Östersund Municipality
Green Bond Second Opinion

24 January 2023

Executive Summary

Östersund Municipality ("Östersund") is a municipality in Northern Sweden with about 65,000 inhabitants. The municipality is the sole shareholder of Östersunds Rådhus AB and its subsidiary, Östersundshem AB, a property development company. The municipality has a 98% share in Jämtkraft AB, which produces, distributes and sells electricity and district heating. Proceeds raised under this green bond framework can fund eligible projects within municipal units, municipal companies and their subsidiaries.

Östersund Municipality expects to continue to finance mainly renewable energy and has an ambition to reach 70% new financing. In the framework, which is an update from the 2017 version, the categories are largely the same, but combined heat and power under the renewable energy category is a new activity, and the eligibility criteria for Green and energy efficient buildings are largely rewritten based on the technical screening criteria for climate change mitigation in the EU Taxonmy. Also, the categories Replacement of fossil raw materials and Environmental measures (not climate related) are removed. To date, 70% of green bond proceeds have been allocated to renewable energy, 26% to green buildings, 2% to sustainable transportation and 2% to water and wastewater management. Going forward, Östersund expects a small decline in the proportion of green buildings in favour of water and wastewater management.

SHADES OF GREEN

CICERO Dark Green

GOVERNANCE ASSESSMENT

GREEN BOND PRINCIPLES

Based on this review, this framework is found to be aligned with the principles.

We rate the framework **CICERO Dark Green** and give it a governance score of **Excellent.** The biggest share of financing will go to renewable energy projects which are critical in a decarbonized 2050 perspective, while the framework includes a wide range of measures within Östersund Municipality's operations, for which the climate benefits and risks vary. The criteria for green buildings cover energy use and environmental certifications, with an expected focus on renovations.

Strengths

Östersund Municipality has ambitious targets and plans for development of a climate neutral municipality. The category expected to receive most of the proceeds are renewable energy, primarily a combined heat and power facility based on forestry waste, a Dark Green asset. The second largest category is green and energy efficient buildings, where Östersund have reasonably ambitious energy efficiency requirements in place. We rate this category Medium Green. Several of the other smaller categories are shaded Dark Green. It is a clear strength that the green bond framework is supported by a good governance structure and clear environmental goals. A further strength is the explicit exclusion of fossil fuel and other harmful technologies. Delivered district heating does not involve waste incineration, which often has high emissions due to fossil fractions. Finally, a commitment to

substantial impact reporting, although on a best effort and portfolio basis, increases transparency to investors and is a clear strength.

Pitfalls

We encourage issuers to use harmonized methodologies in their reporting, among other to facilitate comparisons between issuers. The municipality follows the recommendation based on the Nordic Position Paper on Green Bonds Impact Reporting. Investors should, however, be aware that the used grid factor set by the Nordic Position Paper, at 315g CO_2e/kWh, is higher than the European average grid factor and much higher than the Nordic average. We encourage the issuer to apply the same grid emissions factor in the reporting of emissions from its own operations (Scope 1) as in the reporting of emissions from managing the portfolio buildings (Scope 2).

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1 Östersund's environmental management and green bond framework

Company description

Östersund Municipality ("Östersund") is a municipality in Northern Sweden with about 65,000 inhabitants. The municipality is the sole shareholder of Östersunds Rådhus AB and its subsidiary, Östersundshem AB, a property development company. The municipality has a 98% share in Jämtkraft AB, which produces, distributes and sells electricity, biogas and district heating. Proceeds raised under this green bond framework can fund eligible projects within municipal units, municipal companies and their subsidiaries. The issuer has informed us that all organizations funded under the green bond framework will follow relevant municipal policies.

The current framework is an update from one in 2017. The amount raised under the previous framework to date is 5,275 million SEK.

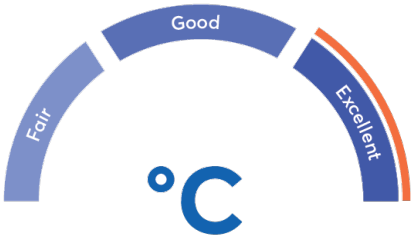
Governance assessment

Östersund Municipality and its subsidiary companies have ambitious and comprehensive environmental strategies, policies and procedures as well as comprehensive reporting. Thus, policies appear to be well implemented and tracked and this has been the case for a long time. The municipality is also quite advanced when it comes to adaptation. It is positive that the municipality has performed vulnerability mappings vis a vis climate change impact.

It is positive that the municipality is actively looking at where it needs to strengthen its work, for example by focusing on environmental considerations in purchasing and procurement. Östersund also sets environmental requirements for procurement, which include criteria for transport services. Jämtkraft sets environmental requirements based on operation and needs, such as emissions, chemicals or energy efficiency. The environmental management system includes having a life cycle perspective in procurement. Still, there are not formal procedures for including e.g. life cycle analyses in tendering processes.

Östersund intends to report on allocation and impacts through quantitative impact indicators where reasonable and where relevant data is available for several indicators. The reporting will be on a portfolio basis.

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



Sector risk exposure

Physical climate risks. For the Nordics, the most severe physical climate impacts will likely be increased flooding, snow loads, and urban overflow, as well as increased storms and extreme weather. Developing projects with climate resilience in mind is critical for the municipality's planned real estate growth. For any municipality, mitigation and adaption measures should be mapped for its current building stock and activities, to limit damages and consequently potential financial impacts from damage costs.

Transition risks. The Swedish government is targeting climate neutrality by 2045, a strategy that includes coping with environmental issues that concerns multiple of Östersund's responsibilities, such as minimizing the carbon footprint of the real estate sector and transitioning towards zero-emission transport. Therefore, the municipality is exposed to transition risks from stricter climate policies e.g., reducing its greenhouse gas (GHG) emissions, upgrading the energy efficiency of its industries, buildings, transport, etc.

Environmental risks. A city is responsible for several vital areas; therefore, the municipality is associated with heavily emitting sectors such as industrial processes, the real estate sector, and transportation. Consequently, the municipality is at risk of polluting the local environment for example during the erection of the properties, from poor waste handling and so on.

Environmental strategies and policies

The climate strategy and climate programme of Östersund describes how Östersund will become fossil-free and energy-efficient in its operations by 2025, climate neutral by 2030 and climate positive by 2040 in the geographical area of Östersund. To help reach these goals, Östersund has set the following targets:

- By 2030, become fossil free in the geographical area of Östersund.
- By 2025, become fossil free in own operations.
- By 2030, reduce energy consumption by 30% in own operations and in the geographical area of Östersund relative to 2010.
- By 2030, the split between means of transportation in Östersund's urban area will be 40% car, 20% public transport and 40% active transport, cycling and walking.
- Aim to become a climate-neutral municipality (i.e., this is one of the four main strategies of the municipality general plan ("Östersund 2040" plan). According to the plan, Östersund aims to take a leading role in reducing GHG emissions.
- Contribute to the 17 UN Sustainable Development Goals ("SDGs") and Agenda 2030.

The climate strategy also describes nine strategic development areas - broken down into 74 climate actions - which aims to be implemented by 2023 to help Östersund reduce emissions from fossil fuels and energy use. Currently there is a small amount of oil used in a back-up power plant. This will be phased out in 2025. In addition to the climate programme and climate strategy, Östersund has a goal that all owned properties will, where possible, have solar cells on the roofs by 2030.

While Östersund has not explicitly implemented the TCFD guidelines, the municipality has implemented actions related to climate change adaptation into its operations. For instance, the municipality has carried out a risk and vulnerability analysis of the municipality (currently being updated with a focus on climate change adaptation) as

well as an enhanced analysis of downpour and extreme rainfalls, and a heat mapping/urban heat islands map has been developed. Both the downpour analysis and the heat map are integrated in the municipal digital maps, which are used in planning and building permit processes.

Östersund is a member of Viable Cities[1] which is an initiative focusing on the transition to climate-neutral and sustainable cities. The municipality has held an ISO 14001 certification since 2007 and is registered under the EU Eco-Management and Audit Scheme (EMAS)[2]. Jämtkraft also has an ISO 14001 certification for its operations and subsidiary companies. The property subsidiary Östersundshem has an environmental management system and environmental policies that include requirements for the new buildings, as well as towards suppliers and contractors.

Travel and transportation account for approximately half of the territorial greenhouse gas emissions of the municipality. The issuer has a range of policies and initiatives to reduce the impact of transportation. The second largest contributor to emissions is heating. The municipality owned companies Jämtkraft and Östersundshem AB both have initiatives and policies aimed at reducing the impact of heating.

External contractors are required to follow the municipal environmental policy. The requirements can vary from case to case, for example, if the project is in a vulnerable environment the demands can be higher. Environmental audits are routinely performed by internal auditors. The municipality has transparent annual reporting to stakeholders on environmental performance. Examples are:

- In 2021, Östersund reported that CO_2 emissions in the municipality of Östersund as a geographical area had decreased by 54% or approximately 131,000 tCO_2 between 2010 and 2020 with a further 4% reduction from 2020 to 2021. A large part of the reduction stems from Jämtkraft supplying 100% renewable electricity to its local customers since 2011. The emission reduction is also due to decreased gasoline use by nearly 50% and decreased use of peat in district heating by nearly 80% over the period 2010–2020. Overall, Östersund achieved its 2020 target of reducing GHG emissions by 60% compared to 1990 emissions. According to the issuer, the 2020 emission reduction of 14,750 tCO_2 was on par with what is required to reach the goal of a fossil fuel-free municipality in 2030. A continued reduction of 11,312 tCO_2 per year is required for the municipality as a geographical unit to reach the goal in time.
- CO_2 emissions in the municipal organization have decreased by 79% or approximately 8,000 tCO_2 during the period 2010 to 2020. According to the issuer, the 2020 emission reduction of 900 tCO_2 shows that the goal of a fossil fuel-free municipal organization in 2025 is achievable.
- Energy use includes the energy used for transport as well as electricity and heat production. In 2020, total energy use was 24.9 MWh per inhabitant compared to 26.9 MWh per inhabitant in 2019, a decrease of 8%. During the period 2010–2020, energy use per inhabitant has decreased by 29%, which means that the 2030 target is close to being reached. Similar results are seen for energy use in the municipal organisation.

Green bond framework

Based on this review, this framework is found to be aligned with the Green Bond Principles. For details on the issuer's framework, please refer to the green bond framework dated January 2023.

[1] https://en.viablecities.se
[2] The EU Eco-Management and Audit Scheme (EMAS) is a management instrument developed by the European Commission for organizations to evaluate, report, and improve their environmental performance. More information http://ec.europa.eu/environment/emas/index_en.htm

Use of proceeds

For a description of the framework's use of proceeds criteria, and an assessment of the categories' environmental impacts and risks, please refer to section 2.

Selection

The selection of green eligible projects is managed by a dedicated group, the Green Bond Committee ("GBC"). Members of the GBC consist of the Finance Unit and Climate and Environment Unit. Östersund will assure that the sustainability expertise always relies within the GBC. All decisions are made in consensus, and this applies to the selection process of green eligible projects as well. There is screening for controversial projects with e.g., local resistance or large negative environmental impacts.

In addition to the criteria in the green bond framework, eligible projects must comply with EU law, the Swedish Environmental Code ("Miljöbalken") and align with the municipality's environmental goals, plans and programs. The projects may also be subject to requirements stemming from the municipality's ISO 140001 certification or EMAS registration, or Jämtkraft's ISO 14001 certification. As per the requirements of ISO 14001, life cycle assessments are considered in the environmental management system.

A list of green eligible projects is kept by the Finance Unit and Climate and Environment Unit who are also responsible for keeping it up to date. The list of green eligible projects is monitored on a regular basis during the term of the green bonds to ensure that the proceeds are sufficiently allocated to green eligible projects. This is also a responsibility of the GBC.

Management of proceeds

An equivalent to the net proceeds from Östersund's green bonds will be tracked by using a spreadsheet where all issued amounts of green bonds will be inserted. The Finance Unit and Climate and Environment Unit is responsible for the allocation of proceeds.

All green bonds issued by Östersund will be managed on a portfolio level. Östersund intends to align, on a best effort basis, the reporting with the portfolio approach described in ICMA's "Handbook – Harmonized Framework for Impact Reporting (June 2021)". Projects can whenever needed be removed or added to the green portfolio of green eligible projects. If, for any reason, a green eligible project ceases to comply with the requirements set out in the municipality's green bond framework, such project will be removed from the green portfolio.

Any unallocated proceeds will be temporary held by Östersund and placed in line with the municipality's handling of short-term excess liquidity. According to its financial policy and guidelines, the investments must be fossil-free and investments must therefore not take place in companies engaged in exploration, exploitation, extraction or production of coal, oil, gas, oil sands or other unconventional fossil oil. Should there be any unallocated proceeds Östersund strives to allocate them within one year.

The proceeds from Östersund's green bonds will not be used to finance investments linked to fossil energy generation, the weapons and defence industries, potentially environmentally negative resource extraction, gambling or tobacco.

Reporting

Östersund has carried out comprehensive annual reporting linked to previously issued bonds. The climate coordinator and finance manager are responsible for the reporting.

Östersund commits to regular reporting until no green bonds are outstanding. The report will be published on Östersund's website on an annual basis and will be on a portfolio basis but linked to individual bonds.

Allocation reporting will cover total amount of green bonds issued; a list of financed green projects within the Östersund municipality; the share of proceeds used for financing/re-financing and share of proceeds used for categories described in section 2; and share of unallocated proceeds (if any). The allocated amounts and green bond share of financing per project will be reported.

Östersund intends to report on quantitative impact indicators where reasonable and where relevant data is available for several indicators. Some of these include:

- Estimation of avoided CO_2e emissions
- Annual energy saved (MWh)
- Annual energy production (MWh)

The climate impact is calculated according to the proportion of the project's investment cost that is financed with green bonds. Total investment, approved amount and allocated amount per project are reported. Östersund municipality's impact reporting is based on Nordic Public Sector Issuers: Position Paper on Green Bonds Impact Reporting[3]. In cases where another calculation method is used, this is stated.

Allocation of proceeds will be subject to an annual review by an independent party. The verification report provided by the independent party will be published on Östersund's website; www.ostersund.se/gronaobligationer .

[3] https://www.kuntarahoitus.fi/app/uploads/sites/2/2020/02/NPSI_Position_paper_2020_final.pdf

2 Assessment of Östersund's green bond framework

The eligible projects under Östersund's green bond framework are shaded based on their environmental impacts and risks, based on the "Shades of Green" methodology.

Shading of eligible projects under Östersund's green bond framework

- An amount equivalent to the net proceeds from Östersund's green financing instruments shall be used to finance or re-finance, eligible projects providing distinct environmental benefits ("green eligible projects") and comply with criteria detailed in the below table. The ambition is for as much as possible to be new financing, estimated to be approximately 70% new and 30% refinancing.
- New financing is applicable to planned and ongoing green projects as well as green projects completed within the latest 12 months/reporting year. Re-financing is applicable to green projects older than 12 months/completed prior to the reporting year.
- As of end of 2021, the proceeds under the 2017 framework were 59% new financing and 41% refinancing. The share per category was 70% to renewable energy, 26% to green and energy efficient buildings, 2% to sustainable transportation and 2% to water and wastewater management. Going forward Östersund expects a small decline in the proportion of green and energy efficient buildings in favour of water and wastewater management.
- The proceeds of Östersund's green financing instruments will not be used to finance either fossil fuel energy generation, nuclear energy generation, weapons, and defence industries nor potentially environmentally negative resource extraction, gambling, or tobacco.

Category	Eligible project types	Green Shading and considerations
Renewable energy	i. Hydropower[4], wind power and solar power incl. battery storage for electricity ii. Production of hydrogen from electrolysis, and biogas, biofuels and bioenergy from agricultural residues, forestry residues, food residues and other biological residues iii. Combined heat and power	**Dark Green** ✓ Renewable energy is key to the low carbon transition and represents a Dark Green solution. ✓ The environmental impact associated with renewable energy projects will be addressed in the permit process through a consultation process where

[4] Hydropower with water-rights court ruling in Sweden or concession in Norway.

all stakeholders can be heard. The issuer informs us that there are no wind power projects in the pipeline.

- ✓ Climate and other environmental risks are associated with biofuels and bioenergy. While it is positive that inputs are waste based, there can still be issues in the respective value chains of the materials. For example, for forestry, the intensive cultivation of a limited number of tree types (spruce, pine) can be negative for biodiversity.
- ✓ Combined heat and power will be produced from woody biomass, mainly waste based. Peat is no longer used. The municipality has no requirements that forestry waste must come from certified forests. However, they inform us that Jämtkraft is obliged by law to report to the Swedish Energy Agency where among other things traceability of biomass included. Regarding forestry waste, that is being sourced locally. The majority is within ~ 100 km reach, but some smaller share of forestry waste may be within 200 miles reach. In addition, Jämtkraft also has a control system in place and aims for fossil free transportation when transporting biomaterials.
- ✓ For biogas, there is a requirement that methane losses may not exceed 2% and should be reported every month to the local environmental authority. The issuer has clarified that any biofuel production would be based on food waste.
- ✓ While biomass for electricity production has been labelled as carbon neutral, the carbon accounting principle is highly technical and context specific. Due to resource constraints and potential biodiversity issues, biomass-based electricity is unlikely to represent a scalable solution from a 2050 perspective.

Energy efficiency  	District heating/cooling, energy recovery, heat pumps, energy storage and smart grids incl. smart meters, replacement and new installation of LED lighting	**Medium to Dark Green** ✓ District heating is based on locally sourced forestry waste (with a share of over 97% in 2021 and increasing to 100% in 2025). ✓ Energy recovery is from wastewater or air. No waste incineration is included. ✓ Focusing on improving energy performance in existing buildings is essential to decrease the climate footprint of the real estate sector. Measures such as window replacements, upgrading ventilation systems and similar generally give high energy savings. ✓ One should note that energy efficiency measures could be tied to mandatory improvements of technical systems that would take place regardless of the linked energy savings. ✓ The issuer informs us that energy storage is by use of batteries. The production of batteries has potentially significant negative environmental impacts. The issuer informs us that they have some potential suppliers in mind and will evaluate them shortly, and then environmental aspects will be included as a selection criterion. But other aspects that are critical are delivery possibilities and times.
Sustainable transportation 	Fossil free public transportation, pedestrian and bicycle paths, cycle infrastructure, vehicles driven by hydrogen, biogas and electricity and logistics solutions leading to reduced climate footprints from transportation of people and goods incl. charging infrastructure for electric vehicles	**Dark Green** ✓ Electrification is a key avenue for decarbonising the transport sector, while public modes of transportation are preferable to individual ones. Concurrent investments in electrification and hydrogen are key. Sustainably sourced advanced biofuels also have a role to play. ✓ The potential for emission reductions depends on area planning and degree of urbanization, introduction of new vehicle technologies for passenger and goods transportation, and fuel types. ✓ No projects that include fossil fuels are eligible. ✓ Biogas is produced locally as a part of a green regional partnership.

		✓ Biogas vehicles can potentially run on natural gas. According to the issuer only biogas is produced and available at the gas filling station in the city of Östersund. ✓ For projects that require construction, emission intensity and resilience of materials and equipment should be considered.
Green and energy efficient buildings 	New buildings i. Buildings with a Primary Energy Demand (PED) at least 20% lower than the threshold set for nearly zero-energy building (NZEB) requirements in national measures, or ii. Buildings that meet the energy requirements for Nordic Swan Ecolabel, Miljöbyggnad Silver or equivalent level In addition, for buildings larger than 5000 m^2: • upon completion, the building resulting from the construction undergoes testing for airtightness and thermal integrity, and • the life-cycle Global Warming Potential of the building resulting from the construction has been calculated for each stage in the Life Cycle Existing buildings i. EPC A, or ii. Buildings that meet the energy requirements for Nordic Swan Ecolabel, Miljöbyggnad Silver or equivalent level	**Medium Green** ✓ Passive or plus house technologies should become mainstream and the energy performance of existing buildings greatly improved. The Medium Green shade reflects the issuer's focus on renovations, while for new construction framework criteria and internal policies address energy performance and embodied emissions. Hence, Östersund is taking steps towards the long-term vision. ✓ The issuer expect most of the proceeds for the green building category to be for renovation. 80% of the building stock that we will have in 2050 is already built today[5]. Therefore in the transition to a low-carbon society, it is vital to renovate and improve existing properties. With that perspective in mind, refurbishments with a 30% reduction in primary energy demand is an encouraged activity. In its renovation activities, we further encourage the issuer to seek to reduce embodied emissions in the materials used in the renovation. ✓ While Östersund does not yet have a systematic approach to choosing materials with lower emissions, the municipality has taken important first steps. The municipality's environmental system integrates life cycle assessments intro procurement processes. The municipality is using Loopfront[6] to increase re-use of materials and furniture and the issuer informs us that an independent consultant is doing a analysis of all

[5] Climate change - UKGBC - UK Green Building Council
[6] https://www.loopfront.com

	Major renovations i. Major renovations and re-construction leading to primary energy savings of at least 30%	municipal procurements from a climate perspective with the aim to reduce indirect GHG emissions. ✓ The criteria for existing buildings ensure that financed buildings are better than applicable regulations, but how energy efficient the buildings are will depend on their time of construction. ✓ While construction projects can have potential negative local environmental impacts, both Östersundshem AB and the municipality have policies in place to mitigate negative impacts of construction phase, according to the issuer. ✓ For new buildings, access to public transport is considered, bicycle parking and charging facilities for electric cars are offered to tenants. ✓ Based on different climate related weather hazards, municipal digital maps have been developed, which are used in planning and building permit processes in the municipality. We welcome the municipality's work on climate resiliency and encourage it to strengthen this work and the implementation of adaptive measures.
Waste management	Recycling and re-use, rehabilitation of contaminated land and leachate management	**Medium to Dark Green** ✓ Facilitating material recovery through increased recycling and re-use is essential to reduce climate impacts from production. ✓ Leachate management is of landfills. Generally, leachate has a high biochemical oxygen demand (BOD) and high concentrations of organic carbon, nitrogen, chloride, iron, manganese, and phenols. Many other chemicals may be present, including pesticides, solvents, and heavy metals. ✓ The issuer informs us that one potential rehabilitation project is clean up of PFAS contaminated areas, from fire foam at training areas. ✓ No fossil fuels vehicles can be financed under this category. ✓ Projects should seek to minimize emissions from the construction phase and supply chain.

Water and wastewater management  	E.g., water & wastewater treatment plants	**Light to Medium Green** ✓ The shading reflects a certain vagueness in the eligibility criteria, including a lack of a quantitative eligibility criteria for investments under this project category. ✓ Energy consumption and limiting leakage are important considerations in the sustainability of such projects. There are no criteria in this respect, however the issuer has confirmed it will report on energy consumption and leakage for its water and wastewater operations. ✓ Projects should seek to minimize emissions from the construction phase and supply chain (e.g., from cement production).
Carbon sequestration  	E.g., biochar production, CCS/CCR technology	**Medium to Dark Green** ✓ Removal of GHGs from the atmosphere play a pivotal role in IPCC scenarios that limit warming to 1.5˚C or 2˚C and technological breakthroughs are needed for achieving removal at this scale (IPCC 2021)[7] . Investments in technologies for Carbon Capture and Storage (CCS) and Carbon Capture and Recycling (CCR) are therefore much needed. ✓ Afforestation and land-use to provide wood for biochar could increase competition for land, if applied at scale (IPCC 2019)[8]. We encourage the issuer to consider this issue in project sector. ✓ CCS/CCR technologies will require energy in most cases. Life cycle assessments should be employed for such projects.

[7] IPCC, 2021: Future global climate: scenario-based projections and near-term information. Chapter 4 in: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change

[8] IPCC, 2019: Interlinkages Between Desertification, Land Degradation, Food Security and Greenhouse Gas Fluxes: Synergies, Trade-offs and Integrated Response Options. Chapter 6 in: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems.

Climate adaptation measures 	Climate adaptation measures in buildings, infrastructure, sensitive habitats and in the municipality as a whole such as local management of rainwater (Sw. Lokalt Omhändertagande av Dagvatten/LOD) and planting of trees	**Dark Green** ✓ Climate scientists are clear when communicating that some level of climate change is unavoidable even in the most optimistic climate scenarios. For the Nordic countries, expected changes are among others heavy rain and floods. It is therefore crucial to plan and mitigate potential risks to reduce the potential financial and environmental impact of such events. ✓ For measures that require construction, emission intensity and resilience of materials and equipment should be considered. There should also be considerations on how measures impact the local environment.

Table 1. Eligible project categories

3 Terms and methodology

This note provides CICERO Shades of Green's second opinion of the client's framework dated January 2023**.** 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 Shades of 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.

'Shades of Green' methodology

CICERO Shades of 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:

Shading	Examples
Dark Green is allocated to projects and solutions that correspond to the long-term vision of a low-carbon and climate resilient future.	Solar power plants
Medium Green is allocated to projects and solutions that represent significant steps towards the long-term vision but are not quite there yet.	Energy efficient buildings
Light Green is allocated to transition activities that do not lock in emissions. These projects reduce emissions or have other environmental benefits in the near term rather than representing low carbon and climate resilient long-term solutions.	Hybrid road vehicles

The "Shades of Green" methodology considers the strengths, weaknesses and pitfalls of the project categories and their criteria. 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, including potential macro-level impacts of investment projects.

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 Shades of 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.

Assessment of alignment with Green Bond Principles

CICERO Shades of Green assesses alignment with the International Capital Markets' Association's (ICMA) Green Bond Principles. We review whether the framework is in line with the four core components of the GBP (use of proceeds, selection, management of proceeds and reporting). We assess whether project categories have clear environmental benefits with defined eligibility criteria. The Green Bonds Principles (GBP) state that the "overall environmental profile" of a project should be assessed. The selection process is a key governance factor to consider in CICERO Shads of Green's assessment. CICERO Shades of Green typically looks at how climate and environmental considerations are considered when evaluating whether projects can qualify for green finance funding. The broader the project categories, the more importance CICERO Shades of Green places on the selection process. CICERO Shades of Green assesses whether net proceeds or an equivalent amount are tracked by the issuer in an appropriate manner and provides transparency on the intended types of temporary placement for unallocated proceeds. Transparency, reporting, and verification of impacts are key to enable investors to follow the implementation of green finance programs.

Appendix 1:
Referenced Documents List

Document Number	Document Name	Description
1	Östersund_Green Bond Framework_draft_230123	Östersund's Green bond framework dated January 2023
2	Årsredovisning-2021	Östersund's Annual report 2021
3	Årsredovisning-2020	Östersund's Annual report 2020
4	Effektrapportering Gröna obligationer 2021 Östersunds Kommun	Östersund's Green bond reporting 2021
5	Effektrapportering Gröna obligationer 2020 Östersunds Kommun	Östersund's Green bond reporting 2020
6	Effektrapportering Gröna obligationer 2019 Östersunds Kommun	Östersund's Green bond reporting 2019
7	Effektrapportering Gröna obligationer 2018 Östersunds Kommun	Östersund's Green bond reporting 2018
8	Klimatprogram	Östersund's climate programme (in Swedish)
9	Riktlinje-för-klimatanpassning	Östersund's Guidelines for climate adaptation (in Swedish)

Appendix 2:
About CICERO Shades of Green

CICERO Shades of 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 Shades of Green.

CICERO Shades of Green provides second opinions on institutions' frameworks and guidance for assessing and selecting eligible projects for green bond investments. CICERO Shades of Green is internationally recognized as a leading provider of independent reviews of green bonds, since the market's inception in 2008. CICERO Shades of 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 Shades of 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.

Environmental Finance Bond Awards 2022 Winner
External assessment provider of the year

- **2021 Largest External Reviewer,** Climate Bonds Initiative Awards
- **2020 External Assessment Provider Of The Year,** Environmental Finance Green Bond Awards
- **2020 Largest External Review Provider In Number Of Deals,** Climate Bonds Initiative Awards
- **2019 External Assessment Provider Of The Year,** Environmental Finance Green Bond Awards
- **2019 Largest Green Bond SPO Provider,** Climate Bonds Initiative Awards
- **2018 External Assessment Provider Of The Year,** Environmental Finance Green Bond Awards
- **2018 Largest External Reviewer,** Climate Bonds Initiative Awards
- **2017 Best External Assessment Provider,** Environmental Finance Green Bond Awards
- **2016 Most Second Opinions,** Climate Bonds Initiative Awards