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Second Party Opinion

Östersund Municipality Green Bond Framework

Feb. 4, 2026

Location: Sweden

Sector: Government

Alignment Summary

Aligned = ✓ Conceptually aligned = ○ Not aligned = ✗

- ✓ Green Bond Principles, ICMA, 2025
- ✓ Green Loan Principles, LMA/LSTA/APLMA, 2025

See [Alignment Assessment](#) for more detail.

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Dark green

Activities that correspond to the long-term vision of a low-carbon climate resilient future.

Our [Shades of Green Analytical Approach](#) >

Strengths

Östersund has already taken steps toward climate neutrality by offering decarbonized heat and power to its residents and industries. Different projects eligible under the framework, such as buildings and water investments, benefit from the use of renewable energy, electric machinery, and low-carbon heat production relying on waste-based feedstocks.

It is supporting the development of innovative green industries in its region. New power lines are being built in the area where one of Östersund's major industrial projects, NorthStarH2--a factory for next-generation renewable fuels--is under development. Additionally, the city has built a battery plant to ensure stable electricity supply and a biogas plant to use waste streams that would otherwise go to waste

Weaknesses

No weaknesses to report.

Areas to watch

Construction may entail emissions and biodiversity risks. Projects will have lower embodied emissions compared to business-as-usual, but the methodologies and knowledge needed to reduce such emissions are still evolving, and significant advancements are needed to achieve climate-neutral newbuilds. Sweden mandates biodiversity risk assessments, but national practices might not sufficiently consider biodiversity and climate risks.

The framework includes some broad categories. Projects may entail both climate and environmental risks and benefits. However, the evaluation of eligible projects is based on the municipality's own sustainability strategy and includes members of the climate and environmental unit, which helps to mitigate these risks.

Shades of Green Projects Assessment Summary

Over the three years following the issuance of the financing, Östersund expects to allocate the majority of proceeds to renewable energy, followed by energy efficiency, green buildings, and sustainable water and wastewater projects.

The issuer expects 80% of the proceeds to be allocated to refinancing projects, while 20% will be directed to finance new projects.

Based on the project categories' Shades of Green detailed below, the expected allocation of proceeds, and consideration of environmental ambitions reflected in Östersund Municipality's Green Bond Framework, we assess the framework as Dark green

Renewable energy	 Dark green
Wind power	
Solar power	
Hydropower	
Bioenergy	
Energy efficiency	 Dark green
Transmission and distribution of electricity	
Efficient district heating and cooling network	
Energy storage	
Smart grid technology	
Clean transportation	 Dark green
Road transport including machinery	
Infrastructure	
Green buildings	 Medium green
New buildings	
Existing buildings	
Major renovations	
Building energy efficiency	

Sustainable water and wastewater management

 **Dark green**

Construction and extension of water and/or wastewater collection, treatment, and supply systems

Upgrade of existing infrastructure for water and/or wastewater collection, treatment, and supply systems

Urban storm water management, including associated subsystems

Improved water efficiency through reduced leaks

Pollution prevention and control

  **Dark to Medium green**

Waste management

Carbon capture and utilization

Remediation of landfills and contaminated areas

Remediation and treatment of hazardous substances

Climate change adaptation

 **Dark green**

Physical or nature-based adaptation solutions to reduce climate-related risks such as outdoor environment design or water supply/wastewater, including stormwater management infrastructure

See [Analysis Of Eligible Projects](#) for more detail.

Issuer Sustainability Context

This section provides an analysis of the issuer's sustainability management and the embeddedness of the financing framework within its overall strategy.

Issuer Description

Östersund Municipality is located in Jämtland, Sweden, covering an area of about 2,500 square kilometers. It supports a population of about 65,000 people and plans to reach 75,000 inhabitants by 2040. A large number of small and midsize businesses in the manufacturing, knowledge, service, and tourism industries are based in the municipality. Östersund is responsible by law for providing vital services such as health care, schooling, and social care. Other mandatory responsibilities include libraries, planning and building issues, health and environmental protection, waste, water, and wastewater management, energy supply, public transport, and emergency services. The municipality also provides voluntary services that are of value to society, such as cultural and recreational activities, public housing, park maintenance, and other technical services.

Material Sustainability Factors

Climate transition risks

Policymakers have a key role in cutting greenhouse gas emissions to address climate change. Östersund's responsibilities for vital services related to real estate, transportation, and industry leave it exposed to high-emitting sectors. The Swedish government aims to achieve net zero by 2045 and has a strategy that addresses environmental issues relevant to Östersund.

Physical climate risks

Physical climate risks can affect many economic activities, and without adaptation measures, rising greenhouse gas emissions will lead to more frequent and severe climate hazards. The physical impacts of climate change and extreme weather are felt globally, with the direct effects--including heat waves, flooding, and wildfires--affecting specific regions. The indirect consequences can cascade across sectors, affecting the volume and pricing of traded goods and services as well as administrative functions for a city. Over the past century, Sweden has experienced a rise in average temperatures, influencing its ecosystems and weather patterns, particularly in recent decades. Östersund is exposed to physical climate risks related to changes in precipitation, including increased flooding, changing snow and ice patterns, and more frequent storms and extreme weather events.

Other environmental factors

Östersund is exposed to risks related to water, land use, pollution, and biodiversity loss when building infrastructure and undertaking new developments. The challenge it faces is to mitigate the impacts of these risks and safeguard Sweden's natural environment. Preserving natural carbon stocks is key to meeting climate goals, and many habitats, such as bogs and organic soils, store large amounts of carbon. Disturbing these habitats can lead to significant emissions. The natural environment also absorbs carbon dioxide, so conserving 30%-50% of land, sea, and fresh water (as recommended by the Intergovernmental Panel on Climate Change) is central to reducing greenhouse gas emissions and adapting to climate change. Some ecosystems, including bogs and topsoil, take a long time to recover, and certain changes are irreversible.

Social factors

Municipalities play an important role in ensuring the development of society and economy. They are responsible for ensuring that residents have access to necessary services and resources, including electricity and water, education, social services, health care, and welfare services. Sweden is a high-income economy with a Human Development Index ranking of 0.947 (2021), placing it among the top countries globally. Despite its affluent status, Sweden has faced increasing economic inequality in the past decade, albeit less so than many other countries.

Issuer And Context Analysis

We consider that eligible projects directly address sustainability factors that are material to Östersund. The framework aims to finance a range of activities, including renewable energy investments, green building construction, improvements to water and wastewater systems, and other sustainable projects. Many of the eligible projects under the framework, such as construction projects, are also exposed to the impacts of climate change, biodiversity risks, and resource use challenges.

The municipality has taken steps to decarbonize its activities and aims to lead its entire geographical area toward climate neutrality by 2030. Östersund's climate and energy strategy includes targets for 100% CO₂ emissions reduction by 2025 within the municipal organization and by 2030 for the entire municipality. Key initiatives include a 40% reduction in energy consumption, promotion of sustainable transportation, the Climate Neutral Östersund 2030 project, and the electrification of construction sites. Efforts to reduce emissions from transportation include promoting fossil-free travel options, improving infrastructure for active transport, improving public transport connections, and encouraging behavioral changes among employees and residents. Reducing emissions from construction involves minimizing the climate impacts and energy use of new building projects, and managing existing properties sustainably to extend their lifespan and minimize the need for new buildings.

Östersund actively identifies and assesses physical climate risks to enhance its resilience. The municipality has carried out a risk and vulnerability analysis and produced flash flood mapping, heat mapping, risk and landslide mapping, and flood risk mapping linked to lakes including Storsjön, Härkan, and Indalsälven. Building permits have become more stringent, denying the construction of houses where there is flooding risk. Property owners who have already built houses in areas with landslide risks have been notified. Mapping of heat wave impacts on care homes has led to preventive measures such as sun protection and procedures for high temperatures.

The municipality faces biodiversity risks, particularly when developing greenfield areas, and has strategies to address them. The municipality adheres to legal requirements for environmental impact assessments (EIAs), and the stringent regulatory requirements in Sweden mitigates biodiversity risks to an extent. Östersund Municipality further addresses biodiversity and land-use risks by conducting inventories of natural values in project areas to minimize impacts on biodiversity. Biodiversity risks are identified through field inventories and ecological assessments, with mitigation measures integrated into planning. An example includes the expansion of a designated nature area in a recent development plan due to the discovery of important bird habitats. However, current practice may not fully account for the complexities of biodiversity and climate risks.

Alignment Assessment

This section provides an analysis of the framework's alignment to Green Bond and Loan principles.

Alignment Summary

Aligned = ✓ Conceptually aligned = ○ Not aligned = ✗

✓ Green Bond Principles, ICMA, 2025

✓ Green Loan Principles, LMA/LSTA/APLMA, 2025

✓ Use of proceeds

We assess all the framework's green project categories as having a green shade, and the issuer commits to allocating the net proceeds issued under the framework exclusively to eligible green projects.

✓ Process for project evaluation and selection

The green bond committee, comprising members from the finance and climate and environment units, oversees the selection and evaluation of green projects at least annually. The committee evaluates potential projects against eligibility criteria, and ensures compliance with environmental and social regulations through Östersund's policies and management systems. Approved projects are recorded in an internal tracking spreadsheet, and the committee is responsible for reviewing this list, overseeing the allocation and impact reports, and managing updates to the green bond framework to align with best practice.

✓ Management of proceeds

The finance unit will manage the allocation of an amount equivalent to the net proceeds from green bonds to green projects on an aggregate basis (using a portfolio approach). If a project no longer meets the eligibility criteria, it will be removed from the internal tracking spreadsheet and replaced with a suitable substitute. This spreadsheet will be reviewed annually by the green bond committee. Östersund aims to allocate the net proceeds to green projects within 12 months of each green bond's issuance. Until full allocation, any unallocated proceeds will be managed according to Östersund's short-term excess liquidity strategy. For temporary holdings, it will exclude any investments in activities listed under the exclusion criteria in the framework, including the financing of fossil fuel energy generation, nuclear energy generation, weapons, gambling or tobacco.

✓ Reporting

Östersund is committed to providing annual reports to investors on both the allocation and impact of proceeds until full allocation or in the event of significant developments. These reports will be published on Östersund's website. The allocation report will detail the outstanding amount of green bonds, the distribution of new financing and refinancing, a breakdown of green projects by category, descriptions of selected projects, and any unallocated proceeds. Östersund aims to present quantitative impact indicators in its impact reports where applicable, potentially on an aggregated portfolio basis due to confidentiality and project volume. It intends to align with the Nordic Public Sector Issuers' recommendations for Green Bonds Impact Reporting 2024, with relevant impact metrics for each project category.

Analysis Of Eligible Projects

This section provides details of our analysis of eligible projects, based on their environmental benefits and risks, using the "[Analytical Approach: Shades Of Green Assessments](#)".

Overall Shades of Green assessment

Based on the project category shades of green detailed below, the expected allocation of proceeds, and consideration of environmental ambitions reflected in Östersund Municipality's Green Bond Framework, we assess the framework as Dark green.

Dark green

Activities that correspond to the long-term vision of a low-carbon climate resilient future.

Our [Shades of Green Analytical Approach](#) >

Green project categories

Renewable energy

Assessment

 **Dark green**

Description

Construction, operation, maintenance, and repair of the following renewable energy sources:

Wind power

- Facilities that produce electricity from wind power (onshore)

Solar power

- Facilities that produce electricity or co-generation of heat/cool from solar photovoltaic (PV) technology

Hydropower

New or existing facilities that have or are in the process of obtaining a permit consistent with the Swedish Environmental Code, which entered into force on Jan. 1, 2019, and which comply with one of the following criteria:

- The electricity generation facility is a run-of-river plant and does not have an artificial reservoir;
- The power density of the electricity generation facility is above five watts per square meter; or
- The life cycle greenhouse gas emissions from the generation of electricity from hydropower are lower than 100 grams of CO₂ equivalent per kilowatt hour.

Bioenergy

- Electricity generation or heat/cooling or co-generation of heat/cool and power exclusively from biomass, biogas, and biofuels
- Manufacturing of biogas and biofuels for use in transport and of bioliquids

Analytical considerations

- Renewable energy sources such as solar PV, wind, and hydroelectric power are key elements in limiting global warming to well below 2 C. However, these projects may cause land use change and adversely affect local biodiversity, and are also exposed to physical risks. Bioenergy can play a role in the transition from fossil-based energy and transport fuels. However, risks and impacts depend on the type of feedstock; life cycle emissions, including a consideration of direct and indirect land use changes; water stress; and biodiversity impacts.
- We assign Dark green to projects in this category including wind, hydro, solar, and bioenergy projects that rely on low-risk waste streams. Östersund will also finance a biogas project, which we assign a Medium green shade; however this is expected to represent less than 4% of the category's allocation, and therefore it does not affect the shade of the project category.
- We assign a Dark green shade to the combined heat and power plant that will enable the production of low-carbon heat and electricity. The plant will use locally sourced forest residues and recycled wood. The Dark green shade reflects Sweden's high share of certified forests. Sweden's Forestry Act and Environmental Code set requirements such as forest conservation set asides and minimum tree ages for felling, as well as restrictions on agricultural inputs to protect water quality. Sweden also adheres to EU policies that limit the risk of deforestation and illegal land use conversion.
- We assign a Medium green shade to the biogas project, because it represents an improvement from fossil fuels and uses waste streams that would otherwise be unused. However, we consider the high share of cattle manure in feedstock a higher-risk waste stream, supporting a Medium green rather than Dark green shade.
- Renewable energy projects typically require a change in land use and carry biodiversity and local environmental risks. An EIA is required for all activities that may have a significant impact on the environment, in line with Sweden's transposition of the EU's EIA directive.

Energy efficiency

Assessment

 Dark green

Description

Transmission and distribution of electricity

- Transmission and distribution infrastructure in Sweden's electricity system

Efficient district heating and cooling network

- Construction, operation, and refurbishment of district heating and cooling networks, where the system uses at least 50% renewable energy, 50% waste heat, 75% cogenerated heat, or 50% of a combination of such energy and heat

Energy storage

- Facilities that store electricity and return it at a later time in the form of electricity, such as battery storage and pumped hydropower storage

Smart grid technology

- Smart grid technology

Analytical considerations

- Reliable and efficient electricity transmission and distribution networks are important for electrification and a low-carbon economy. Investments in grid flexibility and resilience to physical risks, as well as measures to reduce transmission losses, are needed. At the same time, networks should be carefully managed to avoid disrupting habitats and harming biodiversity, particularly in areas of high ecological value. District heating systems can contribute to the transition toward a low-carbon,

climate resilient future. However, the sustainability benefits depend on their energy inputs, which can be associated with significant emissions and varying sustainability credentials.

- Östersund will make investments to expand its electrical grid over the next three years, and energy efficiency will therefore receive a higher share of financing compared to prior allocations. We assign a Dark green shade to the municipality's investments in grid infrastructure, because of the low carbon intensity of Östersund 's grid, which is primarily powered by wind and hydropower. New power lines are being built to connect the industrial site at Jämtkraft's two combined heat and power plants in Lugnvik, where one of Östersund's major industrial projects, NorthStarH2--a factory for next-generation renewable fuels--is under development. The work is being carried out in stages, with connection targeted for 2028.
- Grid investments can create risks for local ecosystems and biodiversity. Under Sweden's implementation of the EU's EIA Directive, any activity that could significantly affect the environment must undergo an EIA.
- We assess investments in Östersund's district heating network as Dark green, since the heat production is predominantly powered by renewable sources, with an estimated emissions intensity of 14 grams of CO₂ per kilowatt hour, which is considered very low. In 2024, the municipality reported that 99% of inputs came from forest residues and recycled wood, and it aims to reach 100% by 2030. We also considered the high share of certified forests in Sweden.
- Östersund may refinance the Hydrobooster project, which adds 15 megawatts of battery capacity to enhance energy system stability. Sustainability screening was conducted during battery purchasing, ensuring that cobalt-free options were selected. There are currently no recycling or end-of-life strategies for the batteries, but the development of such strategies is being considered.

Clean transportation

Assessment

 Dark green

Description

Road transport including machinery

The purchase, financing, and leasing of the following modes of transportation:

- Vehicles such as buses, cars, trucks, and machinery (e.g. cranes, excavators) that are fully electric or powered with hydrogen or biogas

Infrastructure

The construction, modernization, and maintenance of supportive infrastructure including:

- Infrastructure dedicated to vehicles with zero tailpipe CO₂ emissions, such as electric charging points, hydrogen, and biogas fueling stations
- Infrastructure dedicated to personal mobility or cycle logistics such as pavements, bike lanes, and pedestrian zones

Analytical considerations

- Mitigating greenhouse gas emissions from transport will be crucial for meeting global decarbonization goals. Fossil fuel-powered vehicles and vessels also create air pollution, such as nitrogen oxides and sulfur oxides. Electric road and rail transportation are key to decarbonizing land transport. Value chain emissions and environmental impacts in infrastructure projects can be significant and should be carefully managed, for example, by prioritizing low-carbon construction materials. Physical climate risks are also a material consideration for all infrastructure projects.
- Östersund has taken significant steps to decarbonize its fleet; a high share of municipal-leased cars are electric and heavy-duty vehicles such as trucks and machinery have been electrified. Investments in the project category would be targeted at continuing this electrification of the fleet and equipment. We view such investments as Dark green. There are no current plans to finance vehicles running on biofuels, and cars running on biofuels are excluded from the framework.

- Östersund may finance electric machinery that can be used at construction sites as part of this framework. According to the municipality, it created the EU's first nearly emission-free construction site during the building of the Storfjället preschool, by powering about 95% of machinery with electricity instead of fossil fuels. The project showed that fossil-free construction is feasible in current conditions, and Östersund plans to continue investing in electric equipment such as excavators, loaders, asphalt pavers, and other equipment.

Green buildings

Assessment

 Medium green

Description

New buildings

New residential and commercial buildings that have or will have upon completion:

- A primary energy demand (PED) at least 20% lower than the threshold set for nearly zero-energy buildings, according to national building regulations
- Meets the requirements for at least Miljöbyggnad Silver or Nordic Swan Ecolabel, or better

Additional criteria for all new buildings:

- Its carbon emissions per square meter of floor area (kg CO₂/m² BTA) does not exceed the level specified in Miljöbyggnad Silver or an equivalent scheme; and
- Has undergone a screening for material physical climate risks

Additional criteria for all new buildings larger than 5,000 square meters:

- Upon completion, the building has undergone testing for air-tightness and thermal integrity

Existing buildings

Existing residential and commercial buildings that either have:

- Energy performance certificate (EPC) of class A or a PED within the top 15% of the national or regional building stock; or
- Meets the requirements for at least Miljöbyggnad Silver or Nordic Swan Ecolabel, or better

Additional criteria for all existing buildings:

- Has undergone a screening for material physical climate risks

Major renovations

- Primary energy savings of at least 30% within up to three years, validated through an EPC upon completion of the renovation or follow up measurements
- Complies with the applicable minimum energy requirements of the national building regulation for major renovations

Building energy efficiency

- Energy efficient equipment such as:
 - Addition of insulation to the building
 - Energy efficient windows, doors, light sources

- o Heating, ventilation, and air-conditioning and water heating systems, including equipment related to district heating services
 - o Electric heat pumps that meet the refrigerant threshold of 675
- Instruments and devices for measuring, regulating, and controlling the energy performance of buildings, such as:
 - o Zoned thermostats, smart thermostat systems, and sensing equipment, including motion and day light control
 - o Building automation and control systems, building energy management systems, lighting control systems, and energy management systems
 - o Smart meters for, heat, cool, and electricity
 - o Facade and roofing elements with a solar shading or solar control function, including those that support the growth of vegetation

Analytical considerations

- The International Energy Agency emphasizes that achieving net-zero emissions in buildings demands major strides in energy efficiency and the phase-out of fossil fuels. All properties must achieve high energy performance. New properties should also reduce emissions from building materials and construction. Addressing physical climate risks is key to strengthening climate resilience across all buildings.
- We assign a shade of Medium green to the project category because we think that Östersund's framework effectively addresses all environmental factors we consider material for new construction, existing buildings, and renovation projects. These factors are energy use, heating sources, embodied emissions, and physical climate risks. Additionally, Östersund will not invest in buildings that use direct fossil fuel-powered heating.
- Given the fixed nature of buildings, improving their resilience to physical climate risk is crucial in the transition to a low-carbon real estate sector. All eligible projects and buildings have been screened for physical climate risks using relevant scenarios.
- Östersund expects to allocate 20% of proceeds in this category to new construction projects and 80% to existing buildings. All new construction projects must have solid energy performance (20% better than what is required by the Swedish building code, which is also the minimum requirement for energy for Miljöbyggnad Silver). We consider this a strong ambition. Furthermore, we view the ambition for existing buildings to be in the top 15% of the national or regional building stock in terms of energy performance as a strong commitment to the transition to a low-carbon society, and we consider the requirement for renovation projects to result in 30% lower PED to be ambitious.
- Embodied emission thresholds correspond to the requirements of Miljöbyggnad Silver, representing a significant step toward a low-carbon, climate resilient future, in our view. Reducing embodied emissions is key to Östersund's goal to be climate neutral by 2030. It plans to initially require Miljöbyggnad Silver and to progressively set more stringent requirements through 2030 to align with its climate neutrality goal. These efforts will help decrease the life cycle emissions of construction projects, but they will not make new construction carbon neutral.
- Östersund does not require buildings to use certifications, however, municipality-owned housing company Östersundshem has a requirement in its owner directive to strive toward environmental certification in projects where this is considered justified.
- Projects are planned both on greenfield and brownfield land. Östersund adheres to legal requirements for EIAs, and the stringent regulatory context in Sweden mitigates biodiversity risks to an extent. Nonetheless, any new construction activities on greenfield land raises biodiversity and land-use change risks.

Sustainable water and wastewater management

Assessment

Description

Dark green

- Construction and extension of water and/or wastewater collection, treatment, and supply systems
- Upgrading existing infrastructure for water and/or wastewater collection, treatment, and supply systems such as:
 - Distribution infrastructure
 - Water purification
 - Water savings
 - Water conservation
 - Re-use of water
 - Water and wastewater pump stations
- Urban storm water management, including associated subsystems
- Improving water efficiency through reduced leaks

Analytical considerations

- As a form of natural capital, water is necessary for economic activity, ecosystems, and public health. Therefore, water supply systems are important for climate change adaptation, helping to secure a future where everyone has reliable access to sufficient water of adequate quality. Water systems are energy-intensive and, if not sufficiently managed, can generate significant waste and exacerbate water stress for other stakeholders.
- The main investment under the project category is a new water supply project, which will supply the population of Östersund with drinking water. As part of the project, two new raw water intakes with associated pumping stations will also be built. We assess the project as Dark green because it addresses climate change adaptation, will use renewable energy from the grid as the main energy source in its operations, and involves initiatives to reduce emissions from construction and materials. The increased water withdrawals are not projected to affect local ecosystems or water supplies for other communities.
- In addition to the water supply project, the city has several smaller investments planned that focus on climate change adaptation, as well as expanding the water network. These projects range from Dark green to Medium green. The criteria for the projects are broadly defined and do not include specific thresholds related to key environmental considerations, limiting the comparability of benefits. However, the city has explained the nature of the projects, which we think have environmental benefits by either by expanding the population’s access to fresh water and sewage systems, strengthening resiliency, or reducing leakage levels or energy use. In Östersund, water supply and wastewater treatment systems are primarily electrified.
- Financing under this category addresses water infrastructure for public needs, in line with Östersund’s responsibility to provide water services to its population, rather than projects that serve water-intensive purposes such as industrial and agricultural use or mining. Östersund has confirmed that financed projects will not support fossil fuel-linked or emissions-intensive facilities.

Pollution prevention and control

Assessment

Dark to Medium green

Description

Waste management

- Prevention, reduction, collection, transport, treatment, recycling, and processing of waste (non-hazardous and hazardous), including facilities and supporting infrastructure

Carbon capture and utilization (CCU)

- CCU of CO₂ emissions from biogenic sources

Remediation of landfills and contaminated areas

- Remediation of landfills and contaminated areas, including the disposal of illegally deposited waste

Remediation and treatment of hazardous substances

- Remediation and treatment of hazardous substances, including PFAS (per- and polyfluoroalkyl substances)

Analytical considerations

- Waste management is an important pollution prevention measure that can protect human health and local ecosystems from harm. Proper recycling practices reduce emissions and conserve energy and natural resources.
- We view the framework’s general waste collection (non-hazardous and hazardous), sorting, and recycling systems and facilities as Medium green. Some financed projects may result in environmental benefits but still carry climate risks due to the broad eligibility criteria. Östersund does not anticipate any major investments in waste management over the next three years.
- CCU is likely to play a critical role in a low-carbon, climate resilient future. We view carbon storage more favorably than carbon utilization in terms of climate mitigation, but we think the issuer’s CCU project has the potential to decarbonize hard-to-abate shipping, where electrification is challenging. The facility will manufacture e-methanol from green hydrogen and captured biogenic CO₂ from its heat and power plant at Lugnvik. The captured carbon further mitigates the impact of the combined heat and power plant, which relies only on forestry waste residues as a feedstock. The project, which we assess as Dark Green, aims to recycle biogenic CO₂ and produce e-methanol to be used in shipping and the chemicals industry. Nevertheless, CCU can be a very energy intensive process, and it is important for these projects to have adequate leakage monitoring and detection systems and to be subject to a comprehensive life cycle emissions assessment. Uniper plans to produce renewable electro-fuel in Östersund under the project name NorthStarH2, and has signed agreements with Jämtkraft to secure land and electricity connections.

Climate change adaptation

Assessment

 Dark green

Description

Adaptation measures

- Physical or nature-based adaptation solutions to reduce climate-related risks such as outdoor environment design or including stormwater management infrastructure

Climate-related adaptation investments require a climate risk and vulnerability analysis.

Analytical considerations

- Climate scientists have been clear that some degree of climate change will take place, even in the most optimistic of scenarios. This makes it crucial to plan for and mitigate the potential risks to reduce their financial and environmental effects. For Nordic countries, expected changes include heavier rain and more floods.
- Östersund will aim to improve resilience against flooding and extreme precipitation by implementing nature-based adaptation, such as stormwater ponds. We assess the project category as Dark green, reflecting Östersund's focus on nature-based solutions. We view positively that investments require a climate risk and vulnerability analysis.

S&P Global Ratings' Shades of Green

Assessments					
 Dark green	 Medium green	 Light green	 Yellow	 Orange	 Red
Description					
Activities that correspond to the long-term vision of an LCCR future.	Activities that represent significant steps toward an LCCR future but will require further improvements to be long-term LCCR solutions.	Activities representing transition steps in the near-term that avoid emissions lock-in but do not represent long-term LCCR solutions.	Activities that do not have a material impact on the transition to an LCCR future, or, Activities that have some potential inconsistency with the transition to an LCCR future, albeit tempered by existing transition measures.	Activities that are not currently consistent with the transition to an LCCR future. These include activities with moderate potential for emissions lock-in and risk of stranded assets.	Activities that are inconsistent with, and likely to impede, the transition required to achieve the long-term LCCR future. These activities have the highest emissions intensity, with the most potential for emissions lock-in and risk of stranded assets.
Example projects					
 Solar power plants	 Energy efficient buildings	 Hybrid road vehicles	 Health care services	 Conventional steel production	 New oil exploration

Note: For us to consider use of proceeds aligned with ICMA Principles for a green project, we require project categories directly funded by the financing to be assigned one of the three green Shades.

LCCR--Low-carbon climate resilient. An LCCR future is a future aligned with the Paris Agreement; where the global average temperature increase is held below 2 degrees Celsius (2 C), with efforts to limit it to 1.5 C, above pre-industrial levels, while building resilience to the adverse impact of climate change and achieving sustainable outcomes across both climate and non-climate environmental objectives. Long term and near term--For the purpose of this analysis, we consider the long term to be beyond the middle of the 21st century and the near term to be within the next decade. Emissions lock-in--Where an activity delays or prevents the transition to low-carbon alternatives by perpetuating assets or processes (often fossil fuel use and its corresponding greenhouse gas emissions) that are not aligned with, or cannot adapt to, an LCCR future. Stranded assets--Assets that have suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities (as defined by the University of Oxford).

Mapping To The U.N.'s Sustainable Development Goals

Where the financing documentation references the Sustainable Development Goals (SDGs), we consider which SDGs it contributes to. We compare the activities funded by the financing to the International Capital Markets Association (ICMA) SDG mapping and outline the intended linkages within our SPO analysis. Our assessment of SDG mapping does not affect our alignment opinion.

This framework intends to contribute to the following SDGs:

Use of proceeds

SDGs

Renewable energy



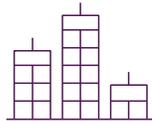
7. Affordable and clean energy*

Energy efficiency



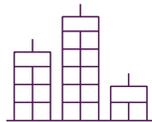
7. Affordable and clean energy*

Clean transportation



11. Sustainable cities and communities*

Green buildings



11. Sustainable cities and communities*

Sustainable water and wastewater management



6. Clean water and sanitation*

Pollution prevention and control



11. Sustainable cities and communities*



12. Responsible consumption and production*

Climate change adaptation



13. Climate action*

*The eligible project categories link to these SDGs in the ICMA mapping.

Related Research

- [Analytical Approach: Second Party Opinions](#), March 6, 2025
- [FAQ: Applying Our Integrated Analytical Approach For Second Party Opinions](#), March 6, 2025
- [Analytical Approach: Shades Of Green Assessments](#), July 27, 2023

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Second Party Opinion: Östersund Municipality Green Bond Framework

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