Green** shading. In order to achieve a dark green shading, the green bond framework would need a clearer requirement that best environmental technology is used in eligible green bond building projects.

SHADES OF GREEN

Based on our review, we rate the Municipality of Linköping's green bond framework **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 Municipality of Linköping's framework to be **Excellent**.



GREEN BOND PRINCIPLES

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





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1 Terms and methodology

This note provides CICERO Shades of Green's (CICERO Green) second opinion of the Municipality of Linköping's green bond framework dated September 3, 2019. This second opinion remains relevant to all green bonds 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 Municipality of Linköping's policies and processes, as well as information gathered during meetings, teleconferences and email correspondence with the Municipality of Linköping.

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 of the bonds. 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



Brown is allocated to projects and solutions that are in opposition to the long-term vision of a low carbon and climate resilient future.



New infrastructure for coal

Sound governance and transparency processes facilitate delivery of Municipality of Linköping's climate and environmental ambitions laid out in the framework. Hence, the governance aspects are carefully considered and reflected in the overall shading of the green bond framework. CICERO Green considers four factors in its review of Municipality of Linköping'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.



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

The municipality of Linköping is the fifth largest municipality in Sweden with nearly 160 000 inhabitants. As a fast-growing community, the municipality and its subsidiaries are investing at a high rate and will continue to do so in the future. The Municipality of Linköping cooperated closely with the university and the business community and together with its subsidiaries, employs around 8000 of its citizens.

Linköpingsgruppen was established in 2017 by the Municipality of Linköping, Linköpings Stadshus, Tekniska verken i Linköping, Stångåstaden and Lejonfastigheter with the purpose to increase cooperation and create new financial solutions. The Municipality of Linköping offers a loan guarantee for its subsidiaries under the recently introduced medium term note (MTN) programme.

The Municipality of Linköping conducts its activities in cooperation with a number of subsidiaries under the Linköping group. The group is formed by the following: Linköpings Stadshus, Tekniska verken, Stångåstaden and Lejonfastigheter and their subsidiaries. Through the Linköping group, the Municipality has chosen to issue a green bond for certain municipal activities, such as property development and management, energy production and distribution and waste management together with companies through Linköpings Stadshus and eight daughter companies. One of the subsidiaries is Sankt Kors Fastighets AB, which does not have its own financing business, but where Linköpings Stadshus lends to the company. Linköpings Stadshus has a coordinating ownership role vis a vis subsidiary companies. Tekniska verken i Linköping AB (publ), is the parent company in a group that offers goods and services in the production and distribution of electricity, trade in electricity, district heating/ cooling, biogas, bio fertilizer, broadband, water, drain, waste management, lighting and related services. AB Stångåstaden (publ) is the largest housing company in Linköping. In total, Stångåstaden owns approximately 26 percent of the housing in the municipality. Finally, Lejonfastigheter AB (publ) develops and manages public environments. The company's real estate portfolio contains 280 properties.

Environmental Strategies and Policies

The Municipality of Linköping ratifies the UN Sustainable Development Goals (Agenda 2030) and the Paris Agreement. According to the Environmental Policy of Linköping, environmentally sustainable developments will focus on pollution prevention and reduction of natural resource use, energy consumption reduction and increasing use of renewable energy, and biodiversity preservation. Continuous education and engagement of employees and elected representatives and information of the local community and stakeholders is also in focus. A clear and ambitious target for the Municipality of Linköping is to become carbon-neutral by 2025. This applies to the municipality as a whole, and not only activities under the responsibility of the municipality. The municipality engages with citizens and subsidiaries to inform about projects, activities, technical information and support around climate issues. The municipality intend to share information through the "Financial forum" and subgroups (the forum consists of Linköping municipality, Stadshus AB, Stångåstaden, Tekniska Verken and Lejonfastigheter). The web site <https://www.linkoping.se/klimatsmart-linkoping/> will also be used.

The environmental policy of the Municipality of Linköping outlines the main action points for sustainable development. In addition to its ambitious mitigation target, the Municipality of Linköping has put a strong



emphasis on adaptation strategies. The municipality's climate adaptation program acknowledges the climate impact and risks that Linköping is exposed to under two representative concentration pathways (RCP 4.5 and RCP 8.5). Furthermore, the municipality runs flood risk mapping for new buildings which includes scenario analysis.

Use of proceeds

Municipality of Linköping's green bonds will mainly finance new eligible projects in accordance to the green bond framework of Linköpingsgruppen. The issuer aims to use most of the proceeds in new projects, a new water sport arena in particular. The actual split between new projects and refinanced green projects will be included in Linköpingsgruppen's annual green bond report for investors. Operating expenditure (OPEX) may be covered by the green bond framework but issuer has informed CICERO Green that OPEX is not the main focus.

The net proceeds will fund eligible projects and assets that meet one of the following purposes: reduce greenhouse gas emissions (1), adapt operations to climate change (2) or promote other environmental issues apart from climate change (3). According to the issuer, analysis shall be conducted to ensure that the projects do not contravene other prioritized areas.

The framework specifies nine project categories: 1) renewable energy, 2) energy efficiency, 3) clean transportation, 4) replacement of fossil raw materials, 5) green buildings, 6) waste management, 7) water and wastewater management, 8) climate adaptation measures and 9) environmental measures. The Municipality of Linköping will mainly utilize the Green building category and to a lesser extent the Clean transportation, Climate adaptation measures and Environmental measures categories. Green bond proceeds will not be allocated to nuclear power or fossil energy generation projects.

Selection

The selection process is a key governance factor in the green bond principles (GBP). CICERO Green considers how climate and environmental considerations are taken into account when evaluating whether projects can qualify for green bond funding. The Municipality of Linköping's green bond framework outlines a detailed and transparent selection procedure that is in line with the green bonds principles (GBP).

The Municipality of Linköping will establish a decision-making unit, responsible for the evaluation of potential green projects which includes environmental and financial representatives who are responsible for evaluating and approving projects by consensus that meet the green criteria. Relevant expertise will be called to inform the decision-making unit for every applicable project. A life-cycle assessment will be conducted on some projects, but not all. The decision-making unit is responsible for documenting the decisions.

Management of proceeds

CICERO Green finds the management of proceeds to be in accordance with the Green Bond Principles (GBP, 2018). The Municipality of Linköping will credit the net proceeds of any issuance under the green bond framework to a separate account. According to the issuer, all projects shall be tagged individually in the book-keeping system filed and disclosed. Financing or refinancing of eligible projects and/or assets that have qualified according to the project evaluation and selection process, will be deducted at the end of each quarter in an amount equal to disbursements for the financing of green projects. If an eligible green project or asset no longer meets the eligibility criteria, it will be removed from the pool of projects. The Municipality of Linköping has informed CICERO Green that, according to the financial policy, proceeds cannot be allocated to oil industry related services or investments in corporates involved with energy production through fossil resources or corporates that prospect for oil, coal and



gas (maximum 5% of total turnover). The Municipality does not direct invest in real economy companies in this area.

Reporting

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.

The Municipality of Linköping has committed to annual reporting through the green bond investor report which shall include a list of all approved green projects with project-specific reporting, including description of the projects and their main environmental benefits and the total amount allocated and disbursed and information about the split between new projects and refinancing. According to the issuer, the annual report aims to include expected vs. actual energy use per green building and estimated and avoided greenhouse gas emissions when relevant and possible.

Linköpingsgruppen has informed CICERO Green that allocation of funds under the green bond framework and the green bond investor report will be reviewed annually by an external auditor. The external auditor with appropriate environmental competence will audit also on impact metrics. The green bond investor report and the opinion of the external auditor will be publicly available on the webpage of every member of Linköpingsgruppen.



3 Assessment of the Municipality of Linköping's green bond framework and policies

The framework and procedures for the Municipality of Linköping'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 the Municipality of Linköping 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 the Municipality of Linköping's green bond framework, we rate the framework **CICERO Medium Green**.

Eligible projects under the Municipality of Linköping'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".

The green bond framework as developed by Linköpingsgruppen contains nine eligible project types. Only a subset is, however, of relevance for the Municipality of Linköping and the elements of this subset are listed in the table below. The main category is green Buildings (a new water sport arena, yet to be decided), but the municipality of Linköping may also to a smaller extent use the categories clean transportation (e.g. charging stations for electric vehicles, foot and bicycle paths, etc.), climate adaptation measures, and environmental measures (e.g. establishment of green recreational parks).

Category	Eligible project types	Green Shading and some concerns
Clean transportation 	<ul style="list-style-type: none">• Fossil free public transportation• Pedestrian and bicycle paths• Logistics solutions which reduce climate footprints from transportation of people and goods	Dark Green ✓ Note that biofuels are not strictly CO ₂ neutral and can vary depending on where and how the biomass is produced. Nevertheless, common biofuels offer large CO ₂ reductions compared to fossil fuels.



- ✓ Biogas vehicles have the potential of running on natural gas and will still be a source for local pollutants

Green buildings



- Commercial and residential buildings that, at the time of approval, at least meet the requirements for *Miljöbyggnad silver*, *Svanen*, *BREEAM very good* or *LEED gold*, or have an energy use that at least meets the requirements for the level silver for energy use (indicator 3) in *Miljöbyggnad*.
- Major renovations leading at least to compliance with requirements for *Miljöbyggnad silver* or that lead to a reduction in energy use per year on a m² Atemp basis of at least 30%.

Medium Green

- ✓ A dark green shading would require passive or plus house technologies.
- ✓ *Miljöbyggnad Silver* requires energy use at least 25% lower than the requirements in national regulations (Boverkets byggregler, BBR)
- ✓ Linköping municipality expects to build a new water sport arena. There is no fossil fuel directly involved in the heating system of the building, but local district heating based on waste will contain plastics leading to fossil emissions.
- ✓ Construction projects can have potential negative local environmental impacts. This is well taken care of by those responsible for the actual construction in Linköping.
- ✓ The facility is expected to include environmentally friendly transport solutions, see clean transport category.
- ✓ For investments into energy efficiency: Consider the potential for rebound effects on energy consumption.

Climate adaptation measures Adaptation measures considered for:



- Buildings
- Infrastructure

Dark Green

- ✓ Consider the implications of climate change on developments along lakefronts, waterfronts and other locations at risk of climate impacts and natural hazards.

Environmental measures

- Environmental measures:
- Nature conservation
 - Biodiversity

Dark Green



- Development of non-toxic environments
 - Improved eco-system services
- ✓ This is a minor part of eligible projects directed towards green recreational parks.

Table 1. Eligible project categories

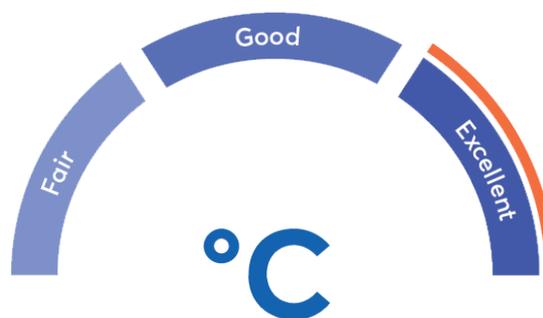
Governance Assessment

Four aspects are studied when assessing the Municipality of Linköping'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.

The overall assessment of the Municipality of Linköping's governance structure and processes gives it a rating of Excellent.

Linköping municipality has in place strong environmental goals and targets, good mitigation plans, a sound selection process and comprehensive and transparent reporting. Nevertheless, methods and parameters used for estimating CO₂ emission reductions from eligible projects are somewhat unclear at this stage. Furthermore, we note that

Linköping municipality does not seem to carry out climate scenario analysis or risk assessments in alignment with the methodology recommended by TCFD¹. On the other hand, the Climate Adaptation program of Linköping municipality is comprehensive and cover a broad set of potential future risks under climate change.



Strengths

The framework of the Municipality of Linköping is fully compliant with the green bond principles (2018). The Municipality of Linköping has ambitious sustainability and environmental policies as well as a Climate Adaptation Program and a Chemical Program. A clear target for the Municipality of Linköping is to become carbon-neutral by 2025. The municipality plans to build a new water sport arena with associated clean transport infrastructure and green recreational parks. The arena is to be run by Lejonfastigheter, a subsidiary of Linköping municipality, well known for its excellent environmental record when it comes to manage public buildings. The criteria for eligible projects under the Green buildings category are good, but do not yet delivering the solutions needed in a low carbon 2050 perspective (passiv house technology and similar).

Weaknesses

We find no substantial weaknesses in Linköpingsgruppen's green bond framework as applied by the Municipality of Linköping.

¹ <https://www.fsb-tcf.org/publications/final-recommendations-report/>



Pitfalls

The Green building criteria allow for either a comprehensive certification (through Miljöbyggnad, Svanen, BREEAM or LEED) *or* a pure energy improvement requirement. In the latter case, other environmental concerns like material use, etc., is not binding.

Final decision is yet to be made regarding the plan to build a new water sport arena. Detailed engineering solutions for the building(s) and the surrounding areas are therefore not available. With the imposed standards in this framework, we rate this main project to be medium green. 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 IEA², 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. The issuer is taking a step in this direction with the energy efficiency criteria. In order to achieve a dark green shading, the green bond framework would need a clearer requirement that best environmental technology is used in eligible green bond building projects.

Use of biofuel for transportation represents in almost all cases solid environmental improvements compared to use of fossil fuels. Ideally the fuel should comply with e.g. EU's sustainability criteria³. However, there are still emissions of greenhouse gases and local pollutants related to the use of biofuels, in particular in a life cycle perspective. Investments in biofuel for transport can therefore potentially represent a lock-in of technologies that becomes obsolete in the longer term. The relative short turn over period for transport equipment mitigate this concern somewhat.

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

² <http://www.iea.org/tcep>

³ <https://ec.europa.eu/energy/en/topics/renewable-energy/biofuels/sustainability-criteria>



Appendix 1: Referenced Documents List

Document Number	Document Name	Description
1	Linköpingsgruppens' Green Bonds Framework, 2019	This document comprises Linköpingsgruppens' Green Bonds Framework and how it intends to use proceeds, how it plans to evaluate and select eligible projects, manages the proceeds and reports to investors.
3	Environmental Policy of the Municipality of Linköping	The environmental policy of the Municipality of Linköping describes the principles for ecologically sustainable development that apply to the municipality's activities.
4	Climate Adaptation Programme of the Municipality of Linköping	This document describes the climate adaptation plan of the Municipality of Linköping. The purpose of the document is to create an overall picture of the risks linked to already ongoing climate change that will not be avoided within the municipality and identify long-term directions and strategies with prioritization of special development initiatives to adapt the municipality's activities to manage these risks.
5	Chemical Programme of the Municipality of Linköping	This document elaborates on the Municipality of Linköping chemical programme with the purpose to develop guidelines for how the use of chemicals that are harmful to health and the environment should be reduced in municipal activities, municipal companies and in activities purchased by the municipality.



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 and the International Institute for Sustainable Development (IISD).

