



# The City of Gothenburg Green Bond Second Opinion

September 2022

## Executive Summary

**The City of Gothenburg is Sweden's second-largest city, with a population of almost 600,000.** The city is growing and over the next 15 years there are plans to build 80,000 new homes and workplaces. Sweden's municipalities are responsible for healthcare, schooling, social care, public transport, waste and water, energy supply, environmental protection and so on. The City of Gothenburg was the first municipality to issue a green bond, in 2013, and it launched its previous framework in 2019. Earlier this year, it established a sustainability-linked loan, to couple climate and social goals to its financing.

**The vast majority of proceeds will finance green buildings, and 80% is expected to be refinancing and 20% new financing.** Overall, the framework covers a broad range of categories. After green buildings, activities in the categories water and wastewater management, renewable energy, and energy efficiency have historically received the most financing. The main change since the previous framework is that eligibility criteria have been set to align with the EU taxonomy where relevant.

We rate the framework **CICERO Medium Green** and give it a governance score of **Excellent**. The shading reflects that most proceeds will be allocated to green buildings and that this project category stands out for including an ambitious climate impact criterion. The City of Gothenburg has robust policies that provide a sound context for projects financed under this framework.

## Strengths

**The City of Gothenburg has included a climate impact criterion in the framework and has quantified targets on emission reductions associated with building materials.** Embodied emissions emitted before a building is completed represent the biggest climate impact for new construction, where 70% of embodied carbon is emitted upfront.<sup>1</sup> Strategies therefore need to be applied to reduce upfront emissions. The City of Gothenburg has started to enforce policies to reduce emissions and in its most ambitious project, the preschool Hoppet, the issuer was able to reduce emissions by 70% compared to a 2020 baseline. The sector still needs more knowledge on emission reduction strategies, therefore we consider it to be best practice that the issuer shares knowledge with other municipalities on its work, that it is actively involved in collaborations to improve life cycle assessment software and having a dialogue with partners to further increase the emission reduction in its projects.

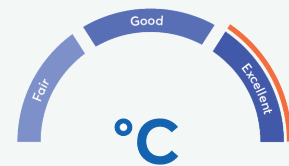
<sup>1</sup> [EU-ECB-Summary-Report.pdf \(hubspotusercontent00.net\)](#)

## SHADES OF GREEN



°CICERO  
Medium Green

## GOVERNANCE ASSESSMENT



## GREEN BOND AND LOAN PRINCIPLES

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



**The City of Gothenburg's overall management of environmental risks is integrated into the strategies and is a core component of the decision-making process of the city.** It is a strength that the issuer focuses on adaption for physical climate risks and has performed an assessment for the city based on IPCC scenarios. It is especially encouraging that the city now is mapping its existing buildings to screen for potential risks and needed mitigation actions, as from a 2050 perspective it is essential that we take care of and improve the existing building stock.

### *Pitfalls*

**Overall, the green building category eligibility criteria are solid, however the criterion for existing buildings allows financing buildings of varying energy performance.** How ambitious the thresholds for the top 15% of the building stock (in primary energy demand) depend on the type of building; for apartment buildings it is set at the level of the current regulation while for other building types it is below current regulations. It is the issuer's responsibility to ensure a robust implementation of the criterion in the context of the framework and to follow up on any future official determination of the top 15%.

**The environmental targets of the City of Gothenburg are progressive and ambitious.** The issuer however failed to deliver on its emission target for 2020, mainly due to high emissions from the transport sector.

**We encourage issuers to use harmonized methodologies in their reporting, among other to facilitate comparisons between issuers.** The City of Gothenburg 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, set at 315g CO<sub>2e</sub>/kWh, is higher than the European average grid factor and much higher than the Nordic average.

### *EU Taxonomy*

**Based on the information provided by the issuer, and to the best of our knowledge, we find that the City of Gothenburg is likely aligned<sup>2</sup> with the taxonomy mitigation criteria for most relevant taxonomy activities (an assessment of Do No Significant Harm and Social Safeguards was not conducted).** For underground permanent geological storage of CO<sub>2</sub>, information was missing to conclude on alignment, while for two water treatment and collection activities, the activities either did not or only partially aligned with the taxonomy criteria. For activities involving bioenergy, we have assessed the framework criteria to be likely aligned, but investors should note there remain general sustainability risks in relation to sourcing of biomass.

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<sup>2</sup> Since the EU Green Bond Standard is not yet formally approved and no verifiers are yet formally registered with the European Securities and Markets Authority (ESMA), our assessment does not firmly conclude on alignment, but indicates a likelihood. In all cases, it is each company's responsibility to finance projects aligned with the criteria and to follow up on actual alignment in their reporting.



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# 1 City of Gothenburg's environmental management and green bond framework

## Company description

The City of Gothenburg is Sweden's second largest city, with a population of almost 600,000. The city is located between Oslo and Copenhagen, and home to Scandinavia's biggest port and a wide range of industries. Gothenburg is currently on the cusp of a major development boom. The city is growing strongly to make space for 700,000 residents by the year 2035 – 120,000 more than at present. Over the next 15 years there are plans to build 80,000 new homes and workplaces.

Sweden's municipalities are responsible by law for a number of areas that are vital to the public good. Responsibilities include healthcare, schooling, social care, public transport, waste and water, energy supply, environmental protection and so on. The City of Gothenburg issued its inaugural green bond in 2013 as the first city in the world and launched its previous framework in 2019.

## Sector risk exposure

**Physical climate risks.** For the Nordics, the most severe physical 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 City of Gothenburg's planned development boom.

**Transition risks.** The city of Gothenburg is exposed to transition risks from stricter climate policies e.g., reducing its GHG emissions, upgrading the energy efficiency of its industries, buildings, transport, etc.

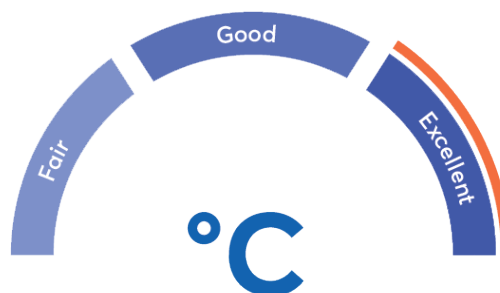
**Environmental risks.** A city is responsible for a number of vital areas; therefore, the City of Gothenburg is linked to heavily emitting sectors such as industrial processes, the real estate sector and transportation. Consequently, the city of Gothenburg is at risk of polluting the local environment for example during the erection of the properties, e.g., from poor waste handling.

## Governance assessment

The City of Gothenburg has solid procedures in place to incorporate sustainability in its daily procedures. It has three environmental and clear and quantified sub-targets linked to energy use and emissions for different activities. The city is also at the forefront in gathering knowledge and creating procedures on reducing embodied emissions in the real estate sector, and work strategically with partners to learn more on how to further lower emissions. It is encouraging that the city has set quantified targets regarding the climate impact of its construction projects, and that it started early to collect data on projects to use as a reference level for its current targets.



The selection process for determining eligible projects is solid, as is the management of proceeds. The issuer has informed us that its selection process has worked well under its last framework, and that it has been able to rule out projects where criteria were not met. The issuer follows recommendations from the Nordic Public Sector Position Paper on impact reporting, and is transparent on used baselines. The issuer reports on a project level.



Resilience assessments have been carried out based on a high-emission scenario from the IPCC (RCP 8.5). The City of Gothenburg has procedures in place to include the assessments when designing new construction, so that potential risks are evaluated and mitigated. The city is now working on how to evaluate and mitigate risks for its existing buildings.

The overall assessment of the City of Gothenburg's governance score and processes gives it a rating of **Excellent**.

### Environmental strategies and policies

The City Council has adopted a programme which objective is to transition Gothenburg to an environmentally sustainable city by 2030. Since the last framework, the issuer has shifted its programme from 12 local environmental goals to three goals that address nature, climate and people. The strategy has also changed so that it is in line with a 1.5 degree target according to the issuer. Each environmental goal has sub-goals, with indicators that will be measured against target values specifying what needs to be achieved for a given year. Performance against the goals is reported to the city council every two years.

By 2030, the City of Gothenburg aims to reach a carbon footprint close to zero. Emissions within the geographic area of Gothenburg will be reduced by at least 10.3 percent annually, and the consumption-based emissions will be reduced by at least 7.6 percent annually by 2030. To achieve this the city has set different sub-targets:

- To reduce energy use. By 2030, the target is to reduce the primary energy consumption per inhabitant, in residential buildings, facilities, public services and businesses by 30% compared to 2010.
- Produce energy solely from renewables. By 2025, electricity and heat produced by Göteborg Energi AB is targeted to be 100% based on renewable fuel.
- Reduce the climate impact from transportation. By 2030, the city is targeting to reduce GHG emissions from transportation by 90% compared to 2010. It also targets to reduce the volume of traffic in terms of km driven by all typed of motorized road vehicles by 25% compared to 2020.
- Reduce the climate impact from purchases. By 2025, a 50% reduction of GHG emissions from the construction of new buildings and from renovations of existing buildings is targeted, using 2020 as a baseline. By 2030, the city is targeting a 90% reduction in emissions.

For other issues like air and water pollution, ocean, biodiversity, etc., the City of Gothenburg has mostly quantified targets. Climate resilience is always assessed in relation to decisions concerning urban planning. The issuer has mapped out climate-related risks expected in a medium and long-term perspective, using a high-emission scenario from the IPCC. Flooding is identified to be the biggest risk in the city, therefore its development plan has a particular focus on mapping out areas exposed to rising sea levels, higher flow in larger watercourses and heavy rain. In addition, climate risk of municipal activities are assessed every four year through a risk and vulnerability analysis, which covers a broad range of risks.



The City of Gothenburg was ranked number one in the global destination index 2016, 2017, 2018, 2019 and 2021<sup>3</sup>, an award that goes to the top performer amongst participating destinations, which was 73 in 2021, in order to highlight the destination's exemplary commitment and efforts to becoming as sustainable as possible.

### **Green bond framework**

Based on this review, this framework is found to be aligned with the Green Bond Principles and the Green Loan Principles (GLP). For details on the issuer's framework, please refer to the green bond framework dated September 2022.

#### *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*

Relevant project managers are responsible for evaluating potential projects by assessing their compliance with green project categories and their environmental benefits. The issuer's environment and climate programme serve as overall guidelines for the selection criteria. The issuer has appointed a Green Bond Committee (GBC) which consists of members from the city planning & development office and the environmental office. A list of potential projects is presented to the committee, where the GBC is solely responsible to approve green projects and confirm they are aligned with the framework's eligibility criteria. A decision to allocate net proceeds will require a consensus decision from the GBC, and decisions will be documented and filed.

The GCB holds the right to exclude any projects already funded by green bond proceeds if the green project no longer meets the eligibility criteria defined in the framework. If a green project is sold, or for other reasons loses its eligibility, funds will be reallocated to other eligible projects.

The issuer informed us that the selection process has worked well. There are projects that have been rejected by the environmental administration because of environmental concerns. There are also examples of times when the green bond committee were critical and demanded additional information, one specific example being that the committee demanded information on which biomaterial would be used, before granting financing for the project.

#### *Management of proceeds*

Green bond proceeds are tracked by the issuer in a register. In the event a project has been sold or is no longer eligible, the City of Gothenburg commits to substitute the project as soon as practical, on a best effort basis. The balance of unallocated proceeds will be held in the liquidity reserve and be managed in line with the issuer's treasury management policies. The maximum period during which net proceeds may be unallocated is 12 months.

Temporary investments will not be placed in entities with a business plan focused on fossil energy generation, nuclear energy generation, research and/or development within weapons and defence, environmentally negative resource extraction, gambling or tobacco.

#### *Reporting*

The issuer will annually provide investors with a report that describes the allocation of proceeds and the environmental impact of projects. The issuer will follow recommendations from the Nordic Public Sector Position

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<sup>3</sup> [2021 Results - GDS-Movement](#)



Paper on green bond impact reporting. The GBC is responsible for preparing and verifying annual reporting on the allocation and impact of the net proceeds. The report will be made available on the city's website.

Allocation reporting, which is subject to external verification, will include the following information:

- A summary of green bond developments
- Nominal amounts of outstanding green bonds
- Amounts allocated to each project category
- Relative share of new financing versus refinancing
- The amount of unallocated proceeds
- Descriptions of selected green projects financed

Impact reporting will cover the KPIs indicated in the table below.

Project categories	Key Performance Indicators (KPIs)
Green & energy efficient buildings	<p><b>New buildings</b></p> <ul style="list-style-type: none"> <li>• Annual energy use avoided compared to the relevant building code (MWh)</li> <li>• Annual GHG emissions reduced/avoided (tonnes of CO<sub>2</sub>e emissions)</li> </ul> <p><b>Existing buildings</b></p> <ul style="list-style-type: none"> <li>• Annual energy use avoided compared to relevant national building standard (kWh/m<sup>2</sup> or %)</li> <li>• Annual GHG emissions reduced/avoided compared to relevant national building standard (tonnes of CO<sub>2</sub>e emissions)</li> </ul> <p><b>Major renovations</b></p> <ul style="list-style-type: none"> <li>• Annual energy use reduced compared to the pre-investment situation (MWh or %)</li> <li>• Annual GHG emissions reduced/avoided (tonnes of CO<sub>2</sub>e emissions) compared to the pre-investment situation</li> </ul> <p><b>Installation, maintenance &amp; repair</b></p> <ul style="list-style-type: none"> <li>• Annual energy reduced/avoided (MWh) compared to the pre-investment situation (MWh)</li> <li>• Annual GHG emissions reduced/avoided (tonnes of CO<sub>2</sub>e emissions) compared to the pre-investment situation</li> </ul> <p><b>Buildings implementing circular economy models for reduced climate impact</b></p> <p>Annual GHG emissions reduced/avoided (tonnes of CO<sub>2</sub>e emissions) compared to 2020 baseline</p>
Water and wastewater management	<p><b>Water and wastewater collection, treatment and supply systems</b></p> <ul style="list-style-type: none"> <li>• Annual water savings (m<sup>3</sup>)</li> <li>• Annual energy savings (kWh/m<sup>3</sup>)</li> <li>• Annual GHG emissions reduced/avoided (tonnes of CO<sub>2</sub>e emissions) compared to the pre-investment situation</li> <li>• Capacity of plant or network being constructed or renewed</li> </ul> <p><b>Pollution prevention and control in the water system</b></p> <ul style="list-style-type: none"> <li>• Annual volume of water or wastewater avoided (cubic meters)</li> <li>• Annual reduction of discharges of pollutants to water (tonnes of phosphorus, nitrogen or other pollutants)</li> </ul> <p>Estimated improvement in urban water management measured by applicable indicator, such as % of a defined area where rainwater is retained within the area site, % of rainwater that is retained in a defined area, amount or % of removed urban</p>
Clean transportation	<p><b>Clean transportation and mobility</b></p> <ul style="list-style-type: none"> <li>• Annual GHG emissions reduced/avoided (tonnes of CO<sub>2</sub>e emissions)</li> <li>• Number of vehicles or vessels</li> </ul> <p><b>Infrastructure supporting clean transportation</b></p> <ul style="list-style-type: none"> <li>• Number of charging points of electricity, hydrogen or biofuel installed or upgraded</li> <li>• Passenger km in new means of transportation</li> <li>• Type of project, such as km of new train lines, bicycle lanes</li> </ul> <p>Annual GHG emissions reduced/avoided (tonnes of CO<sub>2</sub>e emissions)</p>



Renewable energy	<p><b>Renewable energy</b></p> <ul style="list-style-type: none"> <li>• Installed renewable energy capacity (kW)</li> <li>• Annual renewable energy generation (MWh)</li> <li>• Storage capacity installed</li> <li>• Number of meters of piping laid, upgraded or replaced for transmission and distribution of hydrogen/biofuels</li> </ul> <p>Annual GHG emissions reduced/avoided (tonnes of CO<sub>2</sub>e emissions)</p>
Energy efficiency	<ul style="list-style-type: none"> <li>• Annual energy use reduced/avoided (MWh or GWh or %)</li> <li>• Annual GHG emissions reduced/avoided (tonnes of CO<sub>2</sub>e emissions)</li> </ul>
Climate change adaption	<p><b>Climate change adaptation</b></p> <ul style="list-style-type: none"> <li>• Physical climate risk addressed and expected adaptation related outcome (quantified if possible).</li> </ul> <p>Number of individuals/households/m<sup>2</sup> addressed</p>
Waste management & circular economy	<p><b>Waste collection and material recovery</b></p> <ul style="list-style-type: none"> <li>• Quantity of waste that is prevented, minimised, reused or recycled (tonnes or % of total waste per year)</li> <li>• Annual GHG emissions reduced/avoided (tonnes of CO<sub>2</sub>e emissions)</li> </ul> <p><b>Technologies for carbon capture and storage</b></p> <ul style="list-style-type: none"> <li>• Tonnes of CO<sub>2</sub>e emissions captured</li> </ul> <p><b>Waste-to-energy</b></p> <ul style="list-style-type: none"> <li>• Biofuel production/Energy generation from waste</li> <li>• Annual GHG emissions reduced/avoided (tonnes of CO<sub>2</sub>e emissions)</li> </ul> <p><b>Circular economy adapted products, production technologies and processes</b></p> <ul style="list-style-type: none"> <li>• Type of circular economy investment and purpose</li> </ul> <p>Annual recovery of materials for reuse in new processes</p>
Environmentally sustainable management of living natural resources and land use	<ul style="list-style-type: none"> <li>• Area of habitat or ecosystem protected/conserved/restored/managed (total and as proportion of municipal land)</li> <li>• Area of wetlands in urban areas</li> <li>• Area of green spaces in urban areas</li> </ul>






## 2 Assessment of City of Gothenburg’s green bond framework

The eligible projects under City of Gothenburg’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 the City of Gothenburg’s green bond framework

- The issuer expects that most proceeds will go to green buildings. In 2021, 78% of allocated proceeds went to green buildings and 11% went to water and wastewater management.
- It is expected that 80% of proceeds will go to refinancing and that 20% will be new financing.
- The issuer informed us that about 60% of proceeds allocated to green buildings will go to residential buildings, while the rest will go to premises. Premises is public buildings, and could be schools, public offices and so on.

Category	Eligible project types	Assessment of alignment with EU taxonomy’s technical criteria for mitigation <sup>4</sup>	Green Shading and considerations
Green & energy efficient buildings 	<p><b>New buildings</b></p> <p>New <b>residential</b> buildings (completed after 1 January 2021 and onwards) that have, or are designed to achieve, a primary energy demand of 60 kWh/m<sup>2</sup> per year, corresponding to an energy demand that is at least 20% better than the level required by the national building regulation (BBR 29). All new buildings are subject to testing for airtightness and thermal integrity as well as for calculating the life-cycle Global Warming Potential for each stage in the life cycle of the building.</p> <p>New <b>premises</b> (completed after 1 January 2021 and onwards) that have, or are designed to achieve, a primary energy demand of 50 kWh/m<sup>2</sup> per year, corresponding to</p>	<ul style="list-style-type: none"> <li>• <b>7.1 Construction of new buildings: Likely aligned.</b> The construction of new buildings category has three main criterion that are all addressed in the framework: i) to have a Primary Energy Demand (PED) at least 10% below NZEB, and for premises bigger than 5000m<sup>2</sup>, ii) testing for airtightness and thermal integrity, iii) calculating the GWP potential</li> </ul>	<p><b>Medium Green</b></p> <ul style="list-style-type: none"> <li>✓ It is positive that the City of Gothenburg has included a climate impact criterion in the framework, referring to life cycle emissions from a building and that it is requiring a reduction in emissions from the materials and construction process. The issuer has informed us that they have collected emission data for multiple assets constructed before 2020, where the data was</li> </ul>

<sup>4</sup> [taxonomy-regulation-delegated-act-2021-2800-annex-1\\_en.pdf \(europa.eu\)](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021L2800-annex-1_en.pdf)



an energy demand that is at least 30% better than the level required by the national building regulation (BBR 29). All new buildings are subject to testing for airtightness and thermal integrity as well as for calculating the life-cycle Global Warming Potential for each stage in the life cycle of the building.

#### Existing buildings

**Residential buildings and premises** (completed before 1st of January 2021) qualifying within the top 15% most energy efficient buildings of the national building stock in terms of Primary Energy Demand, determined through a specialist study.<sup>5</sup>

#### Major renovations

**Renovation** of existing buildings that lead to an overall reduction in primary energy demand per square meter and year (kWh/m<sup>2</sup>/year) by at least 30% compared to the pre-investment situation.

#### Installation, maintenance & repair

Energy efficiency equipment (energy efficient windows, doors and light sources, HVAC).

Instruments and devices for measuring, regulating and controlling the energy performance of buildings.

Charging stations for electric vehicles in buildings (and in parking spaces attached to buildings).

Renewable energy technologies (such as solar, heat pumps, wind turbines, storage units and heat exchanger/recovery systems).

- **7.7 Acquisition and ownership of buildings: Likely aligned.** Buildings within the top 15% of the building stock are aligned with the mitigation criteria; the issuer has also informed us that for all its premises advanced energy control and monitoring systems are in place. This will also be implemented for residential buildings.
- **7.2 Renovations of existing buildings: Likely aligned.** Major renovations lead to a reduction of PED of at least 30%.
- **7.3 Installation, maintenance and repair of energy efficiency equipment: Likely aligned.** The activities under the framework align with several of the individual measures set in the EU taxonomy.
- **7.5 Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings: Likely aligned.** The activities under the framework align with several of the

used to make an emission baseline for new projects where new projects need a 50% reduction. The issuer is now working on creating a similar baseline for renovation projects.

- ✓ The issuer has clarified that all construction projects need to adhere to the energy performance criteria, and that the climate impact criteria will be implemented so that it is a criterion for some projects now, and will be a mandatory criterion for all projects by 2025.
- ✓ To calculate embodied emissions linked to construction projects the issuer uses a tool called “Byggsektorns miljöberäkningsverktyg”. The issuer also informed us that it has been challenging using this in the initial phase of the design stage for new projects, and they are therefore in a working group to improve the tool

<sup>5</sup> The City of Gothenburg’s method for assessing this criterion is based on a [study](#) published by Fastighetsägarna (via consultancy CIT energy management) which has interpreted what the EU Taxonomy’s 15% most energy efficient buildings-criterion means in the Swedish context in terms of thresholds on energy use for different building categories. According to the study, multi-family apartments with a primary energy demand below 75 kWh/m<sup>2</sup>/year and schools below 98 kWh/m<sup>2</sup>/year qualify within the top 15% and these thresholds will be applied as criteria by the City of Gothenburg.



**Buildings implementing circular economy models for reduced climate impact**

Construction or renovation of buildings that lead to a 50% reduction of the climate impact from the materials and construction process compared to projects constructed by the City prior to 2020. The threshold will be met by implementing a combination of innovative, circular and biobased solutions, such as using low-carbon and/or reused/recycled materials.

individual measures set in the EU taxonomy.

so it can be used for all phases of a project.

- ✓ The eligibility criteria that the PED will be at least 20% lower than current regulations for residential buildings and 30% lower for premises for new construction is solidly ambitious.
- ✓ How ambitious the top 15% threshold is, depends on the type of building. Until an official definition is in place, the issuer will rely on a study by the association of building owners<sup>6</sup>. For apartment buildings, the threshold is set at 75 kWh/m<sup>2</sup>, which is the level required by current regulations, while for other types of buildings, the thresholds are significantly higher than current regulation. For family houses, the threshold for the top 15% has not been set.
- ✓ The methodology used in the mentioned study is to recalculate a building's energy performance so

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<sup>6</sup> Analys av primärenergital for de 15 procent bästa byggnaderna: [Topp 15 \(fastighetsagarna.se\)](https://www.gotland.se/nyheter/2022/05/18/topp-15-fastighetsagarna-se)



that it is expressed in PED in line with the currently applicable building regulation (BBR 29). Whether a building meets the top 15% PED threshold will depend, among other, on its energy source, where different sources are weighed differently in the calculation of its PED. The weighting favours district heating over electricity, meaning that, all else equal, it will be easier for a building connected to district heating to meet the threshold for top 15% than for a building with electric heating.

- ✓ From a climate perspective, it is beneficial to renovate existing buildings rather than build new assets, therefore the inclusion of renovation projects with a 30% PED reduction, and activities linked to installation, maintenance & repair represent is encouraging.
- ✓ The issuer has performed an assessment for the city based on IPCC scenarios. Evaluation of risks and mitigating actions is integrated into the procedure of designing new



Water & wastewater  
management



**Water collection, treatment and supply systems**

Construction and extension of water collection, treatment and supply systems that have a net average energy consumption below 0.5 kWh per cubic meter produced water supply.

Renewal of water collection, treatment and supply systems that lead to (i) a reduction in the net average energy consumption per year by at least 20% per m<sup>3</sup> water produced compared to the pre-investment energy use level in the area where the renewal works are carried out, or (ii) a reduction in the leakage level by at least 20% compared to the pre-investment leakage level of the area where the renewal works are carried out.

**Wastewater collection and treatment**

Renewal of sewer networks or treatment plants that lead to a reduction in the net average energy consumption per year by at least 20% compared to the pre-investment energy use level in the area where the renewal works are carried out.

Construction, renewal or installation projects that lead to a reduction in GHG emissions by at least 20% compared to the pre-investment emission level of the area where the construction/renewal works are carried out or that are subject to installation of new technology.

**Pollution prevention and control in the water system**

• **5.1 Construction, extension and operation of water collection, treatment and supply systems: Likely aligned.**

The eligibility criteria in the framework align with the energy consumption threshold in the taxonomy.

• **5.2 Renewal of water collection, treatment and supply systems: Likely not aligned.**

The City of Gothenburg informed us that hardly any single project would be able to generate a 20% reduction in the entire water / wastewater system. The 20% threshold applies at project level.

• **5.4 Renewal of wastewater and treatment: Likely aligned.**

The framework eligibility criteria comply with the 20% threshold and the net average energy consumption baseline is averaged for three years.

**Medium to Dark Green**

✓ Maintenance of the existing water and wastewater sector is generally positive both for public health and climate resilience reasons. It is a strength that there are quantitative criteria, both regarding energy consumption and leakage reduction, but based on the broad scope of eligible activities, it is difficult to assess how ambitious the financed projects will be.

✓ The production of chemicals for use in water and wastewater treatment accounts for a substantial greenhouse gas footprint, meaning that reducing chemicals are measures to reduce greenhouse gas emissions from the treatment process. The issuer informed us that it works to adapt the production of drinking water so that the use of chemicals can be reduced, however that it is difficult as it varies

buildings. The city is currently mapping its existing buildings to screen for potential risks and needed mitigation actions.



Technologies and solutions leading to a reduced amount of pollutants, such as micropollutants, in the water supply system. These solutions could include for example ultrafiltration systems, which often have co-benefits in terms of improving the system’s resilience against expected future climate changes such as deteriorated water quality in lakes and watercourses that will require additional efforts to maintain adequate drinking water quality.

Technologies and solutions leading to reduced discharges of pollutants to the recipients of the wastewater, protecting watercourses, lakes and sea from pollutants such as nitrogen, phosphorus and microplastics. These solutions could include measures that target reduced infiltration of additional water in the wastewater system and improved management of excessive stormwater resulting in overflows in the system.

Sustainable urban drainage systems (SUDS)<sup>7</sup> leading to a retention of rain water and/or improvement in its quality in urban areas by, for example, reducing rainfall-runoff and corresponding combined sewer overflows, increasing rainwater infiltration and thus improving the water balance, or providing valuable habitats and thus supporting biodiversity. Measures may include green roofs, urban tree planting, green alleys and streets, infiltration ditches etc.

depending on the raw water quality, the amount of water produced, etc.

- ✓ The issuer has informed us that daily water and wastewater operations are not running on fossil fuel energy but relay on a diesel back-up generator.

Clean transportation



**Clean transport and mobility**

The purchase, financing, renting and leasing of the following transport modes:

- **6.3 Urban and suburban transport, road passenger transport: Likely partially aligned.** The framework covers activities that comply with the zero

**Medium to Dark Green**

- ✓ Transport with zero tailpipe CO<sub>2</sub> emissions is vital to decarbonize the transport sector.

<sup>7</sup> The construction of SUDS is integrated in the urban drainage and wastewater treatment system, where relevant, and will strive to estimate the percentage of retained rainwater, removed urban runoff pollutants and/or percentage of runoff reduction peak flow.



Urban or suburban passenger transport with either zero tailpipe CO<sub>2</sub> emissions such as electric and hydrogen busses and trams, or that are fossil-free (fueled by biogas).

Passenger cars operated on electricity or biogas

Electric 2- and 3-wheel vehicles and quadricycles, such as bicycles, motorcycles, mopeds and minicars

Light- and heavy-duty vehicles and machines that are zero tailpipe CO<sub>2</sub> emissions (electric or hydrogen) or fossil-free (fuelled by biogas or Swedish Hydrogenated Vegetable Oil (HVO) 100).

Vessels for passenger or freight transport on sea or coastal waters with zero tailpipe CO<sub>2</sub> emissions, such as ferries.

Retrofit and upgrade of vessels to electric drive for the transport of freight or passengers on sea or coastal waters, and of vessels required for port operations and auxiliary activities. The retrofit/upgrade should lead to a reduction in the fuel consumption by at least 10%.

#### **Infrastructure supporting clean transportation**

The construction, modernisation and maintenance of transport infrastructure, including:

Infrastructure dedicated for pedestrians and bicycles.

Infrastructure required for zero-emissions road transport and for operating urban transport: such as electric charging points, electric grid connection upgrades, hydrogen fuelling stations, electric road systems, terminal infrastructure for loading, unloading and transshipment of goods, and signalling systems for trams and rail systems.

Infrastructure required for zero tailpipe CO<sub>2</sub> operation of vessels or the port's own operations as well as infrastructure dedicated to transshipment between modes: such as electricity charging, biofuels or hydrogen-based

tailpipe migration criteria. The framework also includes activities that are likely not aligned, such as buses on biogas.

- **6.4 Operation of personal mobility devices, cycle logistics: Likely aligned**

The framework covers activities such as bicycles.

- **6.5 Transport by motorbikes, passenger cars and light commercial vehicles: Likely aligned.**

The framework covers electric 2- and 3-wheel vehicles and quadricycles, as well as light vehicles that are zero tailpipe CO<sub>2</sub> emissions or fossil-free. The fossil-free transportation need to have lower emissions than the threshold set by the taxonomy to be aligned, which is at 50gCO<sub>2</sub>/km .

- **6.10 Sea and coastal freight water transport, vessels for port operations and auxiliary activities: Likely aligned.**

The activities in the framework correspond to the measures mentioned in the EU taxonomy. The vessels have zero tailpipe CO<sub>2</sub> emissions.

- **6.11 Sea and coastal passenger water transport: Likely aligned.** The activities in the framework correspond to the

✓ For projects that require construction and the use of vessels, emission intensity and resilience of materials and equipment should be considered.

✓ From a 2050 perspective, cities need to facilitate personal mobility by adapting and building infrastructure for bicycles and pedestrians. Infrastructure for electric vehicles also needs to be strengthened. It is therefore encouraging that the framework supports infrastructure for clean transportation.

✓ Investments in hydrogen are still in their early stages, and can be produced using natural gas, in the case of “blue” hydrogen.

✓ The framework covers hybrid boats, which can still feature substantial emissions.



refuelling stations, and shore-side electrical power and/or district heating for vessels at berth.

measures mentioned in the EU taxonomy. The vessels have zero tailpipe CO<sub>2</sub> emissions.

- **6.12 Retrofitting of sea and coastal freight and passenger water transport: Likely aligned.** The reduction in fuel consumption is expected to be at least 10%.
- **6.13 Infrastructure enabling low-carbon road transport and public transport: Likely aligned.** The activities in the framework correspond to the measures mentioned in the EU taxonomy.
- **6.14 Infrastructure for personal mobility, cycle logistics: Likely aligned.** Building infrastructure dedicated to pedestrians and bicycles is aligned with the criteria in the taxonomy.
- **6.15 Infrastructure for rail transport: Likely aligned.** The framework covers infrastructure that is dedicated to the operation of vehicles with zero tailpipe CO<sub>2</sub> emissions and the issuer has confirmed that parking spaces that can also be used for fossil fuel-powered cars cannot be financed.





- **6.16 Infrastructure enabling low carbon water transport: Likely aligned.** The framework covers infrastructure required for zero tailpipe CO<sub>2</sub> operation of vessels or the port's own operations.

## Renewable energy



The construction of facilities generating electricity from onshore or offshore wind power.

### Solar power

The construction of facilities generating electricity using solar photovoltaic technology, concentrated solar power technology or solar thermal technology.

### Bioenergy

The construction of facilities producing or co-generating heat/cool and power from bioenergy and facilities generating electricity from bioenergy. The facilities may include bioenergy carbon capture and storage (BECCS) facilities and will use waste-based biomass, biogas or bioliquids exclusively from sustainable sources.<sup>8</sup>

Manufacture of biogas, biochar or biofuels for use in transport and of bioliquids, based on sustainably sourced agricultural and forest biomass.

### Waste heat

The construction of facilities producing heat/cool using waste heat.

### Geothermal heating/cooling systems

- **4.1 Electricity generation using solar photovoltaic: Likely aligned.** The activities in the framework cover solar power. **Dark Green**
  - ✓ Renewable energy is key to the low carbon transition and represents a Dark Green solution.
- **4.2 Electricity generation using concentrated solar power (CSP) technology: Likely aligned.** The activities in the framework cover solar power.
  - ✓ The framework describes numerous activities under renewable energy. In 2021, 3% of allocated proceeds went to renewable energy. Proceeds went to replacing two boilers that had reached the end of their technical life. The remaining proceeds went to the installation of solar parks and solar panels on roofs.
- **4.3 Electricity generation from wind power: Likely aligned.** The activities in the framework cover wind power.
- **4.10 Storage of electricity: Likely aligned.** The framework activity “storage of renewable energy” covers storage of electricity.
  - ✓ Energy storage is crucial for facilitating greater integration of renewables. However, certain technologies, such as the storage of hydrogen, may entail climate risks that are not yet fully understood.
- **4.6 Electricity generation from geothermal energy: Likely aligned.** The

<sup>8</sup> In the evaluation of all bioenergy projects, the environmental and social impact of supply chain elements are taken into account. Biomass/fuel deriving from sources of high biodiversity that competes with food sources is excluded and purchases of bio-based feedstock need to comply with the EU Renewable Energy Directive (RED II). Sustainability of the supply chain is preferably proven by a certification such as the Roundtable on Sustainable Biomass (RSB), Forest Stewardship Council (FSC) or Programme for the Endorsement of Forest Certification (PEFC).



The construction of geothermal technologies producing or cogenerating heat/cool and power or electricity generation facilities based on geothermal energy. Life-cycle GHG emissions from the production will be lower than 100gCO<sub>2</sub>e/kWh.

#### **Transmission and distribution infrastructure for hydrogen and biofuels**

Construction of new transmission and distribution networks dedicated to hydrogen or biofuels.

Retrofit of gas transmission and distribution networks that enables the integration of hydrogen and biofuels in the network.

#### **Storage of renewable energy**

Storage facilities for electricity, thermal energy and hydrogen, for the purpose of managing the intermittency of renewable energy.

eligibility criteria respect the life cycle threshold.

- **4.8 Electricity generation from bioenergy: Likely aligned.** The issuer confirms that its activities will comply with relevant EU directives and that GHG savings are at least 80% compared to fossil fuels. To be fully aligned the issuer must use the latest relevant best available techniques. The issuer has also confirmed that it monitors and has a contingency plan in order to minimize methane leakage. For activities that exceed the 100MW, to be fully aligned, they need to either a) attain electrical efficiency of at least 36%, b) apply highly efficient CHP technology or c) use carbon capture and storage technology.
- **4.11 Storage of thermal energy: Likely aligned.** The framework activity “storage of renewable energy” covers storage of thermal energy.
- **4.12 Storage of hydrogen: Likely aligned.** The framework activity “storage of renewable energy” covers storage of hydrogen.



- **4.14 Transmission and distribution networks for renewable and low-carbon gases: Likely aligned.** The framework activities described under “Transmission and distribution infrastructure for hydrogen and biofuels correspond to the taxonomy activity.
  - **4.18 Cogeneration of heat/cool and power from geothermal energy: Likely aligned.** The eligibility criteria respect the life cycle threshold.
  - **4.20 Cogeneration of heat/cool and power from bioenergy: Likely aligned.** The issuer confirms that its activities will comply with relevant EU directives and that GHG savings are at least 80%. The issuer has also confirmed that it monitors and has a contingency plan in order to minimize methane leakage.
  - **4.24. Production of heat/cool from bioenergy. Likely aligned.** The issuer confirms that its activities will comply with relevant EU directives and that GHG savings are at least 80%. The issuer has also confirmed that it monitors and has a contingency plan in order to minimize methane leakage.
-



Energy efficiency



**Clean, efficient and reliable networks**

Construction of transmission and distribution infrastructure or equipment. Infrastructure dedicated to creating a direct connection or expanding an existing direct connection to a power plant that is more greenhouse gas intensive than 100 gCO<sub>2</sub>e/kWh measured on a life cycle basis is not eligible.

Energy efficient district heating distribution, including pipelines and associated infrastructure, that complies with the EU Energy Efficiency Directive<sup>9</sup>. System modifications to lower temperature regimes or advanced pilot systems (such as control and energy management systems and Internet of Things) are eligible without a specific threshold.

Electric heat pumps that (i) meet energy-efficiency requirements in the EU Eco-design Framework Directive and is (ii) below the refrigerant threshold (GWP) of 675.

Information and communications technology enabling the effective management and distribution of energy, such as smart grid technology.

**Energy efficient municipal activities**

Energy efficiency measures in various municipal activities, such as exchanging traffic lights to LED. Investments should improve energy efficiency in the respective area by at least 30 per cent.

- **4.25 Production of heat/cool using waste heat: Likely aligned.**

- **4.9 Transmission and distribution of electricity: Likely aligned.** **Medium Green**

The eligibility criteria respect the greenhouse gas intensity threshold.

✓ From a 2050 perspective, strengthening grids is important as electrification is a key element to a low-carbon future.

- **4.15 District heating/Cooling distribution: Likely aligned.** The framework covers district heating distribution that is modified to lower temperature regimes and advanced pilot systems.

✓ Depending on their inputs and mitigation of other climate risks, district heating networks can be beneficial sources of heat.

- **4.16 Installation and operation of electric heat pumps: Likely aligned.** The framework covers financing electric heat pumps that meets the GWP threshold set in the EU F-gas regulation.

✓ Swedish district heating has high compliance with the European definition of energy efficient district heating as it has high proportions of heat recycling and renewable supply. In addition to waste incineration, district heating may require fossil or biofuel boilers, and/or may use recovered heat from industry. The eligibility criterion in the framework is that the system uses at least 50% of renewable energy or 50% waste heat or 75% cogenerated heat or 50% of a combination of such energy and heat.

<sup>9</sup> Compliance means that the system uses at least 50% renewable energy or 50% waste heat or 75% cogenerated heat or 50% of a combination of such energy and heat.



- ✓ Adapting district heating systems to lower temperature regimes is beneficial<sup>10</sup> from an environmental perspective because it reduces the energy lost in converting and transporting energy to buildings. It also enables the integration of renewable and waste-heat sources for heating.
- ✓ Heat pumps, on average, deliver 3-5 more heat than it consumes in electricity<sup>11</sup>. Therefore, they are a solid replacement for electric panel ovens as an energy-efficient measure.

Climate change  
adaption



**Adaptation solutions in buildings, infrastructure and the city as a whole**

Adaptation solutions (physical and non-physical) in buildings and infrastructure that substantially reduce the most important physical climate risks<sup>12</sup> that the infrastructure is exposed to.

Adaptation solutions (physical and non-physical) that substantially reduce the most important physical climate

N/A

**Dark Green**

- ✓ Climate scientists have been clear that some level of climate change is taking place even in the most optimistic scenarios. For the Nordic countries, expected changes are among others heavier rain and floods. It is therefore crucial to plan and mitigate potential risks to reduce

<sup>10</sup> [Low-temperature district heating: heating our homes at lower cost – Analysis - IEA](#)

<sup>11</sup> [Heat Pumps – Analysis - IEA](#)

<sup>12</sup> Process to identify the most important climate risks that the asset/city is exposed to is based on robust assessment of risks related to temperature (e.g. changing temperature, heat stress and wildfires), wind (e.g. changing wind patterns and storms), water (e.g. changing precipitation patterns, sea level rises and water stress) and solid mass (e.g. coastal erosion, soil degradation and landslides). The risk assessment is based on climate projections (based on best practice) across the existing range of future scenarios consistent with the expected lifetime of the activity. The adaptation solutions will not adversely affect the adaptation efforts of other people, nature, cultural heritage, assets or activities. The solutions will favour nature-based solutions such as blue or green infrastructure to the extent possible and, when feasible, be monitored against pre-defined indicators.



risks<sup>11</sup> that the city is exposed to, such as flood defences, management of rising water levels and extreme weather research and monitoring systems.

the potential financial and environmental impact of such events. By implementing adaption solutions one limits resources and emissions linked to rebuilding damaged assets.

- ✓ For measures that require construction and the use of vessels, emission intensity and resilience of materials and equipment should be considered. There should also be considerations on how measures impact the local environment.

Waste management & circular economy



**Waste collection and material recovery**

Waste collection: separately collected and transported non-hazardous waste that is segregated at source and intended for preparation for reuse or recycling operations

Material recovery: facilities dedicated for the sorting and processing of separately collected non-hazardous waste streams into secondary raw materials involving mechanical reprocessing. At least 50%, in terms of weight, of the processed waste should be converted into secondary raw materials suitable for substituting virgin materials in production processes.

**Technologies for carbon capture and storage**

Bioenergy carbon capture and storage (BECCS) facilities

Transport and permanent underground storage of captured CO<sub>2</sub>, with CO<sub>2</sub> leakages not exceeding 0.5% of the mass of

- **5.5 Collection and transport of non-hazardous waste in source segregated fractions: Likely aligned.** The activities in the framework cover waste collection and comply with the criteria set out in the taxonomy.
- **5.6 Anaerobic digestion of sewage sludge: Likely aligned.** There is a monitoring and contingency plan in place to minimize methane leakage and the produced biogas is used directly for the generation of electricity or heat.

**Medium Green**

- ✓ The City of Gothenburg has procedures in place to ensure that waste is sorted and recycled when possible, and is making efforts to increase the share of waste that is recycled.
- ✓ The issuer expects the main investment in this project category to be recycling centers or sorting facilities.
- ✓ Facilitating material recovery is essential to reduce climate impacts



CO<sub>2</sub> transported and with appropriate leakage detection and monitoring plan in place

#### **Waste-to-energy**

Waste-to-biogas<sup>13</sup>: facilities dedicated for the treatment, through anaerobic digestion or composting, of sewage sludge or separately collected bio-waste with the resulting production and utilisation of biogas

Waste-to-energy: facilities dedicated to waste incineration to produce heat/cool and electricity that follows a waste hierarchy to ensure that as much of the waste as possible is reused and recycled before being converted to energy.

#### **Circular economy adapted products, production technologies and processes**

Construction of facilities for the recovery of resources for productive reuse in other processes, such as the recovery of zinc from ashes generated in waste-to-energy plants or the recovery of phosphorus from sewage sludge.

- **5.7 Anaerobic digestion of bio-waste: Likely aligned.** There is a monitoring and contingency plan in place to minimize methane leakage and the produced biogas is used directly for the generation of electricity or heat. The biomass used is partly pellets made from residues from the forest industry and partly branches that are residual products from forestry. Food & feed crops are not used as feedstock.
- **5.8 Composting of bio-waste: Likely aligned.** The bio-waste that is composted is source segregated and collected separately, and the compost produced is used as fertilizer or soil improver and meets the mentioned requirements.
- **5.9 Material recovery from non-hazardous waste: Likely aligned.** The activity meets the 50% conversion criterion.
- **5.11 Transport of CO<sub>2</sub>: Likely aligned.** The framework eligibility criteria comply with the CO<sub>2</sub> leakage threshold, permanent location and leakage detection criteria.

from production, therefore it is encouraging that the issuer has included the construction of facilities to recover resources.

- ✓ There are no current plans to invest in waste heat incineration plants. In any event while waste-to-energy can be an environmentally sound way of to dispose waste it can entail climate risk including high emissions. We consider this to be a Light Green activity in the framework.

<sup>13</sup> A monitoring and contingency plan should always be in place in order to minimise potential methane leakage at the facility.



- **5.12 Underground permanent geological storage of CO<sub>2</sub>: Not enough information to conclude on alignment.**  
The framework eligibility criteria comply with the CO<sub>2</sub> leakage threshold and leakage detection criteria. To be aligned the issuer needs to establish whether the geological formation is suitable to use as a CO<sub>2</sub> storage site.

Environmentally sustainable management of living natural resources and land use



**Management and conservation of habitats and ecosystems that promote biodiversity**

Measures to conserve, manage and develop responsibility biotopes – meaning habitats for plant and animal species that the Environmental Administration have identified that Gothenburg has a particular responsibility to conserve and develop – such as shallow sea bays, natural pastures, deciduous forests and small water bodies. Measures will include nature conservation management and other efforts to increase the area of responsibility biotopes on municipal land.

Measures to manage and increase the proportion of green and blue spaces in the urban environment for the purpose of contributing to biodiversity, recreation, equalizing temperatures, cleaning the air and reducing noise.

**Dark Green**

- ✓ Investments to conserve biotopes and increase the proportion of green spaces in the urban environment have multiple environmental benefits.

Table 1. Eligible project categories











## 3 Terms and methodology

This note provides CICERO Shades of Green’s (CICERO Green) second opinion of the client’s framework dated September 2022. This second opinion remains relevant to all green bonds and/or loans issued under this framework for the duration of three years from publication of this second opinion, as long as the framework remains unchanged. Any amendments or updates to the framework require a revised second opinion. CICERO Green encourages the client to make this second opinion publicly available. If any part of the second opinion is quoted, the full report must be made available.

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

### ‘Shades of Green’ methodology

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

Shading	Examples
 <b>Dark Green</b> is allocated to projects and solutions that correspond to the long-term vision of a low-carbon and climate resilient future.	 Solar power plants
 <b>Medium Green</b> is allocated to projects and solutions that represent significant steps towards the long-term vision but are not quite there yet.	 Energy efficient buildings
 <b>Light Green</b> 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 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 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 Green's assessment. CICERO 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 Green places on the selection process. CICERO 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.

### *EU taxonomy assessment*

CICERO Shades of Green has assessed the activities against the EU Taxonomy's technical screening criteria for substantial contribution to mitigation. CICERO Shades of Green has not assessed detailed alignment with the DNSH-criteria for each of the relevant activities, nor the minimum social safeguards. To assess activities' taxonomy alignment, CICERO Green has reviewed the issuer's green bond framework, other supporting documents provided by the issuer, and written responses to questions on each asset's taxonomy alignment. The Shades of Green assessment includes an assessment of environmental harmful activities more broadly, and where relevant, makes reference to the taxonomy DNSH-criteria.



# Appendix 1: Referenced Documents List

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Document Number	Document Name	Description
1	City of Gothenburg Green Bond Framework September 2022	
2	Impact report 2021 City of Gothenburg	
3	Environment and climate programme for the City of Gothenburg 2021-2030	

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## Appendix 2: About CICERO Shades of Green

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

CICERO Green provides second opinions on institutions' frameworks and guidance for assessing and selecting eligible projects for green bond investments. CICERO Green is internationally recognized as a leading provider of independent reviews of green bonds, since the market's inception in 2008. CICERO Green is independent of the entity issuing the bond, its directors, senior management and advisers, and is remunerated in a way that prevents any conflicts of interests arising as a result of the fee structure. CICERO Green operates independently from the financial sector and other stakeholders to preserve the unbiased nature and high quality of second opinions.

We work with both international and domestic issuers, drawing on the global expertise of the Expert Network on Second Opinions (ENSO). Led by CICERO Green, ENSO contributes expertise to the second opinions, and is comprised of a network of trusted, independent research institutions and reputable experts on climate change and other environmental issues, including the Basque Center for Climate Change (BC3), the Stockholm Environment Institute, the Institute of Energy, Environment and Economy at Tsinghua University, the International Institute for Sustainable Development (IISD) and the School for Environment and Sustainability (SEAS) at the University of Michigan.



- ★ **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