

# **‘Second Opinion’ on Stockholms Läns Landsting (Stockholm County Council) Green Bond Framework**

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August 23, 2018

# Summary

Stockholm County Council's green bond framework aligns with the ICMA's 2017 Green Bond Principles and provides a strong, forward-thinking approach to green financing for emissions reduction and climate resilience initiatives within the County Council's operations. This Green Bond Framework focuses primarily on reducing the environmental impact and exposure to climate risk of operations and at the same time delivery of the County Council's essential public services in the health care and transportation. Projects in renewable energy (20%), green buildings (20%), and clean transportation (40%) will be prioritized. Specifically, these will include investments in new hospital facilities, expanded and more resilient public transport and digital transformation. The remaining share will be allocated to energy efficiency, waste management and circular economy, waste water and water management, sustainable land use, and adaptation measures. According to the issuer, proceeds generated under this framework will only be used to finance new projects, not refinance existing projects.

The County Council has been issuing green bonds since 2014, which has helped it establish itself as a leader in low emissions and climate resilient city administration. To date, the County Council has reduced its total greenhouse gas emissions by 70 percent from its own activities since 1990, and by more than 40 percent since 2011. Bus services and rail services are run on renewable fuel and almost all buildings are run on renewable energy.

This Framework sets high and progressive standards that exceed legal requirements for its project categories, and features examples of thought leadership and industry best practices. Miljöbyggnad Guld level for energy use is required for new buildings and energy performance retrofits, all new construction is screened for flood risk and other resilience measures. Several existing buildings are already 50% below the BBR legal requirements for energy performance standards. For new buildings the issuer is targeting 35% below BBR for their new hospital projects. The County Council has conducted a climate risk assessment of its properties and operations and developed prioritized adaptation plans. It is also using this Framework to continue investing in promoting a circular economy by revising recycling and waste management programs and investing in innovations to plastics recycling technology. According to the issuer, the County's procurement requirements exceed the requirements laid out by Swedish legislation.

The County Council has well-established governance procedures that ensure transparency and accountability. Impact reports will include a full list of projects, amounts allocated by project category, emissions reduced, and waste diverted, among other indicators. Progress against baselines is provided where possible. The reports will be made available to both investors and the public and are verified internally every year and by a third party every third year.

Based on CICERO's assessment of the climate implications of project categories, governance procedures, and goals and reporting requirements outlined, Stockholm Läns Landsting's Green Bond Framework is given a Dark Green shading.



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Dark Green

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# 1 Introduction and background

As an independent, not-for-profit, research institute, CICERO Center for International Climate Research provides independent Second Opinions on institutions' green bond frameworks. These includes a focused overview of selection and evaluation criteria for eligible projects as well as an assessment of the framework's alignment with the institutions' environmental objectives and a low-carbon, climate resilient economy. The Second Opinion is based on documentation of rules and frameworks provided by the institutions themselves (the client) and information gathered during meetings, teleconferences, and e-mail correspondence with the client.

CICERO 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 expand the technical and geographic breadth and depth for Second Opinions reviews. 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. ENSO 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's Second Opinions are normally restricted to an evaluation of the mechanisms or framework for selecting eligible projects at a general level. ENSO network members do not validate or certify the climate effects of single projects, and thus, have no conflict of interest with regard to single projects. Network members are neither responsible for how the framework or mechanisms are implemented and followed up by the institutions, nor the outcome of investments in eligible projects. CICERO is independent of the entity issuing the bond, its directors, senior management and advisers, and is remunerated in a way that prevents any conflicts of interests arising as a result of the fee structure.

This note provides a Second Opinion of Stockholm County Council's Green Bond Framework and policies for considering the environmental impacts of their projects. The aim is to assess the Stockholm County Council's Green Bond Framework as to its ability to support their stated objective supporting the transition to a low carbon and climate resilient society.

This Second Opinion is based on the green bond framework presented to CICERO by the issuer. Any amendments or updates to the framework require that CICERO undertake a new assessment.

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 long-term emissions with short-term solutions, and encourages careful infrastructure investments that will move economies towards low- or zero-emitting, climate resilient infrastructure and activities in the long run. Proceeds from green bonds may be used for financing, including refinancing, new or existing green projects as defined under the mechanisms or framework. In this Second Opinion, CICERO assesses the alignment of issuer's proposed project categories with a smooth transition to a low-carbon and climate resilient future.

### Expressing risk and impact with ‘shades of green’

CICERO Second Opinions award a dark green, medium green or light green shading, reflecting both the climate and environmental ambitions and the governance structure of the green bond framework, as well as the resulting investments’ short and long-term exposure to carbon risk. The shading is based on a broad qualitative assessment of each project type, in addition to the governance structures that support implementation of the framework, according to what extent it contributes to a low-carbon and climate resilient society. The shading is also intended to translate climate science into investment risk for investors: a dark green project is less exposed to climate risks than a lighter green investment. Investments in all shades of green projects are necessary in order to successfully implement the ambition of the Paris agreement.

The ‘shades of green’ indicate the following:

- **Dark green** for projects and solutions that are present-day realizations of the long-term vision of a low carbon and climate resilient future. Typically, this will entail net-zero or net-negative emissions investments and governance structures that transparently integrate environmental concerns into project design and implementation.
- **Medium green** for projects and solutions that represent steps towards the long-term vision by reducing emissions in the short- to medium- term and actively facilitating the transition to a low carbon, climate resilient.
- **Light green** for quick fix projects and solutions that reduce the environmental impact of existing technologies and begin the transition to the long-term vision, but are not expected to be part of medium or long-term solutions (e.g. energy efficiency in fossil-based processes).
- **Brown** for projects that do not improve or enhance the detrimental environmental effects of an activity or technology, in opposition of the long-term vision of a low carbon and climate resilient future.

The overall rating is defined primarily by the project types that will be financed by the green bond, with additional consideration of the issuer’s governance and transparency measures. The latter demonstrates the issuing institutions systems and capacity to identify, deliver, and report on the framework objectives. 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 Stockholm County Council's Green Bond Framework and rules and procedures for climate-related activities

Stockholm Läns Landsting – or Stockholm County Council – is a municipal body in Sweden that serves 2.3 million citizens and employs 45,000 people. Stockholm has a growth rate of approximately 35,000 inhabitants per year. The County Council provides inhabitants with health care, public transport, transport services for the disabled, and dental care.

To date, the County Council has reduced its total greenhouse gas emissions by 70<sup>1</sup> percent from its own activities since 1990, and by more than 40<sup>2</sup> percent since 2011. Bus services<sup>3</sup> and rail services are now run on renewable fuel and almost all buildings are run on renewable energy. The electricity purchased by the County Council is 100% waterpower certified “Bra Miljöval,” which certifies that extra care has been taken to preserve the fauna in the river, restrict water flow and build fish steps.

Building on this progress, the County's 2017 – 2021 Environmental Program presents 15 environmental goals for the healthcare, transportation, infrastructure and facility management sectors, including a plan for sustainable procurement. It measures progress through 24 indicators, which are reported annually to the County Council Assembly. The County Council has set progressive goals for sustainable sourcing and procurement, waste reduction and management for a circular economy, reduced environmental impacts from construction, and climate risk analysis and resilience planning. The Framework is designed to forward these goals. CICERO notes that these goals are forward-thinking and contribute to the strength of the Framework.

Major sources of emissions for the County Council currently include public transport, which is by far the largest source of emissions, and energy consumption in properties and buildings. Additionally, emissions from use of nitrous oxide, anesthetic and other medical gases and the construction phase of new public buildings contribute to the overall impact. Accordingly, initiatives in clean transportation, renewable energy, and green buildings are prioritized under this Framework.

In effort to reduce the climate impact in the construction phase of new buildings and properties, the County is calculating life cycle emissions of materials and equipment used. The County Council has also developed a Code of Conduct (2010) for suppliers, which requires that suppliers set and disclose environmental policies, targets, and performance for themselves and subcontractors. According to the issuer, the County's procurement requirements exceed the requirements laid out by Swedish legislation.

The Council has conducted climate risk scenario analysis of its operations and assessed levels of emergency preparedness, insurance coverage, and adaptation infrastructure available and required. Seven high risk areas have been identified and prioritized for interventions: water contamination and heat waves (very high); macro-level

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<sup>1</sup> Stockholm County Council Environmental report 2017, LS 2017-1112

<sup>2</sup> Stockholm County Council Environmental report 2017, LS 2017-1112

<sup>3</sup> The issuer has pointed out that one bus in the County Council's fleet of 2000 buses is not run on renewable fuel.

climate effects, blizzards, downpours and flooding, and forest fires (high); and extended growing season (medium). The County Council is preparing a climate adaptation plan to prepare regional infrastructure for increasing incidents of heat waves and extreme weather.

The County Council's has identified 13 Sustainable Development Goals as priorities which are also highlighted in the green bond framework. For each green bond category, the relevant SGDs are listed.

### **Use of proceeds:**

The framework aligns with the ICMA's 2017 Green Bond Principles (GBP). Under this framework, Stockholm County Council green bonds can be used to finance projects, in whole or in part, that forward environmental goals identified in the County Council's Environmental Program. Proceeds generated under this framework will only be used to finance new projects, not refinance existing projects. Projects funded under this Framework will improve the environmental performance of the County Council's own operations, although the County's Code of Conduct for suppliers sets higher environmental performance requirements suppliers as well.

The Framework includes eight project categories: renewable energy, energy efficiency, green buildings, clean transportation, waste management and circular economy, waste water and water management, sustainable land use, and adaptation measures. Renewable energy projects include wind, solar, geo-thermal, and bio-energy. Transportation projects must be executed in accordance with the CEEQUAL system and require a certification level of "very good." Investments in energy performance for both existing and new buildings are required to meet Miljöbyggnad guld standards. Existing building construction projects must meet Miljöbyggnad silver.

The issuer anticipates that 80% of the proceeds will fall in the renewable energy, green buildings and clean transportation project categories, of which approximately 50% is expected to go towards clean transportation projects with the remaining 50% split between green buildings and renewable energy

### **Selection and Evaluation:**

The selection process is a key governance factor in the Green Bond Principles. CICERO examines how climate-specific and broader environmental considerations are taken into account when identifying, screening, and approving projects for green bond funding. The broader the project categories, the more importance CICERO places on the governance process.

The process for identifying eligible projects includes three steps and ensures adequate involvement and oversight by senior-level experts with appropriate environmental competence.

1. The process is initiated by the County Council Treasury, which forms a project group. The project group consists of high-level representatives from the Sustainability Department, Finance, Communications, and Accounting, and is responsible for identifying and compiling the portfolio of eligible projects for financing.
2. Once the proposed portfolio is compiled, the Sustainability Department screens the proposed projects to ensure compliance with legislation, policies, the County Council Environment Program, the County Council's Code of Conduct and procurement practices for suppliers, general sustainability issues, and this framework's project categories.
3. Finally, a Steering Group for Green Bonds provides the final review and approval of the proposed projects. The Steering Group consists of senior executive managers from the Sustainability Department, the Public Transportation Administration (Trafikförvaltningen), the Department for Property

development and construction (Locum), the Treasury (Internfinans), and communications team. Approval of the portfolio is by consensus.

### **Management of proceeds:**

The management approach for green bond proceeds outlined in this Framework is in alignment with the guidance provided in the Green Bond Principles. Stockholm County Council Treasury is responsible for allocation of net proceeds from the issuance of green bonds under this framework and keeps a record of any transfers of proceeds. The proceeds are credited to a dedicated earmarked account (“the Green Account”); allocation of proceeds is verified by an internal auditor at Stockholm County Council once per year. Larger projects are reviewed twice per year. A transfer from the Green Account is only allowed in an amount corresponding to the financing of eligible projects, or to repay a green bond. Funds are held for maximum one year before being allocated to a qualifying project.

Low performing projects are identified for further investigation by the Project Group or internal or external audits. If the Steering Committee decides that a project no longer qualifies for the portfolio, the funds will be reallocated to other eligible projects.

### **Transparency and Accountability**

Transparency, reporting, and verification of impacts generates the data that investors need to track and analyze the impact of green bond programs. Procedures for reporting and disclosure of green bond investments are vital to build confidence that green bonds are contributing towards climate goals and mandates and protect the integrity of the green bond market.

This Framework outlines Stockholm County Council’s commitment to assessing and reporting on eligible projects and their expected financial and non-financial impact in a transparent manner, on an annual basis. Reports will include a full list of projects, the total amount of proceeds allocated to eligible projects, the amount allocated to each project and project category, and the amount of unallocated proceeds. The report will be made publicly available on the County Council’s website.

The County Council intends to report on relevant impact indicators as defined in the Nordic Public-Sector Position Paper on Green Bonds Reporting (NPSI). The County Council’s 2018 Green Bond Impact Report<sup>4</sup> reports on GHG emission reduced per year for investments in green buildings, MWh of renewable energy generated, percent of environmentally friendly materials being used for green buildings, and material recovery rates for waste management, among other indicators. The impact report also presents baselines where possible and appropriate, for example for green energy used in buildings, waste management material recovery, EV infrastructure, and emissions avoided from public transportation expansion projects.

The County Council will verify its reporting with regular annual internal audits, and external verification done every three years. The issuer also has an established verification process for environmental management of suppliers; the process includes regular desk reviews, questionnaires, office audits, and factory audits.

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<sup>4</sup> [https://www.sll.se/globalassets/6.-om-landstinget/ekonomi/finansiella-rapporter/green-bond\\_impact-report\\_webb\\_3.pdf](https://www.sll.se/globalassets/6.-om-landstinget/ekonomi/finansiella-rapporter/green-bond_impact-report_webb_3.pdf)

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

<b>Document Number</b>	<b>Document Name</b>	<b>Description</b>
1	Stockholm County Council Green Bond Framework (August 2018)	Green Bond framework with a detailed overview of sustainability targets and context
2	Stockholm County Council Environmental Plan	2017 – 2021 Environmental Plan with 15 environmental goals measured through 24 targets
3	Nordic Public Sector Position Paper on Green Bonds Reporting	Joint paper from Nordic public-sector issuers to establish a common approach to green bonds impact reporting with identified indicators.
4	Stockholm County Council Green Bond Impact Report 2018	Includes details about green bond proceed allocation to date and impact indicators.
5	Procurement Code of Conduct for sustainability	Overview of environmental, health and safety goals and requirements for suppliers, with reference made to the Swedish Environmental Code.

**Table 1 Documents reviewed**

### 3 Assessment of Stockholm County Council’s Green Bond framework and environmental policies

The framework and procedures for Stockholm County Council’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 and resilience 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 Stockholm County Council 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
<b>Renewable energy</b>	<ul style="list-style-type: none"> <li>• Wind power generation</li> <li>• Solar power generation</li> <li>• Geothermal energy production</li> <li>• Bio-energy production</li> </ul>	<p><b>Dark Green</b></p> <p>✓ The issuer has confirmed that geothermal projects refers principally to boreholes connected with heat pumps and cooling agents. These systems have a low environmental impact; detailed requirements for energy efficiency are included. If aquifer storage is used, the project must prove that drinking water is not affected in the long-term.</p>

		<ul style="list-style-type: none"> <li>✓ Only locally produced biomass or biogas will be used. No peat or biodiesel is included.</li> </ul>
<b>Energy efficiency</b>	<ul style="list-style-type: none"> <li>• Smart technology aimed at reducing energy consumption</li> </ul>	<p><b>Dark Green</b></p> <ul style="list-style-type: none"> <li>✓ Energy efficiency introduces the potential for rebound effects.</li> </ul>
<b>Green buildings</b>	<ul style="list-style-type: none"> <li>• New or retrofitted buildings satisfying the issuer's energy and/or building standard requirements, including indicators related to energy performance, human health, indoor environment, light, sound, hazardous substances, materials, and renewable energy. <ul style="list-style-type: none"> <li>a.) For new buildings the level of Miljöbyggnad Guld (gold) or equal is required</li> <li>b.) For reconstruction and retrofitting, Miljöbyggnad Silver is required and concerning energy performance, they should fulfill or surpass Miljöbyggnad Guld (gold) or equal.</li> </ul> </li> </ul>	<p><b>Medium to Dark Green</b></p> <ul style="list-style-type: none"> <li>✓ This category receives a medium to dark green shading because of its high ambitions on energy efficiency (Miljöbyggnad Gold), focus on construction phase emissions and resilience.</li> <li>✓ The issuer has confirmed that proceeds will not be used for any equipment that is fossil-fueled.</li> </ul>
<b>Clean transportation</b>	<ul style="list-style-type: none"> <li>• Non-fossil fuel public transportation systems</li> <li>• Infrastructure for bicycles and pedestrians</li> <li>• Infrastructure for electric vehicles – this may include charging stations or other infrastructure for charging electric vehicles.</li> </ul> <p><i>Projects within the metro expansion are executed in accordance with the CEEQUAL system which includes</i></p>	<p><b>Dark Green</b></p> <ul style="list-style-type: none"> <li>✓ Projects are executed in accordance with the CEEQUAL system with a goal set on level "Very Good."</li> <li>✓ The issuer has indicated that this category will likely focus on electric vehicles and could – in the future – include fuel cell vehicles, which CICERO considers a strength.</li> <li>✓ Clean transportation could feasibly include construction of bicycle lanes and public</li> </ul>

*several environmental aspects such as land use, water, transport, bio-diversity, hazardous substances and social issues with a goal set on level Very Good.*

transportation infrastructure, which could involve emissions intensive equipment, activities, and material procurement.

- ✓ Electric plug-in hybrids will not be eligible for funding.

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**Waste management and circular economy**

- Energy efficient and resource-preserving waste treatment
- Investments that support biogas production from own organic waste or facilitate the distribution or use of biogas in own operations and transportation
- Investments that support waste management, focusing on prevention, reduction, re-use or recycling of own waste.
- Investments that enables circular economy such as tools or systems that re-use and recycle construction materials and support the re-use of County assets, for example med-tech equipment and office furniture.

**Dark Green**

- ✓ According to the issuer, projects in this category will focus on recycling programs for non-organic materials like plastics and metals. This includes technology and equipment such as optic sorting systems for separating waste streams, sensors, scales and counting equipment, and interfaces to connect scales and other measuring equipment with computers.
- ✓ According to the issuer, waste from the County's facilities – mainly food and biological waste from hospitals – could be used as feedstocks for biogas generation in waste-to-energy and circular economy programs.
- ✓ The issuer has indicated that this category does not include financing for waste collection fleets or construction of facilities.

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**Water and wastewater management**

- Investments that reduce, remove, and treat harmful substances from operations or projects, for example pharmaceuticals, chemicals, micro plastics, or metals that have been linked to negative effects on human health and/or the environment.
- Biogas production from wastewater
- Water saving equipment and technology

**Dark green**

- ✓ Water and wastewater management may impact biodiversity and other local ecosystems.
- ✓ Be aware of possible lock-in effects from construction and installment of pipes and treatment facilities.
- ✓ The issuer has indicated that the County may invest in point source reduction of certain pharmaceuticals at hospitals. This is noted as a strength.

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**Sustainable land use/environmental management**

- Increase in or conservation of biodiversity
- Investments that limit, reduce, remove, treat or replace harmful

**Dark Green**

	<p>substances in products, assets or projects, for example pharmaceuticals, chemicals, microplastics, or metals that have been linked to negative effects on human health and/or the environment</p> <ul style="list-style-type: none"> <li>• Reforestation and green structures</li> </ul>	<ul style="list-style-type: none"> <li>✓ The issuer has indicated that this project category will not include investments related to agriculture or animal husbandry.</li> </ul>
<b>Adaptation measures</b>	<ul style="list-style-type: none"> <li>• Climate change adaptation measures such as green structures, water storage, heat protection structures, sun screens, cooling systems, water quality and flood protection.</li> </ul>	<p><b>Dark Green</b></p> <ul style="list-style-type: none"> <li>✓ The issuer has assessed and prioritized climate risks – including physical risks – faced by the County, and already screens property investment and assets for flood risk. This is a clear strength.</li> <li>✓ The issuer has confirmed that cooling systems are not gas-powered and are run on renewable electricity.</li> <li>✓ CICERO encourages the issuer to ensure that investments in adaptation do not increase or lock in emissions.</li> </ul>

Table 2. Eligible project categories

### Strengths

Through this Green Bond Framework, established governance procedures and organizational targets and performance, Stockholm County Council demonstrates that it takes climate impact and risk, including physical risk, seriously and is working systematically to build the climate resilience of its assets and services. The County Council has already proven its capacity to manage for, meet, and exceed sustainability targets. It has been issuing green bonds since 2014, which has helped it make significant progress towards sustainability targets, develop best practices, and establish itself as a leader in low emissions and climate resilient public administration. To date, the County Council has reduced its total greenhouse gas emissions by 70 percent from its own activities since 1990, and by more than 40 percent since 2011. Bus services and rail services are run on renewable fuel and almost all buildings are run on renewable energy. Several existing buildings are already 50% below the BBR legal requirements for energy performance standards. For new buildings the issuer is targeting 35% below BBR for our new hospital projects like SÖS, Danderyd and Chopin. The electricity purchased by the County Council for operation of its buildings and properties is 100% hydropower certified “Bra Miljöval,” which certifies that extra care has been taken to preserve the fauna in the river and restrict water flow.

Building on this progress, the County’s 2017 – 2021 Environmental Program sets 15 environmental goals for the healthcare, transportation, infrastructure and facility management sectors, including a plan for sustainable procurement through its Supplier Code of Conduct. The County Council is using its supplier Code of Conduct to drive reduced emissions, increased accountability and transparency, and green public product development along its supply chain. This progressive supply chain management policy has already had positive impact. Some examples of improved products developed as a result of this policy include textiles made with green labelled (Bra Miljöval) Tencel and recycled PET instead of resource-intensive cotton and fossil-based polyester, ambulances

that are phasing out toxic materials in the interior and run on bio-gas with diesel back-up, and phthalate-free products.

The County has already identified, assessed, and ranked seven physical climate risks that affect health care and public transportation, including exposure to flood risk and heat stress, and developed climate adaptation plans to ensure dependable delivery of its essential services. The assessment describes the County's general level of emergency preparedness and insurance coverage and makes recommendations for further improvements.

According to the issuer and evidenced by its previous Green Bond Impact Reports, the County Council is focused on reducing emissions from its public transportation services – which are the biggest contributors to emissions – and from buildings. Other priorities include reducing the environmental impact of construction and promoting a circular economy. This green bond framework is designed to forward the County Council's these progressive goals for emissions reduction, sustainable supply chain and waste management, and reduced environmental impacts from construction. The Framework sets high standards for project selection and at times exceeds legal requirements. This is particularly notable in the green building and waste management project categories.

As described in this Framework, projects funded under the green buildings project category must meet Miljöbyggnad Guld (gold) level or equal for new buildings as well as energy performance retrofits; requiring the highest level of energy performance for retrofits is an unusually high standard and is a significant strength. Voluntary certifications such as Miljöbyggnad cover a broad set of environmental issues that are important for overall sustainable development. These certifications alone, however, do not ensure passive or plus housing, which form part of a low carbon, climate resilient economy. The issuer has confirmed that zero emissions buildings are currently not present in the portfolio but has explained that several buildings are 50% below the BBR legal requirements for energy performance.

The County Council already invests in adaptation and resilience for its buildings and facilities by using GIS analysis of heavy rain and flooding patterns, selecting resilient construction materials, using green roofs for water storage, run-off, and considering impacts on biodiversity. Additionally, the County is investing in strategies to reduce the environmental impact of construction of new buildings and retrofits, which include calculating and reporting life cycle emissions from materials and equipment. CICERO commends the County Council for their initiatives and high performance standards in the building sector and encourages further progress towards zero emissions, climate resilient buildings as the County continues to grow.

The issuer intends to use proceeds to invest in the development a circular economy by reducing waste generation and managing remaining waste more effectively. This emphasis on promoting a circular economy again sets the County Council apart as a thought leader for sustainable public administration. Waste from the County's facilities is being diverted from landfills through improved recycling programs. According to the issuer, proceeds used in the waste management and circular economy project category may go towards technology and equipment that increases effectiveness and efficiency of waste management, including sorting, measurement, and reduction which could be installed at County Council hospitals. Examples of such technology and equipment include small optic sorting systems, sensors, scales, waste measurement monitors, waste compactors, interfaces that connect scales with computer systems, and software for waste statistics. Other examples include storage facilities for recyclable materials and equipment to tag and track materials and facilitate reuse. Finally, proceeds under this project category may fund innovative technologies that reduce waste generation in construction or deconstruct and reuse textiles or plastics effectively. In some cases, such as food and biological waste from hospitals, waste may be used as feedstocks for biogas generation in waste-to-energy programs.

The County Council has explained that, although plastic recycling is a priority, existing technologies for sorting and recycling plastics do not capture enough of the plastics in waste streams. In response, it has participated in research projects to develop new plastic recycling systems to increase recycling of plastics from the health care sector.

CICERO welcomes the development and use of a common methodology in impact reporting and sees it as a clear strength that Stockholm County Council commits adherence to the "Nordic Public-Sector Issuers: Position Paper on Green Bonds Impact Reporting" in their Green Bond Framework. The County Council emphasizes energy production/savings and greenhouse gas savings as the most relevant performance metrics for most project types but does not limit it to these. Its targets, associated indicators, and impact reports are made [publicly available](#). CICERO is encouraged that not only emissions reductions, but also other indicators that measure the transition to a low carbon and climate resilient society are reported. The 2018 Green Bond Impact Report<sup>5</sup> reports on GHG emissions reduced per year for investments in green buildings, renewable energy generation, and clean transportation, MWh of renewable energy generated, percent of environmentally friendly materials being used for green buildings, and material recovery rates for waste management, among other indicators. The report presents baselines where possible and appropriate, which can help investors monitor and assess progress over time.

### **Weaknesses**

No significant weakness perceived.

### **Potential risks and pitfalls**

The European grid factor recommended by the Nordic Public Sector Issuers is 380 g CO<sub>2</sub>/kWh and is based on the methodology outlined in the Harmonized Framework for Impact Reporting developed by a group of multilateral development banks. Investors should be aware of the different approaches commonly applied in calculating emissions from production and use of electricity. Estimating the actual marginal emission impact of electricity in the Nordic grid is a complex task, and different analyses may produce results varying from nearly zero to almost 1000 gCO<sub>2</sub>/ kWh, depending on assumptions and project-specific conditions. Investors should be aware that the European grid factor recommended by the Nordic Public Sector Issuers this factor is higher than the European average grid factor, which was 350 g CO<sub>2</sub>/kWh in 2015 (International Energy Agency).

The Nordic Public Sector Issuers have chosen the geographic area comprising EU26+Norway because the Nordic energy system is more and more connected to other European countries, facilitating export and import of electricity. Using such a mix would be more favorable for electrifications solutions such as electric vehicles. The average grid factor for production in the Nordic countries today according to the European Environmental Agency amounts to 83 g CO<sub>2</sub>/kWh<sup>2</sup>.

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<sup>5</sup> [https://www.sll.se/globalassets/6.-om-landstinget/ekonomi/finansiella-rapporter/green-bond\\_impact-report\\_webb\\_3.pdf](https://www.sll.se/globalassets/6.-om-landstinget/ekonomi/finansiella-rapporter/green-bond_impact-report_webb_3.pdf)

# 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-carbon society.

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

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