



City of  
Gothenburg

# Green Bond Impact Report 2018



*“It is a city that has sustainability in its DNA  
and is always eager to share best practice”*

Gothenburg – GDS-Index Leadership Award 2018

## City of Gothenburg- sustainable city open to the world

Gothenburg is a port city with a strategic location between Oslo and Copenhagen. It has a population of around 572,000 (2018) and is Sweden’s second largest city. Gothenburg is the core and growth engine of the Gothenburg region and Region Västra Götaland. It is home to a variety of strong industries and Scandinavia’s largest port.

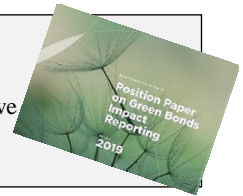
The City aims to be a green, open and vibrant where it’s easy for people to move about and meet up. A city where there’s also room for flora and fauna, and eco-system services. A city we can pass on to future generations with pride.

Gothenburg was in 2013 the first city in the world to issue green bonds to finance sustainability projects. In 2016 the city was awarded the United Nation’s climate award Momentum for Change. Other awards to Gothenburg include Sweden’s climate city 2015. In 2019 the City was awarded from The Swedish Environmental Protection Agency for our percervance and long-term perspective with the motivation: *With their strategic work for waste prevention in different sectors, they are a role model that others can follow.* Gothenburg also took 1st place in the Global destination sustainability index 2016, 2017 and 2018 (visitor’s industry).

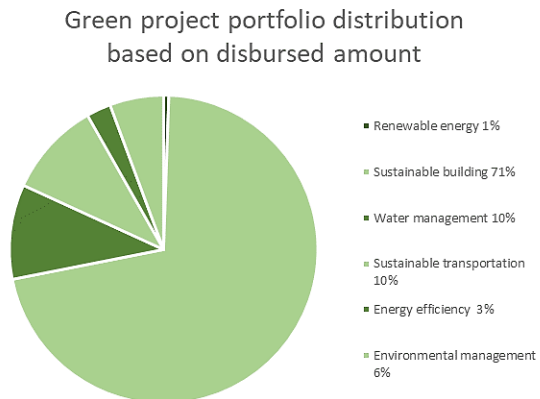
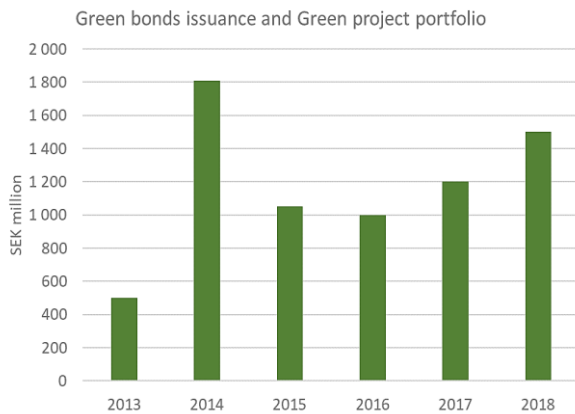


Photo: Peter Kvarnström

City of Gothenburg reports its Green Bonds impact in accordance with the *Nordic Public Sector Issuers: Position Paper on Green Bonds Impact Reporting*, published in October 2017, updated in January 2019, by a group of Nordic public sector green bond issuers. If we deviate from the Position Paper recommendations in our reporting, this will be indicated.



## Executive Summary, as of 31 Dec 2018



Project category	GHG emissions reduced/avoided, tonnes CO2e/year	Outstanding disbursed amount to projects, SEK mn	Impact, tonnes CO2e per SEK mn
Renewable energy	2090	38	55
Sustainable building	682	4917	0,14
Water management	n/a	685	n/a
Sustainable transportation	217	396	0,55
Energy efficiency	1356	177	7,7
Environmental management	n/a	389	n/a
<b>Total</b>	<b>4345</b>	<b>6602</b>	<b>n/a</b>
<b>Disbursed amounts with CO2 impact, SEKm</b>		<b>5528</b>	
<b>Impact, tonnes CO2e per SEK mn</b>			<b>0,8</b>
<b>Annual renewable energy generation, MWh</b>			<b>5500</b>
<b>Annual energy reduced/avoided MWh</b>			<b>7075</b>

\*This table presents the calculated impact in terms of CO2 reduced or avoided. Aggregated project data reported represent both ex-ante estimates and ex-post outcomes. For information on additional project impact, see page 12-14.

Impact attributable to green bond investors*	97,6%
* Total outstanding disbursed amounts to projects divided by total outstanding green bonds	
Whereof impact attributable to Green Bond SEK 250 mn maturing 3 October, 2019	3,46%
Whereof impact attributable to Green Bond SEK 250 mn maturing 3 October, 2019	3,46%
Whereof impact attributable to Green Bond SEK 1500 mn maturing 3 June, 2020	20,74%
Whereof impact attributable to Green Bond SEK 310 mn maturing 3 June, 2020	4,29%
Whereof impact attributable to Green Bond SEK 1050 mn maturing 3 June, 2021	14,52%
Whereof impact attributable to Green Bond SEK 1000 mn maturing 15 June, 2022	13,83%
Whereof impact attributable to Green Bond SEK 1200 mn maturing 14 June, 2023	16,59%
Whereof impact attributable to Green Bond SEK 500 mn maturing 5 November, 2024	6,91%
Whereof impact attributable to Green Bond SEK 1000 mn maturing 5 November, 2024	13,83%

### Key procedural aspects

- The City of Gothenburg's Green Project portfolio exclusively consists of loans to the administration and companies within the municipality.
- Each loan is selected according to the Green Bonds framework available at <http://finans.goteborg.se/en/greenbonds/green-bond-framework/>
- The City of Gothenburg reports on a portfolio basis, and in Swedish kronor (SEK)
- For this document, the reporting period ends on 31 December 2018

# UN Sustainability Goals

All the 17 global sustainable goals are relevant to the City of Gothenburg, but not all the 169 targets. The city has local goals and strategic documents that address the most important areas in the relevant targets. In the case of the project financed by the green bonds they primarily address goal: 3 Good health and well-being, 4 Quality education, 6 Clean water and sanitation, 7 Affordable and clean energy, 9 Industry, innovation and infrastructure, 11 Sustainable cities and communities, 13 Climate action and 14 Life below water.



## City of Gothenburg’s Green projects

The City of Gothenburg’s Green Bond eligible projects promote the transition to a low-carbon and climate resilient society. Some project examples include:

### Solar cells on all new roofs

The City of Gothenburg has adopted the target that by the year 2030 the city will produce 500 GWh renewable electricity. The City shall promote and facilitate small-scale production of renewable electricity by using the municipal roofs for solar production. The solar energy program states that the city premises administration, in new production and when refurbishing roofs according to maintenance plan, shall install maximum with solar cells on surfaces with good solar radiation, however taking into account operating efficiency which means that small plants are avoided.



City Premises Administration build energy efficient buildings and often in line with passive house standard. In addition, they make very high demands on the energy performance of the components that affect the energy consumption, such as energy saving light and energy-efficient appliances.

## Sweden´s largest solar park ‘Nya Solevi’



Foto: Paul Olsson

Sweden´s largest solar park ‘Nya Solevi’ has been built by Göteborg Energi at Säve airport. Nya Solevi covers an area of 11 hectares, equal to the size of 16 football fields combined.

The facility comprises 20,000 panels with an expected lifespan of 30 years, which will produce about 5.5 GWh of electricity every year. This is sufficient to power 1,100 private houses.

### **Sustainable Selma town hall**

Selma Town hall is housing a community service, library and leisure center, in addition to activities for senior citizens, a cultural school, a restaurant and daily activities.

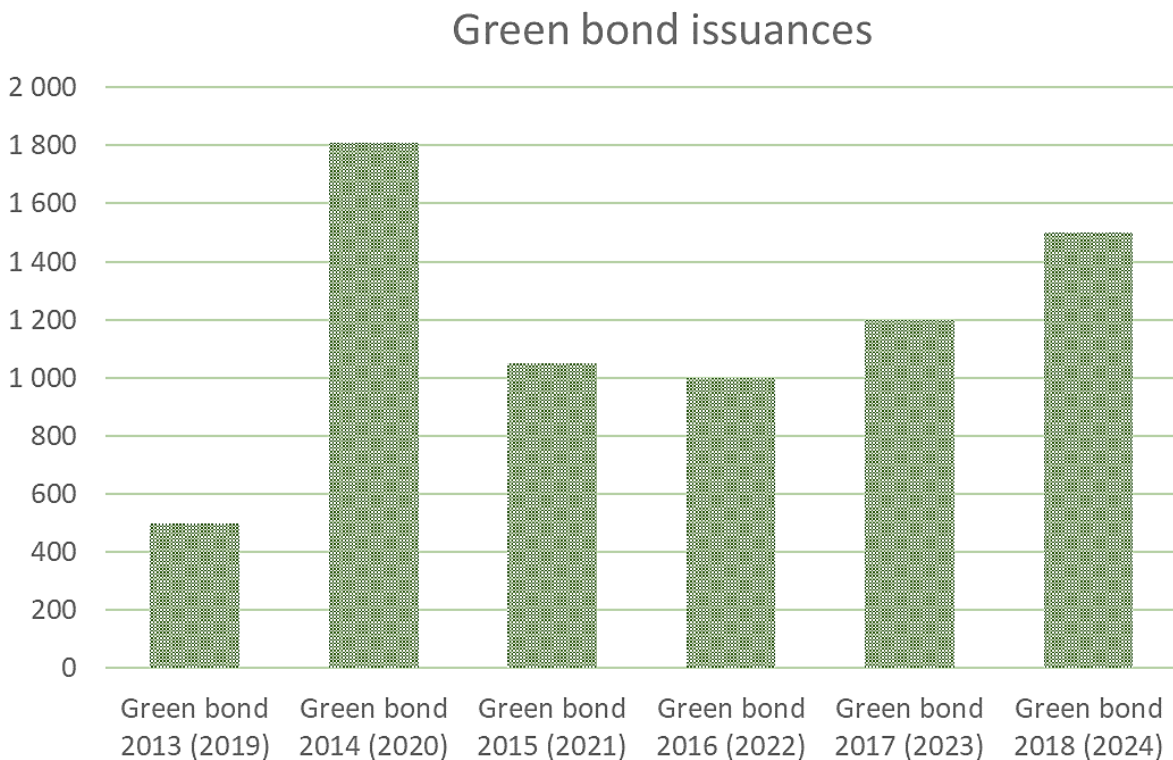
The vision is to be a welcoming and social environment full of life, and there are three overall sustainability aspects: Social, economic and environmental. The Town will be a natural meeting place in the community. The location of the building and the mixture of different amenities promotes a creative environment with opportunities for interesting and inspiring meetings between people with different background. In addition, it will be an energy efficient building with good indoor environmental climate and material choices.

The building is silver-certified by Sweden Green building Council, which means an energy consumption less than or equal to 75 percent of the Swedish building code. Regarding energy sources, there is also a requirement that at least 10 percent must come from renewable energy (environmental category 1) and less than 25 percent from non-renewable sources (environmental category 4).



Sketch: Selma Town Hall, White Arkitekter

## Green Bond Issuances



City of Gothenburg continues to issue new green bonds and the demand for the bonds have been strong. On November 5, 2018 the city issued two new green bonds, earmarked and dedicated to finance green projects defined within the city's framework for green bonds, and the transaction amounted to SEK 1,5 billion. Hence, since the first issuance on October 3, 2013, the City has issued Green Bonds on nine occasions raising a total of SEK 7 060 million of

funding supporting the transition to an ecological sustainable society. At the time of publication approximately 26 percent of the city’s outstanding bonds consists of Green Bonds.

The City of Gothenburg’s responsibilities, including its climate and environmental work, spans many different areas. This diversity is reflected in the city's portfolio of Green Bond eligible projects. In accordance with the city’s extensive and ambitious Environmental and Climate Programs the Green Bonds are emitted, aimed at financing projects in fields such as renewable energy, energy efficiency, public transportation, waste management and sustainable housing.

Chart: Yearly bonds issuance

SEK (bn)	Share of total outstanding green bonds	Issuance	Maturity	XS no
0,25	3,50%	2013-10-03	2019-10-03	XS0976165828
0,25	3,50%	2013-10-03	2019-10-03	XS0976166719
1,5	21%	2014-06-03	2020-06-03	XS1073521988
0,31	4,50%	2014-06-03	2020-06-03	XS1073488675
1,05	15%	2015-06-30	2021-06-03	XS1253847815
1	14%	2016-06-15	2022-06-15	XS1433082861
1,2	17%	2017-06-14	2023-06-14	XS1627778316
0,5	7%	2018-11-05	2024-11-05	XS1900629616
1	14%	2018-11-05	2024-11-05	XS1900633303

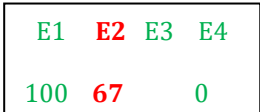
Table: Outstanding green bonds

### High credit ratings

City of Gothenburg continues to receive high credit ratings for the green bonds, GB1 from Moody’s (excellent, the highest rating possible) and E2 from Standard and Poor’s (the second highest rating). The city’s rigorous review and decision-making process, second party review, methods and criteria for calculating performance against targeted environmental results, audit by external party and ongoing annual reporting of all bonds is among other factors highlighted by Moody’s.



Standard and Poor’s underline the city’s transparent reporting, the use of a variety of key performance indicators for selected projects, transparency of project impact and special accounts for greens funds as being of substantial weight when assessing the rating.



Please read more at: <http://finans.goteborg.se>

## Second opinion

On March 12, 2015, CICERO, an independent research institute at the University of Oslo, issued a second opinion regarding the city's framework for green bonds. In the evaluation published by CICERO, it is concluded that the City of Gothenburg is taking important steps to reduce the city's carbon and environmental footprint. The city's framework and supporting environmental policies are described as transparent, comprehensive, long-term and robust. CICERO's previous evaluation of the city's work with green bonds was published in July 2013. Please read more at: (<http://finans.goteborg.se/greenbonds/second-opinion/>)



## Position paper on Green Bonds Impact Reporting

City of Gothenburg released together with a group of ten Nordic public-sector issuers a joint position paper on green bonds impact reporting. The Position Paper was launched at the OECD Green Investment Financing Forum in Paris on 24 October 2017. The second edition of the Position Paper was published in January 2019.



The paper proposes an outline for reporting environmental benefits of green bond investments. It provides guidance on general matters such as to report on actual impact when feasible, to distinguish between reduced and avoided emissions, and to report impact in relation to the share financed by green bonds. The paper also recommends issuers to report impact in relation to amounts disbursed and outstanding, as opposed to amounts committed.

Key impact reporting principles regarding financial, environment and procedural aspects are:

### Key financial aspects

- Reporting the shared finance
- Reporting impact in relation to invested monetary unit
- Bond-by-bond vs bond-programme reporting

### Key environmental aspects

- Reporting environmental impact
- CO<sub>2</sub>-baseline for electricity
- Baseline CO<sub>2</sub>-emission calculation for district heating
- Use national building standards as baseline for measuring impact of green buildings

### Key procedural aspects

- Annual reporting
- Executive summary
- Project information in spreadsheet format
- Report at geography and sector level



The objective of green bonds impact reporting is to provide transparent insight into the environmental performance of projects financed through green bonds. The document is focused on the environmental benefits associated with investment projects financed through green bond proceeds, notwithstanding the potential social co-benefits that such projects may bring.

**Green Bond eligible projects**

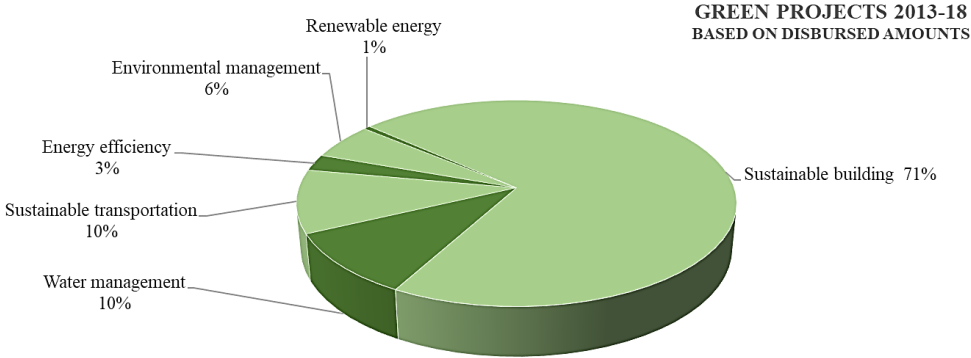
The proceeds from the Green Bonds are used to finance projects defined within the city's framework for green bonds. Eligible projects can be fully or partially funded by the city. Eligible Projects may include projects that target:

Mitigation	Adaption	Environment
Mitigation of climate change, including investments in low-carbon and clean technologies, such as energy efficiency and renewable energy programs and projects.	Adaptation to climate change, including investments in climate-resilient growth	To a smaller extent (max 20%), projects which are related to a sustainable environment rather than directly climate related can be included.

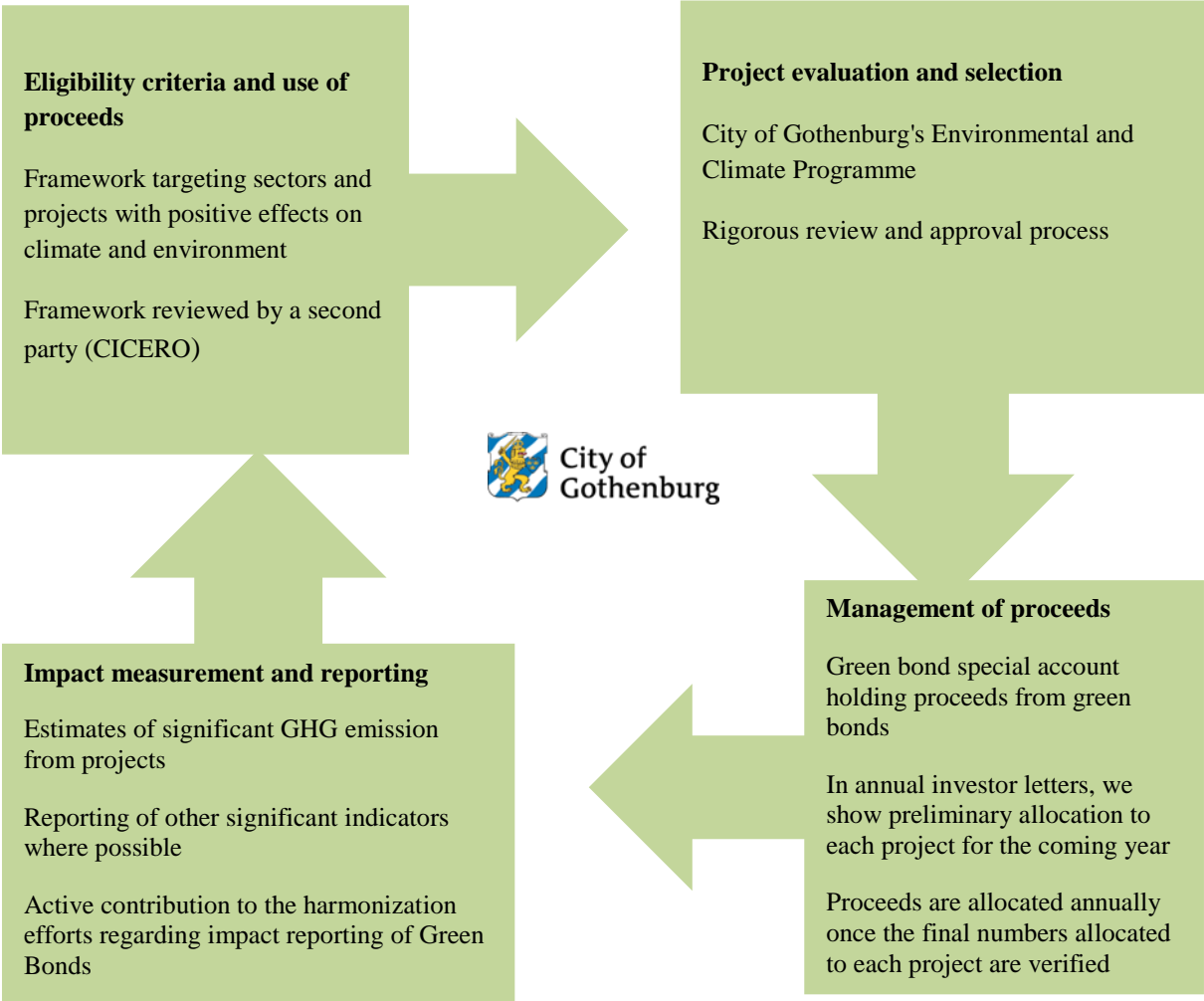
The framework established by the City of Gothenburg constitutes the basis for city’s work with green bonds. In 2015, the requirements for projects financed within the framework for green bonds were specified even further. This was done to assure that there are clear and concrete requirements placed upon the projects. Projects within the following sectors are included within the framework. If a project covers multiple sectors, the project is included in the main sector only, but target results will include all components of the project.

Sectors
Renewable energy (solar, wind, wave, bio, waste and hydro)
Energy efficiency
Waste management
Water management
Biofuel
Smart grids
Sustainable transportation (e.g. public transport, cycle and shipping infrastructure)
Sustainable housing (e.g. infrastructure and construction)
Environmental (max 20%) <ul style="list-style-type: none"> <li>• Biodiversity</li> <li>• Water clearing facilities</li> <li>• Air pollution</li> <li>• Chemicals</li> </ul>

Use of proceeds are allocated by sectors as shown in chart below.



**Selection process**



To identify Green Bond eligible projects, a rigorous review and approval process is in place to ensure that the projects are in line with the city's framework for green bonds and thus targeting

mitigation of and adaption to the effects of climate change and other important environmental aspects. In the City of Gothenburg experts regarding climate change and environmental work as well as financial expertise are involved in the selection process ensuring both green and secure investments.

Following dialogue with administrations and municipal companies within the city, the City Executive Office selects projects in accordance with the city's Environmental and Climate Programs and the city's framework for Green Bonds. The city's Environment Department provides environmental expertise and verifies the selections made by the City Executive Office. The City Executive Office then presents the final selection of projects eligible for funding with green bonds to the City Executive Board.

### **Reporting approach and how to interpret the results**

The City of Gothenburg is committed to transparent reporting of the projects financed within the city's framework for green bonds. The purpose of this impact report is to provide a more detailed understanding of the climate and environmental impacts that can be expected or are projected to result from the Green Bond eligible projects. Gothenburg has been a progressive stakeholder of developing the green bond market and investor reporting as an important part of that process. The city aims to follow all the key aspects of the Position Paper from the Nordic Public sector, but it will be a continuous process of development.

Estimations of impact indicators and projections of impacts are based on certain assumptions. The City of Gothenburg aims to make sound and conservative assumptions that are reasonably based on information available at the time. However, actual environmental impacts of projects may diverge from initial projections. Examples of this can be changes in law requirements, baseline conditions, behavior and slow start-up periods. Because of this, calculation methods and baseline assumptions may vary.

## 1. Renewable energy, energy efficiency, GHG reduction focused projects

### Impacts and allocated amounts

Name of Project	Administration/ Municipal company	Project start	Adaption/ Mitigation/ Environment	Sector	UN global goals	Annual energy savings MWh	Annual energy produced MWh	Renewable capacity added MW	Annual GHG emissions avoided tons of CO2 eq.	Project	Allocated amounts (msek)
<b>Electric cars</b>	Gatubolaget AB	2013	M	Sustainable transportation	11	n/a	n/a	n/a	190	<ul style="list-style-type: none"> <li>• 248 electric cars in the city carpool</li> <li>• 62 new cars in 2018</li> <li>• 356 tons of CO2 eqv saved, Swedish energy mix</li> </ul>	94
<b>Celsius</b>	Göteborg Energi AB	2014	M	Energy efficiency	9, 11	1015	n/a	n/a	386	<ul style="list-style-type: none"> <li>• District heating to ship and to white goods.</li> <li>• Better air quality (ship)</li> <li>• Less noise (ship)</li> <li>• Project promotes the use and optimization of district heating technology in Europe</li> </ul>	5
<b>Traffic lights energy efficiency</b>	Road Traffic administration	2015	M	Energy efficiency	9, 11	2339	n/a	n/a	970	<ul style="list-style-type: none"> <li>• Replacements of ineffective fittings have resulted in energy savings of over 60 %.</li> </ul>	172
<b>Sustainable buildings</b>	City premises administration	2014	M	Sustainable housing	11	1985 <sup>1</sup>	n/a	n/a	382**	<ul style="list-style-type: none"> <li>• Portfolio of new, energy efficient preschools, schools and retirement homes.</li> <li>• Less than 60 kWh/kvm</li> <li>• The buildings use green electricity</li> </ul>	2489
<b>Sustainable housing</b>	Förvaltnings AB Framtiden	2015	M	Sustainable housing	11	1664 <sup>1</sup>	n/a	n/a	300**	<ul style="list-style-type: none"> <li>• Portfolio of new, energy efficient apartment buildings.</li> </ul>	2189

										<ul style="list-style-type: none"> <li>The buildings use green electricity from wind and water labeled Bra Miljöval</li> </ul>	
<b>Sustainable housing</b>	GöteborgsLokaler	2018	M	Sustainable housing	11	-	n/a	n/a	-	<ul style="list-style-type: none"> <li>New, energy efficient building.</li> <li>Less than 75% of BBR</li> <li>Possible to install solar cells</li> </ul>	239
<b>Trams</b>	Göteborgs kommunleasing AB/Road Traffic administration		M	Sustainable transportation	9, 11	72	n/a	n/a	27*	<ul style="list-style-type: none"> <li>The ordered new trams are more energy efficient and can load more passengers.</li> <li>Calculated to be 30 % more energy efficient.</li> <li>Less noise</li> </ul>	302
<b>Nya Solevi/Solar Panels</b>	Göteborg Energi	2018	M	Renewable energy	7	n/a	5500	5500	2090*	<ul style="list-style-type: none"> <li>Renewable energy production</li> <li>Reduced GHG emission</li> </ul>	38

\* Projected results

\*\* Projected and actual results

n/a = Not applicable

- = No information

1. Electricity and district heating

**2. Other categories**  
**Impacts and allocated amounts**

Name of Project	Administration/ company	Project start	Adaption/ Mitigation/ Environment	Sector	UN global goals	Project	Allocated amounts (msek)
<b>Ultrafilter</b>	Department of sustainable waste and water	2013	A	Water management	3	<ul style="list-style-type: none"> <li>• Making the production of drinking water more resilient to climate change.</li> <li>• Prevented sick days which also entails lower social costs.</li> </ul>	570
<b>Denitrification</b>	Gryaab	2014	E	Environment	6, 14	<ul style="list-style-type: none"> <li>• Expansion of a water treatment plant to reach a higher denitrification rate.</li> <li>• Estimated reduction of nitrogen emissions is 350 tonnes/year</li> </ul>	356
<b>Tree planting</b>	Parks and landscape administration	2014	E (A/M)	Environment	11	<ul style="list-style-type: none"> <li>• Trees are planted in the city annually.</li> <li>• The project improves biodiversity, promotes a green cityscape and has a positive effect on urban air quality.</li> </ul>	33
<b>The Pedestrian City</b>	Road traffic administration	2015	M	Sustainable transportation	9	<ul style="list-style-type: none"> <li>• Improved conditions for pedestrians traveling in urban areas</li> <li>• Examples include: improved traffic security and accessibility for pedestrians traveling in the city</li> </ul>	109
<b>The Bicycle City</b>	Road traffic administration	2015	M	Sustainable transportation	9, 11	<ul style="list-style-type: none"> <li>• Project includes several improvements to the city's bicycle infrastructure</li> </ul>	181
<b>Sewage pump station, Kodammarna</b>	Eco-cycle and water administration	2017	M/A/E	Water Management	6	<ul style="list-style-type: none"> <li>• Decrease energy consumption by 30 % approx 0,5 GW/year. *</li> <li>• Decrease the overflow of sewage to the river Göta älv. *</li> <li>• Making the plant resilient to climate change, higher water levels. *</li> <li>• Possible to install solar cells on the roof. *</li> </ul>	115

\*Projected results

## Collected data and baselines

Electricity: 380 g CO<sub>2</sub>/kWh (Position paper on Green Bonds Impact Reporting)

District heating: 65 g CO<sub>2</sub> ekv/kWh (Environmental values for district heating delivered 2018, Göteborg Energi AB,

<https://www.goteborgenergi.se/DxF-50187741/Miljovarden-for-fjarrvarme-2018-Preliminar.pdf?TS=636846151397891198>

Cars: Baseline emission 150 g CO<sub>2</sub>/km (<https://www.anskaffelser.no/verktoy/effektkalkulator-varebiler>), mileage per car average 10000 km/year and 0,2 kWh/km