Kommuninvest Green Bonds Impact Report, December 2017

Report on 146 Swedish local government investment projects financed by Kommuninvest Green Bonds as of year-end 2017.

KOMMUNINVEST

CONTENTS

Comparison figures relate to the preceding year (1 January–31 December 2016) unless otherwise stated.

About this report

This report was written and compiled by:

- **Björn Bergstrand,** Head of Sustainability/ Senior Investor Relations Manager, Kommuninvest i Sverige AB
- **Erik Törnblom,** Analyst, Kommuninvest i Sverige AB

Any errors, omissions or otherwise are our responsibility.

Project impact reporting is based on data collected from financed projects during Q4-2017 and Q1-2018. The data has been reviewed by Kommuninvest however their accuracy has not been verified by neither Kommuninvest nor a third party. Climate impact calculations have been made by Kommuninvest, and their accuracy has not been verified by a third party.

The information has been reviewed and approved for publication by the Kommuninvest Environmental Committee, whose members are presented on page 19.

About Kommuninvest

Kommuninvest is a Swedish municipal cooperation set up in 1986 to provide cost-efficient and sustainable financing for local government investments in housing, infrastructure, schools, hospitals etc. The cooperation comprises 288 out of Sweden's 310 local governments, of which 277 municipalities and 11 county councils/ regions. Kommuninvest is the largest lender to the Swedish local government sector and the sixth largest credit institution in Sweden. At year-end 2017, total assets were SEK 357 billion (USD 43.4 billion[1]), with a loan portfolio of SEK 310 billion (USD 37.7 billion). The head office is located in Örebro.

1) USD/SEK=8.2322 as of 31 Dec, 2017

KOMMUNINVEST

www.kommuninvest.org

Cover page: Shutterstock

ISBN: 978-91-983081-3-6

The Sustainable Development Goals (SDGs), officially known as Transforming our world: the 2030 Agenda for Sustainable Development, are a set of seventeen aspirational global goals, with 169 specific targets, adopted through a United Nations resolution in September 2015.

The Kommuninvest Green Bonds Framework addresses six of the SDGs:

#6 Clean Water and Sanitation	**#7** Affordable and Clean Energy	**#9** Industry, Innovation and Infrastructure
#11 Sustainable Cities and Communities	**#13** Climate Action	**#15** Life on Land

Foreword by the Kommuninvest Green Bonds Environmental Committee

Dear reader,
We are pleased to provide you with Kommuninvest's second Green Bonds impact report.

2017 was an exciting year, with the global Green Bond market continuing to grow in spectacular fashion. The reports published by the Task Force on Climate-Related Financial Disclosures and the EU Commission's High Level Expert Group on Sustainable Finance were landmark events. Several investor coalitions regarding shareholder climate action were formed.

These initiatives clearly demonstrate what can be achieved when people join forces with a common objective. This is promising, given the challenges we all face due to climate change.

Kommuninvest seeks an active role in the development of Green Bond market practices, particularly with regards to impact reporting. Transparency, reliability and consistency of data are critical to further expand the Green Bond market and sustainable finance in general.

With the objective to increase harmonization among Nordic public sector issuers, Kommuninvest and nine other issuers in October launched a Position Paper on Green Bonds Impact Reporting, at the OECD Green Investment Financing Forum in Paris. The signatory issuers hope it will inspire qualitative and consistent impact reporting not only in the Nordic countries but also elsewhere. The recommendations of the position paper govern the contents of this report.

The Kommuninvest Green Bonds Framework was set up to support and promote climate change action within the Swedish local government sector. Kommuninvests introduced Green Loans in 2015, as a tool to finance green investments projects in eight areas of relevance. By year-end 2017, the Green Loan portfolio had grown to include 146 Eligible Projects in 80 municipalities and county councils/regions. Three Green Bonds have been issued to great demand.

All Eligible Projects have been reviewed by us, the Kommuninvest Green Bonds Environmental Committee1. The Committee's role includes audit and final approval of Green Loan applications as well as reviewing and deciding on

From left to right: Björn Söderlundh, Head of Lending, Kommuninvest; Marta Fallgren, Environmental Manager., Uppsala County Council; Sara Pettersson, Urban Development Officer, City of Gothenburg; Susanne Arneborg, Strategic Urban Planner, Municipality of Borås; Petra Mangnäs, Client Manager, Kommuninvest (resigned in 2017); Hanna Arneson, Sustainability Manager, Municipality of Örebro; Andreas Hagnell, Senior Advisor Environment and Energy, Swedish Association of Local Authorities and Regions. Petra Mangnäs has been replaced by Daniel Nykvist and Ann Sörman, see page 14.

reporting matters. As this report shows, project impacts correspond to considerable reduced and avoided CO_2 emissions, primarily from renewable energy generation and energy efficiency in buildings and energy systems, as well as additional environmental impact from water management, public transportation and waste management projects.

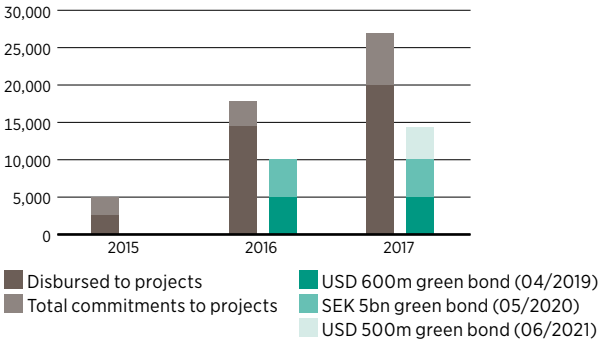
As Sweden's largest local government lender, Kommuninvest has both an opportunity and a responsibility to support its owners and customers in their efforts to transition to a fully sustainable society. Kommuninvest's role as an aggregator of green funding needs was recognized at the UN climate summit in Bonn in November 2017, as one of the winners of the UN 'Momentum for Change' Climate Solutions Award.

This award provides further impetus to continue to build the Kommuninvest green finance platform, in close collaboration with clients, investors and other stakeholders.

Executive Summary, as of 31 Dec 2017

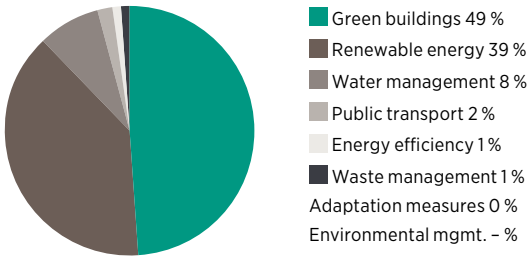
Green bonds issuance and Green project portfolio

SEK million



Green project portfolio distribution

based on disbursed amounts



CO_2 impact and Green indicators, based on outstanding disbursed amounts[1]

Project category	GHG emissions reduced/ avoided, tonnes CO_2e/year	Outstanding disbursed amounts to projects, SEK mn	Impact, tonnes CO_2e per SEK mn
Renewable energy	487,678	7,692	63
Green buildings	3,693	9,778	0.4
Energy efficiency	22,355	235	95
Public transportation	732	470	2
Waste management	486	125	4
Water management	n/a	1,587	n/a
Adaptation measures	n/a	16	n/a
Total	**514,944**	**19,903**	**n/a**
Disbursed amounts with CO_2 impact, SEKm		**18,300**	**28.1 tCO_2e/SEKm p.a.**
Annual renewable energy generation, GWh			**2,059 GWh p.a.**
Annual energy reduced/avoided, MWh			**137,105 MWh p.a.**

1) 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, see pages 26-43. For information on additional project impact, see page 21.

Impact attributable to green bond investors*	72%
Whereof impact attributable to Green Bond USD 600 mn maturing 23 April, 2019	25%
Whereof Impact attributable to Green Bond SEK 5 bn, maturing 5 May, 2020	25%
Whereof Impact attributable to Green Bond USD 500m, maturing 1 June, 2021	22%

* Total outstanding green bonds divided by total outstanding disbursed amounts to projects (in SEK). F/X rate as per date of Green Bonds issuance.

Kommuninvest reports its Green Bonds impact in accordance with the Nordic Public Sector Issuers: Position Paper on Green Bonds Impact Reporting, published in October 2017 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.

Key procedural aspects

- Kommuninvest's Green Project portfolio exclusively consists of loans to Swedish municipalities and county councils/regions.
- Each loan is selected according to the Kommuninvest Green Bonds Framework (see pages 17 and 19) and also available on our Green Bonds website.
- Kommuninvest reports on a portfolio basis, and in Swedish kronor (SEK). F/X rate as per date of Green Bonds issuance.
- For this document, the reporting period ends on 31 December 2017.

Key reporting methodology

- Kommuninvest reports on the basis of the share of the project's total investment cost financed with green bonds (net of redemptions).
- Impacts are based on outstanding disbursed amounts to projects.
- Total amounts committed (net of redemptions) are indicated for reference.

PHOTO: ARCHUS ARKITEKTUR

Project #15: Högås school – Sweden's first school built as a passive house, Knivsta

Client: Kommunfastigheter i Knivsta AB (Knivsta Municipal Property Company)

Investment cost: SEK 163.5 million

Green loans from Kommuninvest (disbursed amounts): SEK 150 million

Completed (year): 2015

Total energy use: 21 kWh/m^2

Total energy requirement (BBR 21): 80 kWh/m^2

Estimated CO_2 emissions reductions: 64 tonnes CO_2e per year (based on Kommuninvest's share of the financing)

Impacts: Built as a passive house in order to minimize life-cycle costs, the Högås school in Knivsta municipality has lived up to expectations. In actual use, the heat demand has been measured at 8 kWh per m^2 and year, far below the passive house requirement of 15 kWh per m^2. The school accommodates 540 students.

Project #31: New surgery center at the main hospital in Karlstad

Client: Värmland County Council

Investment cost: SEK 1,500 million

Green loans from Kommuninvest (disbursed amounts): SEK 980 million

Completed (year): 2016

Total energy use: 83 kWh/m^2

Total energy requirement (BBR21): 158 kWh/m^2

Estimated CO_2 emissions reductions: 24 tonnes CO_2e per year

Impacts: The surgery center has a LEED Healthcare Gold certification, in recognition of its focus on both the health of the patient and the health of the environment. A complete redesign of the patient experience aims to result in higher care quality for patients, while a built-in flexibility of facilities is intended to yield higher capacity and productivity.

PHOTO: VÄRMLAND COUNTY COUNCIL.
Staged photo with plastic human dummy on operating table.

Paris targets and the role of Swedish local governments

Sweden aims to be one of the world's first fossil fuel-free welfare nations. By 2030, Sweden aims to have reduced its emissions by 63 percent compared with 1990; by 2045 Sweden should have no net emissions of greenhouse gases into the atmosphere. The overall objective of Sweden's environmental policy is to hand over to the next generation a society in which our country's major environmental challenges have been solved, without increasing negative environmental and health effects outside Sweden.

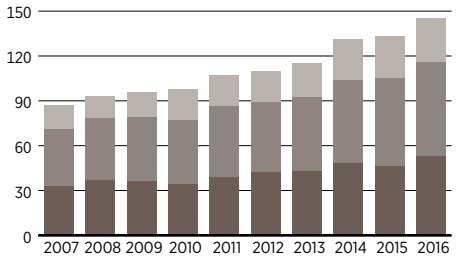
To a large degree, Sweden's efforts are led by the local government sector, which accounts for the majority of public sector investments and which are responsible for the management of many of the welfare services Swedish citizens encounter on a daily basis, including education, childcare, healthcare, water management, waste management, local transport, etc. The local governments are also major employers. Of the total number of jobs in Sweden in 2016, municipalities, municipal companies and county councils/regions accounted for some 25 percent.

Swedish local government investments have been growing steadily over the past ten years, and are expected to continue to grow, due to strong population growth, urbanization trends and demographic changes. To a large degree, investments are focused on investment areas where ambitious environmental objectives can be demonstrated, including commercial and residential real estate, water management, waste management, clean transportation, energy supply and other infrastructure.

More than 90 percent of Sweden's municipalities have set out own environmental targets or adopted national or regional goals. In addition to the major investments in green infrastructure that they undertake, local government are responsible for city planning and infrastructure and for environmental supervision.

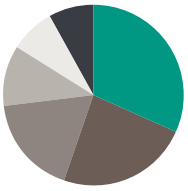
Local government investment volumes

SEK bn



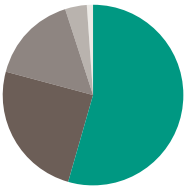
Municipalities
Municipal companies
County councils/regions and their companies

Distribution of investment in municipal groups, 2016



Properties 32 %
Housing 24 %
Infrastructure 18 %
Water/sewerage 11 %
Energy 8 %
Other 8 %

Distribution of investment in county council groups, 2016



Properties 55 %
Infrastructure 25 %
Medical equipment 16 %
Other 4 %
Public transport 1 %

Kommuninvest – a provider of sustainable finance

The role of Kommuninvest, a credit institution owned by 288 out of Sweden's 310 local governments, is to provide stable and cost-efficient funding for local government investments. Of the external financing undertaken by Swedish local governments, Kommuninvest accounted for 50 percent as of year-end 2017.

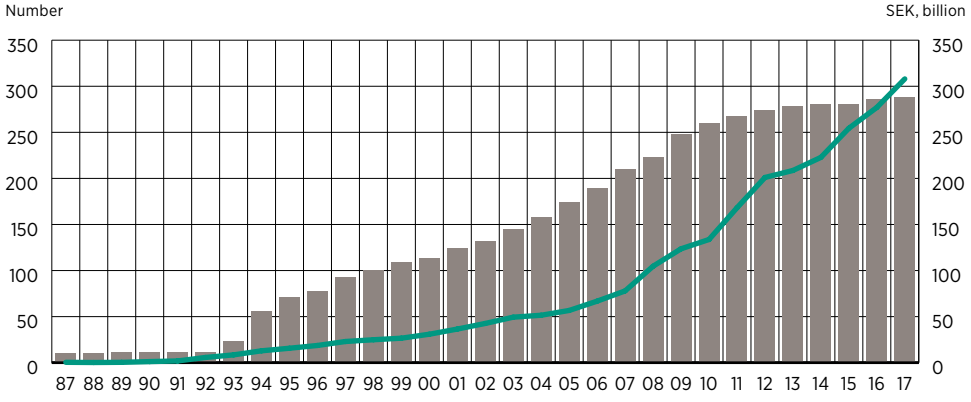
Kommuninvest considers its basic aggregation model for financing local government investments to be its most important contribution in terms of sustainability. Kommuninvest's intermediary role between local governments and capital markets makes it possible to finance all the welfare investments carried out among our members and customers – in new schools and housing, in energy production and other infrastructure – in an economically sustainable fashion.

Kommuninvest's financing takes the form of both labelled green financing, ie. Green Loans for green investment projects, and non-labelled financing, for traditional balance sheet financing. From the start in 2015, Green Loans have increased to represent 6.5 (5.3) percent of Kommuninvest's total lending.

Green Loans are important tools as Kommuninvest seeks to apply finance in support of its clients' efforts to transform the Swedish society to a low-carbon and resilient future, and other important environmental challenges. Kommuninvest, in turn, funds the Green Loans by issuing Green Bonds in national and international capital markets.

Behaving ethically and taking responsibility for economic, environmental and long-term sustainable social development are fundamental elements of Kommuninvest's sustainability efforts. We also seek to promote a dynamic dialogue and communications with stakeholders about this work. Additional information can be found in the Sustainability Report section of the Kommuninvest Annual Report 2017, see pages 10–22.

Number of members and lending volume, 1987–2017



An increased number of members in the Society, and members choosing to place an increasingly large share of their borrowing the Company, are the foremost reasons for the historical growth in lending.

Number of members of the Kommuninvest Cooperative Society

Lending by Kommuninvest i Sverige AB

UN award for Swedish municipalities

At the UN climate conference COP23, in Bonn in November 2017, the Swedish local government sector received the UN's Momentum for Change Climate Solutions Award for the green financing model developed by Kommuninvest and its members.

There to receive the prize was Margareta Rönngren, Deputy Chairman of the municipal executive board in Umeå, and Björn Bergstrand, Head of Sustainability at Kommuninvest. Kommuninvest was one of the three winners nominated in the category Financing for Climate Friendly Investment. According to the UN, the Kommuninvest green finance model is an example of a concrete, innovative and scalable solution by which others can be inspired.

Environmental indicators

Kommuninvest Group (ie. including Kommuninvest Cooperative Society, the parent organisation, and Kommuninvest i Sverige AB, the credit market company)

		2017	2016	2015
Energy consumption				
Total energy consumption (in buildings)	kWh	585,678	463,034	406,160
– of which, electricity	kWh	333,210	295,084	298,087
– of which, heating	kWh	252,468	167,950	108,073
Proportion of renewable energy in energy consumption of electricity	%	100	n/a	50
Change in electricity consumption compared to the preceding year[1]	%	13	-1	-8
Proportion of renewable energy in energy consumption for heating	%	100	n/a	95
Total office space	m^2	2,217	2,217	1,498
Total energy consumption per square metre	kWh/m^2	264	209	271
Total energy consumption per employee	kWh	6,436	5,447	5,207
Purchased office paper	Tonnes	0.5	0.8	1.3
– of which sustainability labelled paper (PEFC)	Tonnes	0.5	0.8	1.3
Proportion of sustainability labelled office paper, of total purchases	%	100	100	100
Total paper consumption per employee	Kilos	11.0	11.8	12.8
Paper recycling, incl. purchased and delivered paper	Tonnes	3.0	2.4	2.1
Total business travel	Km	887,488	1,319,646	1,081,226
Total business travel per employee	Km	9,753	15,525	13,862
Total air travel	Km	591,480	992,144	770,526
Rail travel in Sweden	Km	291,456	327,162	305,287
Total CO_2 emissions from business travel	Tonnes	139.2	231.7	177.3
CO_2 emissions from business travel, per employee	Tonnes	1.5	2.7	2.3

1) Kommuninvest expanded into larger office space in 2017. During 2016, the new office space was under renovation, and was not used as regular offices.

Project #135: Ängen wastewater treatment facility, Lidköping

Client: Lidköping Municipality

Investment cost: SEK 575 million

Green loans from Kommuninvest (disbursed amounts): SEK 250 million

Completed (year): 2021

Impacts: The new Ängen wastewater treatment facility will provide high-quality sewage treatment to some 61,000 p.e. in Lidköping municipality, while helping to reduce the city's carbon footprint and protecting the environment. Emissions of nitrogen, phosphorus and BOD are expected to be reduced by 53–63%, production of biogas to amount to >565,000 Nm^3 per year, and energy use per m^3 of wastewater treated to be reduced by 18%.

PHOTO: LIDKÖPING MUNICIPALITY

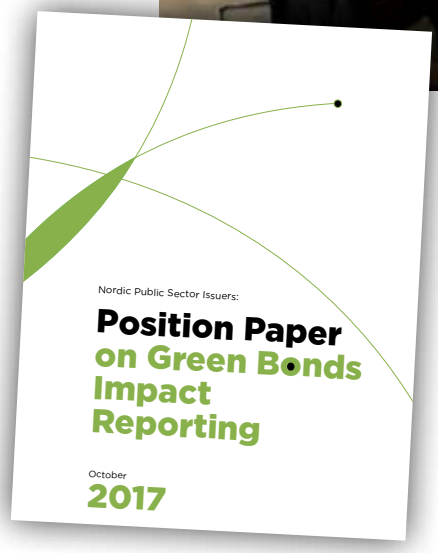
Nordic position paper on Green Bonds impact reporting

As the Green Bond market has been growing rapidly in recent years, ensuring transparency and integrity in reporting has surfaced as a key concern. Indeed, reporting on the use of proceeds from Green Bonds is a core pillar in the Green Bond Principles. Yet, limited reporting guidance has been available to issuers. Uncertainty regarding investor expectations, applicable indicators and assumptions, etc., has constituted a barrier to new issuers and a headache to existing ones. From an investor perspective, inconsistency in issuers' approaches to Green Bond reporting limits constructive use of the information disclosed.

With this backdrop, in 2016, ten Green Bond issuers from the Nordic public sphere formed a working group determined to develop a joint approach to Green Bonds impact reporting. In October 2017, the Nordic Public Sector Issuers: Position Paper on Green Bonds Impact Reporting ("Nordic Position Paper") was released at the OECD Green Investment Financing Forum in Paris. While the initial idea was to harmonise signatory issuers' reporting, the document has gained international attention and has proved relevant to issuers even outside the Nordics.

The Nordic Position Paper offers a unified methodology for reporting on the environmental impacts from projects types typically financed by Nordic public sector Green Bond issuances. Furthermore, the Paper establishes general reporting principles that may be useful to issuers regardless of their sector and geographies.

The Nordic Position Paper can be accessed at www.kommuninvest.se. Feedback can be given to ir@kommuninvest.se



Launched at the OECD Green Investment Financing Forum, Paris October 2017
The Nordic Position Paper was launched in Paris in October 2017, with subsequent events held in London, Stockholm and Oslo to introduce the paper to institutional investors.

"Trend setter in promoting impact reporting"

Climate Bonds Initiative: "Nordic and Baltic Public Sector Green Bonds", 2018

Ann Sörman, Customer Relationship Manager

Björn Söderlundh, Head of Lending

Daniel Nykvist, Customer Relationship Manager

Erik Törnblom, Analyst

Björn Bergstrand, Head of Sustainability/ Senior Investor Relations Manager

Kommuninvest Green Team

The Kommuninvest Green Bonds and Green Loans Programme engages numerous staff across company functions, including lending, debt management, investor relations, sustainability, communications, IT, and research. A smaller group of people are engaged in the Programme on a daily basis. They include Ann Sörman, Customer Relationship Manager, Erik Törnblom, Analyst, and Daniel Nykvist, Customer Relationship Manager. The Programme is co-led by Björn Söderlundh, Head of Lending and Björn Bergstrand, Head of Sustainability/Senior Investor Relations Manager.

Project #134: The Säve House

Client: Region Gotland

Investment cost: SEK 270 million

Green loans from Kommuninvest (disbursed amounts): SEK 250 million

Completed (year): 2017

Total energy use: 37 kWh/m^2

Total energy requirement (BBR21): 80 kWh/m^2

Estimated avoided CO_2 emissions: 70 tonnes CO_2e per year

Impacts: An old school building has been completely renovated and expanded, with solely the frame and the foundation kept from the old construction. Now home to the Wisby high school, the Säve House also houses the island of Gotland's culture school. Environmental Building Gold certification, with energy use amounting to 46% of the building code requirement.

PHOTO: MIKAEL MARMONT

Green Bonds issuance

Kommuninvest Green Bonds are an opportunity to invest in Swedish climate solutions through a triple-A rated fixed income product, explicitly guaranteed by the members of the Kommuninvest Cooperative Society. The triple-A credit quality of the Green Bonds is the same as for any other Kommuninvest bonds, with standard documentation and a 2nd party opinion from Cicero, the climate and environmental research institute.

As of 31 December 2017, Kommuninvest[1] had issued three Green Bonds, for a total of SEK 14.0 (10.4) billion. The inaugural Green Bond, a 3-year USD 600 million transaction, was issued in March 2016. The second bond, and the first to be issued in SEK, was issued in October 2016, a short 4-year transaction amounting to SEK 5 billion. The third Green Bond was a 4-year USD 500 million issued in May 2017.

As of 31 December 2017, Kommuninvest was the largest Swedish issuer of USD Green Bonds, and had also issued the largest SEK Green Bond to date. Funds raised by Kommuninvest Green Bonds support the transition to low-carbon and climate resilient growth, by financing climate friendly investments projects undertaken by Swedish local governments. 4.2 (2.9) percent of outstanding borrowings were in the form of Green Bonds.

Kommuninvest Green Bonds are rated AAA/Aaa by S&P Global Ratings and Moody's, similar to Kommuninvest's other outstanding bonds. In September 2017 and March 2018, the rating institutes confirmed Kommuninvest's credit rating, with a stable outlook. The rating agencies highlight the joint and several guarantee undertaking by Kommuninvest's ultimate owners (288 Swedish local governments), the robust liquidity reserve with access to central bank funding, and the high quality of the loan portfolio.

Kommuninvest Green Bonds

Issue date	Amount issued	Maturity	Coupon	ISIN
15 March 2016	USD 600 mn	23 April, 2019	1.50% (semi-annually)	XS1383831648 (RegS) US50046PAU93 (144A)
16 October 2016	SEK 5 billion	5 May, 2020	0.00% (annually)	XS1508534861
16 May 2017	USD 500 mn	1 June, 2021	1.875% (semi-annually)	XS1618289802 (RegS) US50049GAB86 (144A)

1) Kommuninvest refers to Kommuninvest i Sverige AB (publ), a credit market company which is wholly owned by the Kommuninvest Cooperative Society and explicitly guaranteed by the Society's members, 288 Swedish local governments.

Use of proceeds

Kommuninvest's Green Bonds finance investment projects undertaken by our member municipalities and county councils/regions.

Eligible projects must:
- promote the transition to a low-carbon and climate-resilient society;
- be part of the systematic environmental work in the applicant municipality or county council/region;
- be related to Sweden's national environmental objectives, or to regional environmental goals.

Eligible projects target:
(a) mitigation of climate change, including investments in low-carbon and clean technologies, or
(b) adaptation to climate change, including investments in climate-resilient growth, or
(c) projects related to environmental management in other areas than climate change (max. 30 percent of issued volume).

At year-end 2017, Kommuninvest had committed funding for 149 (81) green projects, in seven out of eight framework categories. As a result of two projects (#67 and #110) being under review for possible non-compliance with framework requirements and one project having withdrawn their need for funding, 146 (81) projects are included in the portfolio of Eligible Loans.

The total disbursements for these 146 (81) projects were SEK 19.9 (14.5) billion, while total commitments were SEK 26.6 (17.8) billion.

Projects in the categories Green Buildings and Renewable energy accounted for 49 (41) percent and 39 (49) percent of disbursements, respectively. Water management projects accounted for 8 (4) percent of disbursements, while Public transportation projects and Energy efficiency projects accounted for 2 (3) and 1 (2) percent, respectively. Waste management and Adaptation projects accounted for less than 1 (1) percent and 0 (–) percent, respectively. There had been no applications for projects in the Environmental management category.

Commitments by category, 31 December 2017

Project category	Committed, SEK mn	Disbursed, SEK mn	# projects
Renewable energy	9,859	7,692	39[1]
Energy efficiency	235	235	3
Green buildings and energy efficiency	12,657	9,778	86
Public transportation	471	470	4
Waste management	125	125	1
Water management	3,219	1,587	12
Adaptation measures	16	16	1
Environmental management	0	0	0
Total	**26,582**	**19,903**	**146**

1) A number of Eligible Projects refer to the same physical investment project. As a consequence, the project-by-project impact reporting, on pages 26-29 in this document, names 33 projects, compared with 39 Eligible Projects for which funding has been provided.

New and refinanced projects

Kommuninvest deploys a bottom-up approach to green financing, whereby Eligible Projects are identified and pre-financed first, and Green Bonds are issued as the second step. This approach has a number of distinct advantages:

i) It enables Kommuninvest to manage its Green Loans and Green Bonds Framework in a conservative manner, with the size of the portfolio of approved Eligible Projects guiding the volume of Green Bonds issuance. As a rule, Kommuninvest aims for aggregated Green Bond Proceeds not to exceed total disbursements to Green Loans. Green Bond proceeds and disbursements to Green Loans are tracked by Kommuninvest according to internal instructions, with independent assurance performed by Kommuninvest's auditors.

ii) It provides investors with transparency regarding which Eligible Projects the Green Bonds will finance, including the composition of green assets, as well as assurance that Green Bond proceeds will be matched to actual Green Loan disbursements.

With this model, it could be argued that all Green Bond proceeds are used for refinancing. Moreover, the relatively short duration of Green Loans means that parts of the Green Loans portfolio will likely be refinanced during the lifetime of the Green Bond.

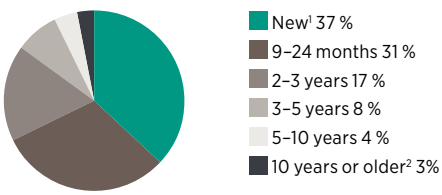
In Kommuninvest's case, the refinanced portion is therefore less relevant. To guide stakeholders with regards to the share of green bonds proceeds that are allocated to new projects, Kommuninvest provides information on the physical age of the financed projects. We also provide information on the maturity profile of outstanding Green Loans, to serve as a guide on expected refinancing activity within the portfolio of Green Loans.

As of 31 December 2017, 37 percent of the Eligible Projects were deemed new (ie. planned, under construction, or no more than 9 months old at the cut-off date). 31 percent of the Eligible Projects were 9-24 months old. In total, 85 percent of the Eligible Projects were less than 3 years old. Our ambition is for a substantial portion of Green Bond proceeds to be allocated to new Eligible Projects.

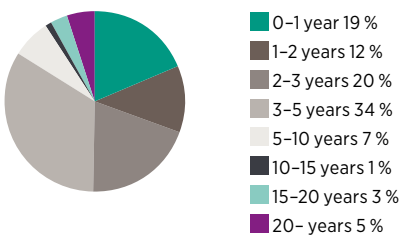
The average duration in the Green Loans portfolio (amounting to SEK 19.9 billion in disbursements) was 4.2 years. The distribution of scheduled redemptions is shown in the graph below.

Age distribution of Eligible Projects, as of 31 Dec 2017

based on project completion date and disbursed outstanding amounts



Maturity profile Green Loans, as of 31 Dec 2017



1) Planned, on-going or a maximum of nine months has passed since completion

2) Adjusted to include projects where project completion date refers to the transaction date (see page 26 and projects #12, #51, #144 – acquisition finance for hydro power stations).

Process for project evaluation and selection

Green Loan applications from Kommuninvest clients are reviewed and finally approved by an advisory committee – the Kommuninvest Green Bonds Environmental Committee – comprising Swedish local government climate specialists.

Investment projects are initially identified, verified and selected by the environmental functions and treasury departments in Kommuninvest's member municipalities/county councils. Eligible projects are then screened by Kommuninvest's Lending department, and, on a quarterly basis, reviewed and finally approved by consensus vote in the Kommuninvest Green Bonds Environmental Committee.

The Committee consists of representatives from the environmental function of two or more member municipalities and county councils/regions, environmental experts from other relevant public sector organisations or academia/non-governmental organization, and from Kommuninvest's management and lending group.

From left to right: Sara Pettersson, City of Gothenburg; Susanne Arneborg, Municipality of Borås; Björn Söderlundh, Kommuninvest; Hanna Arneson, Municipality of Örebro; Andreas Hagnell, Swedish Association of Local Authorities and Regions; Marta Fallgren, Uppsala County Council; Petra Mangnäs, Kommuninvest (Petra resigned in 2017 and was replaced by Daniel Nykvist and Ann Sörman, see page 14.

Committee members

- Andreas Hagnell, Senior Advisor Environment and Energy, Swedish Association of Local Authorities and Regions (SALAR)
- Susanne Arneborg, Strategic Urban Planner, Municipality of Borås
- Marta Fallgren, Environmental Manager, Uppsala County Council
- Sara Pettersson, Urban Development Officer (with focus on Climate and Environment), City of Gothenburg
- Hanna Arneson, Sustainability Manager, Municipality of Örebro
- Björn Söderlundh, Head of Lending, Kommuninvest
- Daniel Nyqvist, Client Manager, Kommuninvest
- Ann Sörman, Client Advisor, Kommuninvest

For further information on the Committee members, see the Green Bond section of Kommuninvest's webpage.

Eligible project categories

Eligible projects are Swedish local government investment projects in the fields of

- Renewable energy
- Energy efficiency
- Green buildings
- Clean transportation
- Waste management
- Water management
- Adaptation measures in buildings, infrastructure and sensitive surroundings
- Environmental management.

Project #123: Aspö Ekologi – ecological residential district, Skövde

Client: Skövde Municipality

Investment cost: SEK 430 million

Green loans from Kommuninvest (disbursed amounts): SEK 350 million

Completed (year): 2018

Total energy use: 43 kWh/m^2

Total energy requirement (BBR21): 90 kWh/m^2

Estimated CO_2 emissions reductions: 75 tonnes CO_2e per year (based on disbursed amounts and Kommuninvest's share of financing)

Impacts: Aspö Ekologi is a residential district where a comprehensive ecological approach has governed the whole construction process and where social diversity aspects has formed an integrated part. The area includes housing for the elderly and a pre-school, as well as a number of features to support a sustainable lifestyle.

Certifications: Nordic Swan Ecolabel, Environmental Building Gold, Feby12 passive house standard.

ILLUSTRATION: WEC360

Impact results

2.1 TWh
487,678 tCO_2

Renewable energy generation

SEK 7.7 billion disbursed and outstanding (SEK 9.9 bn in total commitments) to 39 renewable energy projects is expected to result in 2.1 TWh of annual renewable energy generation. This corresponds to the avoidance of nearly 490,000 tonnes in annual CO_2 emissions.

26.3 GWh
3,693 tCO_2

Energy reduced/avoided in green buildings

SEK 9.8 billion disbursed and outstanding (SEK 12.7 bn in total commitments) to 86 green building projects is expected to generate 26.3 GWh of energy reduced/avoided and resulting in an expected annual reduction in CO_2 emissions corresponding to 3,693 tonnes. On average, the funded new residential projects are expected to consume 41 % less energy than required by the national Swedish building regulations, with an average energy consumption of 60 kWh per sq.m., while the funded new non-residential projects are expected to consume 56 % less energy, with an average energy consumption of 47 kWh per sq.m.

110.8 GWh
22,355 tCO_2

Energy savings from energy efficiency projects

SEK 0.2 billion disbursed and outstanding (SEK 0.2 bn in total commitments) to three energy efficiency projects, expected to result in 22,355 tonnes in annual CO_2 emissions savings. Projects are related to energy efficiency measures in local district heating systems.

Other impacts (water, waste, public transport, adaptation)

SEK 2.2 billion disbursed and outstanding (SEK 3.8 bn in commitments) to 18 projects in areas encompassing water management, public transportation, energy efficiency and waste management. The impact of these projects is broadbased. In water management, they include:

- reducing emissions of phosporus, nitrogen and BOD emissions;
- modernising sludge treatment:
- reducing energy consumption in wastewater treatment;
- increasing production of biogas.

146 eligible projects 80 Swedish local governments

By year-end 2017, Kommuninvest's portfolio of Eligible Loans was related to 146 (81) green investment projects in 80 Swedish municipalities and county councils/regions. Total disbursements to projects stood at SEK 19.9 (14.5) billion, while total committed funding was SEK 26.6 (17.8) billion.

These number differ from those reported in Kommuninvest's Annual Report 2017, due to the exclusion of three projects in connection with the impact reporting from clients (see page 17).

Impact reporting methodology

Introduction

The purpose of this impact report is to illustrate the positive climate and environmental impacts that have resulted or are projected to result from projects financed through Kommuninvest's Green Bonds framework for Green Bonds. Kommuninvest is committed to transparent reporting and conservative assessments when reporting these results.

As of 31 December 2017, Kommuninvest had financed Eligible Projects in seven out of eight project categories: Renewable energy; Energy efficiency in energy systems; Green buildings and energy efficiency; Public transportation; Waste management; Water management; and Adaptation measures.

Investments in these categories, save for Adaptation measures, typically lead to direct reductions in greenhouse gas emissions, primarily through energy savings, or reduce energy consumption and thereby indirectly reduce greenhouse gas emissions.

Interpret results with caution

A number of key result indicators including indicators targeting renewable energy generation, energy savings and reduced and avoided GHG emissions have been selected and where possible quantified. However, it is important to consider the following aspects in order to adequately interpret the reported results:

- Uncertainty and comparability: Estimations of impact indicators and projections of impacts are based on certain assumptions. Kommuninvest aims to make sound, conservative and reasonable assumptions based on, inter alia, current information and data provided by its borrowers. Actual results may differ from initial projections as a result of unforeseen project outcomes, behavior and slow start-up periods.
- Qualitative results: The projects listed within this report may have impacts across a wider range of indicators than those included in this report. Where quantitative data is unavailable, qualitative data, to the extent possible have been included to illustrate the type and direction of other beneficial impacts.
- Ex-ante and ex-post: Both impact analysis (ex-ante) and impact reporting (ex-post) will be used to report the impacts of a project. Kommuninvest aims to report actual results where feasible, and has included information to that effect in the project disclosure tables below. In line with the requirements of the Kommuninvest Green Bonds Framework, all Eligible Projects must promote the transition to a low-carbon and climate-resilient society.

Adhering to harmonised guidelines

The impact indicators summarized in this report focus on results deemed relevant to Green Bond investors, and seeks to be aligned with the recommendations outlined in the Nordic Position Paper[1] (see page 13). In many respects, this means alignment also with the IFI Harmonized Framework for Impact Reporting[2], published by a group of international financial institutions. The indicators are intended to illustrate the type and scale of expected results in a variety of projects. It is important to note that, because of the wide range of project categories, comparability between projects (and other project portfolios) may be limited.

Calculation of climate impact

The environmental impact of Eligible Projects is calculated using actual or estimated annual impact, compared to an alternative base scenario where the investment has not taken place or where it has been completed solely meeting regulatory requirements.

1) Nordic Public Sector Issuers: Position Paper on Green Bonds impact reporting, October 2017

2) International Financial Institutions (IFIs): Green Bonds, Working Towards a Harmonized Framework for Impact Reporting, December 2015

The impact of reduction in greenhouse gas emissions is measured in CO_2-equivalents (CO_2e) while energy savings are measured in MWh. Other units of measurements may be used when appropriate. All project climate impact calculations are based on the share of financing provided by Kommuninvest and the actual disbursements to the project.

We report the impact of investments on an ex-ante basis, i.e. on the basis of estimates. If we have access to ex-post data, i.e. actual outcomes, we will report on these. The project-by-project disclosures indicate whether impact is reported based on estimates or actual outcomes.

Approach

The impact of Eligible Projects funded by Kommuninvest can be calculated in a number of ways:

- by reference to the reduction in energy consumption or added renewable energy capacity, and thus the greenhouse gas emissions avoided as a result of energy savings or crowding out dirtier alternatives (mitigation projects)
- the contribution made to strengthening local adaptation to climate change (adaptation projects).
- the environmental benefits achieved in other ways than through mitigation or adaptation measures (environmental management projects).

Green buildings and Renewable energy

As of 31 December 2017, 49 (41) percent of the disbursements were for Green building projects and 39 (49) percent for Renewable energy projects, project categories which are deemed greenhouse gas mitigation investments.

To calculate the climate and environmental impact, the completed project has to be compared with an alternative scenario. In some cases, it will be appropriate to consider the investment in relation to a baseline scenario – a reference scenario in which the investment does not exist. In such cases the calculation will be as follows

Annual climate impact = (emissions produced or energy consumed by the project in a baseline scenario) – (emissions produced or energy consumed by the project after the investment has been completed).

In other cases, for example where the project financed is a new building, the approach is to assume that the investment will be undertaken regardless but that the borrower may choose to adhere to less strict climate standards. In such instances the climate impact is calculated on the basis of an alternative scenario in which the investment meets the minimum requirements contained in the applicable building regulations. The calculation will then be as follows:

Annual climate impact = (emissions produced or energy consumed by an equivalent investment if minimum standards were followed) – (emissions produced or energy consumed by the project after the investment has been completed).

A detailed disclosure of methodologies that have been deployed in this impact report is provided in the Appendices.

Scope

At this stage, Kommuninvest report impact on Scope 1 and Scope 2 emissions, ie. including all direct GHG emission as well as indirect GHG emissions from consumption of purchased electricity, heat, cooling or steam.

Impact disclosed in relation to financed portion

This report illustrates the expected or realized environmental impact made possible as a result of projects to which Green Bond proceeds have been allocated. When we report impact, we do so in relation to the share of the project's total investment cost that Kommuninvest has

financed, and to amounts disbursed and outstanding to the project.

Impact per invested SEK

Measuring the impact of a green investment project in relation to the money that has been invested is a clear and simple metric to evaluate Green Bonds. While this makes it easy to compare Green Bond issues against each other, it may create a false sense of quantitative rigor, as such an approach puts faith in the precision of numbers related to uncertain environmental calculations, which in many cases are performed ex-ante.

Such an approach may also fail to recognize that some Green Bond frameworks are broad in scope, targeting environmental project categories that do not provide impacts measurable in CO_2. This could, for instance, be adaptation and water management projects or sustainable buildings that have other significant environmental values apart from the CO_2 avoided/reduced. For Kommuninvest, this applies to the project categories water management, adaptation measures and environmental management.

We therefore report impact per invested SEK for investment projects or project categories where the CO_2-impact is quantifiable and relevant. For conservative purposes, we report impact based on amounts disbursed to a project (as opposed to amounts committed). If disbursements are made gradually, environmental impact will also be taken into account gradually. In cases where no disbursements have been made to a project, the environmental benefit for that project will be recognised as zero.

Baselines for CO_2 emissions

Deciding upon a baseline emission factor against which the environmental impact can be measured is important, since the chosen baseline will determine the calculated environmental benefits. Kommuninvest's choice of baselines and methodology for calculation environmental impact are aligned with the recommendations of the Nordic Position Paper.

Outlined below are the baseline choices for the two largest project categories of the Kommuninvest Green Bonds Framework: Renewable energy and Green buildings and energy efficiency. The full disclosure of baselines used in this report is available on page 45.

For electricity, Kommuninvest uses a mainland European mix, including 26 European Union countries as well as Norway, as the relevant baseline. The rationale is that a non-negligible interconnection and export surplus from the Nordic countries to European energy markets exist already today and is planned to increase in the coming decades. This is in accordance with the recommendations of the Nordic Position Paper.

GHG emissions and CO_2 impact, by project categories

Project category	GHG emissions reduced/ avoided, tonnes CO_2e/ year	Disbursements, SEK mn	Impact, tonnes CO_2e per SEK mn
Renewable energy	487,678	7,692	63
Energy efficiency	22,355	235	95
Green buildings and energy efficiency	3,693	9,778	0.4
Public transportation	732	470	2
Waste management	486	125	4
Water management	n/a	1,587	n/a
Adaptation measures	n/a	16	n/a
Environmental management	n/a	0	n/a
Total GHG emissions reduced/avoided, tonnes CO_2e			**514,944**
Total disbursements, SEK million			**19,903**
Disbursements with quantified CO_2 impact, SEK million			**18,300**
% of disbursements with quantified CO_2 impact			**92%**

The baseline emission factor is constructed using a Combined Margin (CM) for the grid comprised of an existing Operating Margin (OM) and a future Build Margin (BM), as suggested by the IFI Framework for a Harmonized Approach to Greenhouse Gas Reporting[3]. However, Kommuninvest applies the same combination of the OM and BM for all projects, as recommended by the Nordic position paper.

For district heating[4] systems, which are fundamentally local/regional and not interconnected on a national or Nordic basis, Kommuninvest has commissioned an external advisor to develop a baseline emission factor for district heating for Sweden, based on avoided mix of best available alternative heating technologies[5].

To calculate the impact and energy efficiency of buildings, the financed building is compared with the requirements of the Swedish national building code (Boverkets Byggregler, BBR).

Energy efficiency in new Green Buildings

As per 31 December 2017, 86 Green Building projects were financed under the Kommuninvest Green Bonds Framework, of which 81 were new buildings (residential, non-residential and other) and 5 were energy efficiency projects in existing buildings.

Total energy use in the 33 residential building projects, expected or actual, is 11,426 MWh per annum, or on average 60 kWh per sq.m and year (total heated surface area: 190,762 sq.m.). This equates to 41 percent less than building requirements. Had these buildings solely been built to meet national building regulations, total energy consumption would have been 19,409 MWh. Energy savings for residential buildings thus amount to 7,984 MWh per annum.

For the 44 non-residential building projects, the total expected or actual energy use is 12,964 MWh per annum, or on average 47 kWh per sq.m and year (total heated surface area: 278,410 sq.m.). Had these buildings solely been built to meet national building regulations, total energy consumption would have been 29,598 MWh. Energy savings for the non-residential buildings thus amounts to a total of 16,634 MWh per annum, or 56 percent less than requirements. For both residential and non-residential building projects the reference to the Swedish building regulation is to the regulation in force upon launch of the Green Bonds Framework (Boverket's Building regulations, BBR 21). In March 2018, Kommuninvest adopted a new Green Bonds framework. Henceforth, green building projects will be measured against the current Boverket Building regulations, BBR 25.

A comparison of impact per invested SEK between the Renewable Energy and Green Building project categories indicate a considerably higher CO_2e impact for the former vs. the latter. A couple of perspectives are relevant here.

Firstly, the primary purpose of a new building is to provide a specific function as a residential or non-residential building. Energy savings are important, however not the primary objective of the investment. This is in contrast to renewable energy investments, where the energy production is in focus. Secondly, the majority of green buildings financed by Kommuninvest are heated through district heating. This means that the major part of energy savings are calculated against a baseline of 59 kg CO_2 per MWh, instead of the 380 kg CO_2 per MWh used for electricity savings.

Joule conversion

In this report we use watt-hours as the energy unit, with 1 Wh being the equivalent of one watt of power expended for one hour of time. The Joule (J) conversion factor is: 1 Wh = 3.6 kJ; 1kWh = 3.6 MJ, 1 MWh = 3.6 GJ.

Definitions used in this document

Atemp	All internal area of a building which is heated to more than 10 ºC in sq.m. Atemp is the area which energy consumption in Sweden is calculated.
CO_2e	Carbon dioxide equivalent
kWh, MWh and GWh	Kilowatthour, Megawatthour and Gigawatthour
PE	Population equivalent

3) International Financial Institution (IFI) Framework for a Harmonized Approach to Greenhouse Gas Accounting, November 2015; Green Bonds, Working Towards a Harmonized Framework for Impact Reporting, December 2015.

4) District heating is a system for distributing heat generated in a centralized location for residential and commercial heating requirements. In the Nordic countries, the heat is often obtained from a cogeneration plant burning principally renewable energy sources, including biomass, but plants also use waste and excess heat, and to a minor extent, fossil fuels. District heating plants may also be used to produce electricity (combined power and heating plants, CHP), and cooling.

5) Profu memorandum (in Swedish only): Stöd till klimatutvärdering av gröna investeringar inom fjärrvärmeområdet, February 2017. Interested parties can obtain this report by sending a request to: ir@kommuninvest.se

PROJECT-BY-PROJECT REPORTING

Renewable energy

#	Sub-category	Borrower	Project location	Project description
7	Bioenergy	Biogasbolaget i Mellansverige AB (Biogas Company of Mid-Sweden)	Karlskoga	Facility for biogas production located at Mosserud recycling station in Gottebol
14	Bioenergy	Gävle municipality	Gävle	Forsbacka biogas production facility
37	Bioenergy	Umeå municipality	Umeå	Investment in commercial scale torrefaction unit for production of black pellets, at municipal subsidiary BioEndev.
4	District Heating	Karlstad municipality	Karlstad	Heden 3 - new bio-fuelled combined power and heating plant (district heating)
5	District Heating	Borås municipality	Borås	Sobacken - new bio-fuelled combined power and heating plant (district heating)
13	District Heating	Karlskoga Energi & Miljö AB (Karlskoga Energy & Environment Company)	Karlskoga	Facilities for district heating, including combined power and heating plant and distribution pipelines.
23, 52, 53	District Heating	Botkyrka and Huddinge municipalities, partly through Södertörns Energi AB	Botkyrka	District heating, district cooling and electricity for the Botkyrka, Huddinge and Salem municipalities.
49	District Heating	Arvika Fjärrvärme AB (Arvika District Heating Company)	Arvika	Investment in district heating company, installed capacity 74 MW.
56	District Heating	Lessebo kommun (Lessebo municipality)	Lessebo	Expansion of biofuels-based district heating plant
64	District Heating	Mjölby-Svartådalen Energi AB (Mjölby Energy Company)	Mjölby	Expansion of biofuels-based combined power and district heating plant in Mjölby.
68, 97	District Heating	Vimmerby Energi och Miljö AB (Vimmerby Municipal Energy Co. AB)	Vimmerby	New biofuels-based combined power and heating plant at Tallholmen.
81,93	District Heating	Norrenergi (Solna and Sundbyberg Municipal Energy Company)	Solna	Balance sheet financing. 99% of Norrenergi energy production is from renewable sources.
103	District Heating	Varberg Municipality	Varberg	Construction of district heating plant to serve primarily as spare capacity and for peak load production during winter. 76 GWh of production in 2016 vs 40-45 GWh in a normal year.
107	District Heating	Arjeplog Municipality	Arjeplog	New boiler for district heating that meets current and future emissions targets.
115	District Heating	Nässjö Affärsverk AB (Nässjö Municipal Energy & Waste Company AB)	Nässjö	New boiler for district heating, equipped with flue gas condensator, total capacity 14.6 MW. Biofuels to replace oil as fuel.
118	District Heating	Ånge Energi AB (Ånge Municipal Energy Company AB)	Ånge	12 km transit pipeline from Akzo Nobel industrial plant in Alby, enabling surplus heat to be used in district heating network in Ånge.
143	District Heating	Forshaga Energi AB (Forshaga Municipal Energy Company AB)	Forshaga	Upgrading of boiler stations in Deje and Forshaga, to phase out fossil fuel use.
153	District Heating	Skövde Municipality	Skövde	New biofuels-based combined power and heating plant (Block 4).
12	Hydropower	Karlskoga Energi & Miljö AB (Karlskoga Energy & Environment Company)	Hällefors	Refinancing of 24 existing small scale hydropower plants.
51	Hydropower	Arvika Fjärrvärme AB (Arvika District Heating Company)	Arvika	Investment in 26 existing hydro power stations.
144	Hydropower	Sollefteå Municipality	Sollefteå	Acquisition of remaining 50% of Sollefteåforsens AB, now a wholly-owned municipal energy company focused on hydro power.
50	Solar Energy	Arvika Fjärrvärme AB (Arvika District Heating Company)	Arvika	Construction of solar energy production facility with a total installed capacity of 0.85 MW.
1	Wind Power	Eskilstuna municipality	Sollefteå	Four new wind power turbines
2, 65	Wind Power	Skellefteå Stadshus (Skellefteå Municipality)	Sorsele	Blaiken wind power plant, phase 2, 3 and 4.
33	Wind Power	KumBro Vind AB (Kumla and Örebro Municipal Wind Company)	Kumla	Co-financing for construction of wind farm with 16 turbines.
38	Wind Power	Umeå Kommun (Umeå Municipality)	Robertsfors	Three wind turbines with a total installed capacity of 9.6 MW.

PROJECT-BY-PROJECT REPORTING

(A), (M) or (E)*	Project Completion	KI Share of Financing	Committed Amount	Disbursed Amount	Expected or Actual impact	Renewable energy generation **	GHG-emissions avoided ***
	Year	%	MSEK	MSEK		MWh	Tonnes of CO_2e/year
(M)	2013	32%	49	49	Expected	8,382	1,576
(M)	2017	87%	120	110	Actual	23,386	4,397
(M)	2016	0%	54	0	Expected	0	0
(M)	2014	34%	900	300	Actual	33,157	10,743
(M)	2019	62%	1,400	1,250	Expected	49,751	16,119
(M)	2015	22%	190	190	Actual	47,158	5,850
(M)	2016	91%	1,860	1,695	Actual	203,435	38,198
(M)	2015	61%	127	77	Actual	64,874	6,322
(M)	2016	70%	177	162	Actual	3,491	340
(M)	2016	43%	216	172	Expected	62,587	10,508
(M)	2016	67%	520	349	Expected	100,611	12,843
(M)	2016	61%	1,250	745	Actual	573,406	55,875
(M)	2013	89%	225	225	Actual	18,304	4,195
(M)	2015	45%	41	19	Actual	917	107
(M)	2010	100%	62	62	Actual	40,000	11,006
(M)	2010	0%	50	0	Actual	0	0
(M)	2017	45%	15	10	Expected	397	109
(M)	2017	80%	376	300	Actual	53,457	14,865
(M)	2015	68%	250	250	Actual	89,139	33,873
(M)	2012	75%	60	45	Expected	53,250	20,235
(M)	2016	100%	400	400	Expected	300,000	114,000
(M)	2015	100%	15	15	Expected	950	361
(M)	2015	100%	165	165	Expected	37,000	14,060
(M)	2015	46%	829	829	Expected	230,833	87,716
(M)	2016	36%	62	59	Expected	11,502	4,371
(M)	2014	0%	123	0	Expected	0	0

PROJECT-BY-PROJECT REPORTING

Renewable energy, cont.

#	Sub-category	Borrower	Project location	Project description
45	Wind Power	Falu Energi & Vatten AB (Falun Energy & Water AB)	Falun	Five wind power turbines at Högberget, total capacity 10 MW (20% ownership).
46	Wind Power	Falu Energi & Vatten AB (Falun Energy & Water AB)	Falun	Five wind power turbines at Tavelberget, total capacity 10 MW (50% ownership).
47	Wind Power	Region Jämtland Härjedalen	Kalmar	Wind power turbine, capacity 3 MW
83	Wind Power	KumBro Vind AB (Örebro and Kumla Municipal Wind Comp. AB)	Hylte	Wind power turbines at Ryssbol, total capacity 13 MW.
92	Wind Power	Hedemora Kommunfastigheter AB (Hedemora Municipal Property Company AB)	Hedemora	Investment in wind power turbine, capacity 1.8 MW.
120	Wind Power	Kopparstaden AB (Falun Municipal Housing Company AB)	Lund	Acquisition of 2 wind power turbines with an installed capacity of 2 MW, to provide own properties with renewable energy.
136, 138	Wind Power	Tanum Municipality	Tanum	Construction of wind power turbines, installed capacity 3 MW.
Subtotal for Renewable energy				

Kommuninvest share of total investment

* (A)=Adaptation, (M)=Mitigation, (E)=Environmental Management

** Value represents Kommuninvest's share of the total renewable energy generation, based on disbursed amounts

*** Based on the share financed by Kommuninvest (disbursed amounts)

PROJECT-BY-PROJECT REPORTING

	(A), (M) or (E)*	Project Completion	KI Share of Financing	Committed Amount	Disbursed Amount	Expected or Actual impact	Renewable energy generation **	GHG-emissions avoided ***
		Year	%	MSEK	MSEK		MWh	Tonnes of CO_2e/year
	(M)	2008	100%	30	30	Actual	6,800	2,584
	(M)	2010	100%	82	82	Actual	17,800	6,764
	(M)	2014	100%	38	38	Actual	2,266	861
	(M)	2016	8%	15	15	Expected	3,622	1,376
	(M)	2012	86%	29	25	Expected	17,241	6,552
	(M)	2009	0%	90	0	Actual	0	0
	(M)	2015	65%	39	26	Expected	4,925	1,872
			60%	**9,859**	**7,692**		**2,058,640**	**487,678**

PROJECT-BY-PROJECT REPORTING

Green buildings and energy efficiency

#	Sub-category	Borrower	Project location	Type of building	Project description
3	New Buildings	Järfälla municipality	Järfälla	Non-residential	Herresta School in Barkarby district
6	New Buildings	Årehus AB	Åre	Non-residential	New nursery school in Undersåker
9	Energy Efficiency	Trollhättans Tomt AB (Trollhättan Ground Plot Company)	Trollhättan	Residential	Energy efficiency measures in two municipal properties
10	New Buildings	Trollhättans Tomt AB (Trollhättan Ground Plot Company)	Trollhättan	Non-residential	Construction of new nursery school
15	New Buildings	Kommunfastigheter i Knivsta AB (Knivsta Municipal Property Company)	Knivsta	Other	Construction of the new Högås school (Sweden's first school built as a passive house)
17	New Buildings	Umeå municipality	Umeå	Non-residential	New nursery schools (Solbacken, Morgonstjärnan & Hedlunda) and new schools (Flurkmark & Storsjö)
18	New Buildings	Umeå municipality	Umeå	Non-residential	Dedicated buildings for public admistration, care and sports
19	Energy Efficiency	Umeå municipality	Umeå	Residential	Energy efficiency measures in existing multi-family housing units, including Sustainable Ålidhem area
20	New Buildings	Umeå municipality	Umeå	Residential	Production of new low-energy multi-family housing units, including Sustainable Ålidhem area
21	New Buildings	Eksta Bostads AB (Eksta Housing AB)	Kungsbacka	Non-residential	Passive houses (Vallda Heberg geriatric care housing unit in Kungsbacka)
22	New Buildings	Eksta Bostads AB (Eksta Housing AB)	Kungsbacka	Residential	Passive houses (Vallda Heberg senior housing units 55+ in Kungsbacka)
25	New Buildings	Trosabygdens Bostad AB (Trosabygden Housing AB)	Trosa	Non-residential	Multi-family housing in Trosa. 16 apartments based on Kombo housing concept developed by SABO (the Swedish Association of Public Housing Companies)
26	New Buildings	Fastigheter i Linde AB (Lindesberg Property AB)	Lindesberg	Residential	Multi-family housing in Lindesberg with 70 apartments (Ålkilsbacken)
28	New Buildings	Växjö Kommunföretag AB (Växjö Municipal Company AB)	Växjö	Non-residential	Vikaholm nursery school for 160 children, first municipal building in Växjö to obtain environmental certification (Miljöbyggnad Silver).
29	New Buildings	Växjö Kommunföretag AB (Växjö Municipal Company AB)	Växjö	Non-residential	Pär Lagerqvist school in Växjö for 1,000 students. Highest environmental certification (Miljöbyggnad Gold). >25% of the structure in massive wood.
31	New Buildings	Landstinget i Värmland (Värmland County Council)	Karlstad	Non-residential	New operations facility at the main hospital in Karlstad. Environmental certification according to LEED Gold.
32	New Buildings	Landstinget i Värmland (Värmland County Council)	Karlstad	Non-residential	New buildings at the main hospital in Karlstad. Environmental certification according to EU Green Building.
34	New Buildings	AB Karlsborgsbostäder (Karlsborg Municipal Housing AB)	Karlsborg	Non-residential	52 apartments in the Strömmen project, Skaraborg.
35	New Buildings	Torsby Bostäder AB (Torsby Municipal Housing AB)	Torsby	Non-residential	Multi-family housing with 23 apartments in Torsby.
36	New Buildings	Trollhättans Tomt AB (Trollhättan Ground Plot Company)	Trollhättan	Non-residential	New office building, certification according to Miljöbyggnad (Environmental Building) Silver
39	New Buildings	AB Kristianstadsbyggen (Kristianstad Municipal Housing Company AB)	Kristianstad	Non-residential	Multi-family housing with 16 units in Vä area, based on Kombo housing concept developed by SABO (the Swedish Association of Public Housing Companies)
40	New Buildings	AB Vingåkershem (Vingåker Municipal Housing AB)	Vingåker	Residential	Multi-family housing with 14 units in Vingåker, based on Kombo housing concept developed by SABO (the Swedish Association of Public Housing Companies)
41	New Buildings	Älmhult municipality	Älmhult	Non-residential	New Elme School for 800 students, built as a passive house.
43	New Buildings	AB Sjöbohem (Sjöbo Municipal Housing Company AB)	Sjöbo	Non-residential	New energy-efficient swimming facility. Environmental certification according to Miljöbyggnad Silver.

PROJECT-BY-PROJECT REPORTING

(A), (M) or (E) *	Project Completion	KI Share of Financing	Committed Amount	Disbursed Amount	Expected or Actual impact	Annual energy reduced/avoided		GHG-emissions reduced / avoided ***
	Year	%	MSEK	MSEK		MWh **	%	Tonnes of CO_2e/year
(M)	2015	87%	317	300	Expected	429	61%	66
(M)	2017	57%	44	40	Expected	42	41%	16
(M)	2015	73%	5	5	Expected	87	52%	9
(M)	2017	75%	43	43	Expected	44	49%	17
(M)	2015	92%	164	150	Actual	341	74%	64
(M)	2015	100%	300	300	Actual	1,791	75%	407
(M)	2015	100%	268	268	Actual	249	39%	40
(M)	2015	94%	276	276	Actual	4,045	40%	432
(M)	2017	99%	675	671	Expected	2,003	40%	200
(M)	2013	80%	119	104	Actual	413	65%	75
(M)	2013	87%	77	72	Actual	82	30%	7
(M)	2016	95%	33	31	Expected	55	27%	7
(M)	2016	90%	104	104	Expected	145	36%	55
(M)	2014	100%	50	50	Actual	108	64%	11
(M)	2017	100%	310	310	Expected	563	46%	84
(M)	2016	65%	1,050	980	Expected	103	48%	24
(M)	2011	54%	724	420	Actual	1,321	58%	242
(M)	2017	100%	100	100	Expected	122	25%	16
(M)	2017	80%	25	24	Expected	52	49%	4
(M)	2017	68%	55	45	Expected	55	33%	7
(M)	2016	100%	26	26	Expected	44	40%	5
(M)	2018	91%	21	21	Expected	35	35%	3
(M)	2017	100%	215	215	Expected	871	74%	254
(M)	2015	79%	151	120	Actual	117	50%	11

PROJECT-BY-PROJECT REPORTING

Green buildings and energy efficiency, cont.

#	Sub-category	Borrower	Project location	Type of building	Project description
48	New Buildings	Skara municipality	Skara	Non-residential	New Viktoria high school. Environmental certification according to Miljöbyggnad Silver.
54	New Buildings	Malå kommun (Malå municipality)	Malå	Residential	Multi-family housing in Malå municipality, based on Trygga Boendet and Kombo housing concept developed by SABO (the Swedish Association of Public Housing Companies)
59	New Buildings	Halmstads kommun (Halmstad municipality)	Halmstad	Residential	Energy-plus multi-family house in Lyngåkra.
61	New Buildings	Vaggeryd-Skillingaryds Bostads AB (Vaggeryd-Skillingaryd Municipal Housing Company AB)	Vaggeryd	Non-residential	Multi-family housing with 16 units at Mjölnaren, based on Kombo housing concept developed by SABO.
62	New Buildings	Vaggeryd-Skillingaryds Bostads AB (Vaggeryd-Skillingaryd Municipal Housing Company AB)	Vaggeryd	Other	Multi-family housing with 16 units at Liljedal, based on Kombo housing concept developed by SABO.
63	New Buildings	Finspångs kommun (Finspång municipality)	Finspång	Other	Multi-family housing unit with 32 apartments (Majoren).
71	New Buildings	Skövde Municipality	Skövde	Non-residential	Billing school (phase 1), certification according to Miljöbyggnad (Environmental Building) Gold
72	New Buildings	Skövde Municipality	Skövde	Non-residential	Billing school (phase 2), certification according to Miljöbyggnad (Environmental Building) Gold
73	New Buildings	Skövde Municipality	Skövde	Non-residential	Construction of Bissgården pre-school
74	New Buildings	Skövde Municipality	Skövde	Non-residential	Construction of Claesborg pre-school
75	New Buildings	Skövde Municipality	Skövde	Non-residential	Construction of Tidan pre-school
76	New Buildings	Kopparstaden AB (Falun Municipal Housing Company AB)	Falun	Residential	Construction of Vitsippan multi-family housing unit, certification according to Feby 12 (passiv house)
77	Energy Efficiency	Ludvika Municipality	Ludvika	Other	Energy efficiency measures in multiple municipal properties.
79	New Buildings	Ale Municipality	Ale	Non-residential	Ale school, built with passive house technology
80	New Buildings	Mariestad Municipality	Mariestad	Non-residential	Prisma and Unica schools, certification according to Miljöbyggnad (Environmental Building) Silver
84	New Buildings	Hällefors Bostads AB (Hällefors Municipal Housing Company AB)	Hällefors	Non-residential	School building with built-in flexibility, ability to convert to 6 apartments if municipal needs change.
85	New Buildings	Skövde Municipality	Skövde	Non-residential	Trädgårdsstaden school, build with high demands on energy performance, air quality, acoustics and chemicals use. 550 sq.m. of fooftop solar energy panels contribute to low level of bought energy.
86	New Buildings	Skövde Municipality	Skövde	Non-residential	Ekedal preschool, with numerous features to support a climate-friendly building, including reuse of refrigerator cooling and sedum roof.
87	New Buildings	AB Tierpsbyggen (Tierp Municipal Housing Company AB)	Tierp	Residential	Multi-family housing with 24 units at Badhusgatan (phase 1), based on Kombo housing concept developed by SABO.
88	New Buildings	AB Tierpsbyggen (Tierp Municipal Housing Company AB)	Tierp	Residential	Multi-family housing with 56 units at Badhusgatan (phase 2), based on Kombo housing concept developed by SABO.
89	New Buildings	AB Tierpsbyggen (Tierp Municipal Housing Company AB)	Tierp	Residential	Housing project at Högbergsparken with 52 small apartments, primarily for students.
91	New Buildings	AB Eidar Bostadsbolag (Trollhättan Municipal Housing Company AB)	Trollhättan	Residential	Production of 26 new apartment units in two-story building with sedum roof.
94	New Buildings	Enköping Municipality	Enköping	Non-residential	Munkssund school for 420 pupils and Munkkällan preschool for 120 children, Environmental Building certification Silver. Rooftop solar energy panels.

PROJECT-BY-PROJECT REPORTING

(A), (M) or (E) *	Project Completion	KI Share of Financing	Committed Amount	Disbursed Amount	Expected or Actual impact	Annual energy reduced/avoided		GHG-emissions reduced / avoided ***
	Year	%	MSEK	MSEK		MWh **	%	Tonnes of CO_2e/year
(M)	2017	91%	320	290	Expected	517	61%	64
(M)	2017	45%	37	17	Expected	59	72%	8
(M)	2014	100%	20	20	Actual	43	131%	16
(M)	2014	97%	30	30	Actual	58	50%	15
(M)	2014	0%	30	0	Actual	0	33%	0
(M)	2017	100%	70	65	Expected	68	26%	8
(M)	2014	100%	125	130	Actual	189	41%	24
(M)	2018	100%	85	85	Expected	96	44%	12
(M)	2016	100%	30	30	Actual	37	40%	14
(M)	2014	98%	30	30	Actual	37	34%	5
(M)	2016	100%	26	30	Actual	28	32%	4
(M)	2012	100%	100	100	Actual	223	45%	25
(M)	2020	36%	39	36	Actual	3,467	33%	370
(M)	2016	81%	180	180	Expected	506	66%	70
(M)	2017	97%	250	243	Expected	582	60%	76
(M)	2016	100%	11	11	Expected	35	52%	3
(M)	2018	82%	195	160	Expected	434	66%	50
(M)	2017	0%	41	0	Actual	0	33%	0
(M)	2015	100%	68	68	Expected	71	25%	7
(M)	2017	78%	80	62	Expected	101	40%	10
(M)	2017	50%	60	30	Expected	39	40%	3
(M)	2017	81%	59	48	Expected	54	30%	6
(M)	2018	86%	150	150	Expected	324	64%	57

PROJECT-BY-PROJECT REPORTING

Green buildings and energy efficiency, cont.

#	Sub-category	Borrower	Project location	Type of building	Project description
95	New Buildings	Älvkarleby Municipality	Älvkarleby	Non-residential	Construction of new care homes for elderly people (100 people).
96	New Buildings	Norra Dalarnas Lokaler AB (Älvdalen Municipal Non-Residential Property Company AB)	Älvdalen	Non-residential	New Älvdalen school, constructed to replace older, inefficient (energy and usage) school from the 1950s.Miljö. Conscious use of building material (SundaHus).
98	New Buildings	Nyköping Municipality	Nyköping	Non-residential	New Alpha upper elementary school, numerous features for a sustainable building.
99	New Buildings	Nyköping Municipality	Nyköping	Non-residential	New Svalsta preschool, numerous features for a sustainable building.
101	New Buildings	Jönköpings Rådhus AB (Jönköping Municipal Group AB)	Jönköping	Residential	Construction of multi-family housing in new Strandängen residential district, with numerous features for a sustainable city district.
102	New Buildings	Tierps kommunfastigheter AB (Tierp Municipal Non-Residential Property Company AB)	Tierp	Non-residential	Bokbindarlunden preschool, Environmental Building certification Silver. Project includes solar energy production.
106	New Buildings	Stiftelsen Östhammarshem (Östhammar Municipal Housing Company)	Östhammar	Residential	Near zero energy building for residential use, 23 units (Alunda Trädgårdsvägen). Solar energy panels.
112	New Buildings	Kopparstaden AB (Falun Municipal Housing Company AB)	Falun	Residential	Multi-family housing with 115 units at Galgberget, based on Kombo housing concept developed by SABO.
113	New Buildings	AB Härnösandshus (Härnösand Municipal Housing Company AB)	Härnösand	Residential	Multi-family housing with 26 units at Gådeå Strand, based on Kombo housing concept developed by SABO.
114	New Buildings	Bergs Hyreshus AB (Berg Municipal Housing Company AB)	Berg	Other	New residential housing units
117	New Buildings	AB Timråbo (Timrå Municipal Housing Company AB)	Timrå	Residential	New residential housing units
119	Energy Efficiency	Ockelbo Municipality	Ockelbo	Non-residential	Replacing inefficient, leaking ventilation equipment with modern unit, resulting in more than 30 % reduction in energy use.
121	New Buildings	Ludvikahem AB (Ludvika Municipal Housing Company AB)	Ludvika	Residential	Three multi-family residential buildings, including one senior residential housing with Nordic Swan Ecolabel.
122	New Buildings	Stiftelsen Östhammarshem (Östhammar Municipal Housing Company)	Östhammar	Residential	Near zero energy building for residential use, 17 units (Långgatan 34).
123	New Buildings	Skövde Municipality	Skövde	Residential	Aspö Ekologi, residential area with a strong green profile, incl. houses built with passive house technology, solar energy production, energy recovery, electric car pool. Certifications: Nordic Swan Ecolabel, Environmental Building Gold, Feby12 passive house standard.
124	New Buildings	Lidköping Municipality	Lidköping	Residential	Three multi-family housing units with 111 apartments, rooftop solar energy panels. Certification: Environmental Building Silver.
125	New Buildings	Lidköping Municipality	Lidköping	Non-residential	Lidåker preschool, including solar energy panels. Certification: Environmental Building Silver.
126	New Buildings	Lidköping Municipality	Lidköping	Residential	Tusenfotingen multi-family residential building with 54 apartments and restaurant. Certification: Environmental Building Silver.
128	New Buildings	Lidköping Municipality	Lidköping	Residential	Tömmen multi-family residential building with 52 apartments and restaurant.
129	New Buildings	Lidköping Municipality	Lidköping	Residential	Bifrost 4 multi-family residential building with 25 apartments. Certification: Environmental Building Silver.
130	New Buildings	Lidköping Municipality	Lidköping	Residential	Valkyrian 18 apartments in multi-family residential units. Certification: Environmental Building Silver.

PROJECT-BY-PROJECT REPORTING

(A), (M) or (E) *	Project Completion	KI Share of Financing	Committed Amount	Disbursed Amount	Expected or Actual impact	Annual energy reduced/avoided		GHG-emissions reduced / avoided ***
	Year	%	MSEK	MSEK		MWh **	%	Tonnes of CO_2e/year
(M)	2019	14%	300	47	Expected	34	25%	3
(M)	2019	18%	200	40	Expected	55	44%	8
(M)	2014	100%	226	226	Actual	319	30%	47
(M)	2015	100%	55	55	Actual	66	35%	25
(M)	2017	100%	400	400	Expected	468	35%	51
(M)	2017	0%	66	0	Expected	0	64%	0
(M)	2018	92%	35	35	Expected	43	56%	16
(M)	2017	61%	160	100	Expected	200	41%	23
(M)	2017	100%	43	43	Expected	74	33%	7
(M)	2017	98%	10	10	Expected	10	24%	1
(M)	2019	100%	65	65	Expected	69	32%	6
(M)	2018	93%	10	9	Expected	464	40%	50
(M)	2015	100%	123	123	Actual	171	26%	21
(M)	2018	100%	40	40	Expected	34	49%	13
(M)	2018	81%	350	350	Expected	861	52%	75
(M)	2018	98%	200	200	Expected	484	52%	62
(M)	2017	100%	34	34	Expected	115	83%	19
(M)	2017	89%	70	70	Expected	140	50%	18
(M)	2017	72%	31	31	Expected	54	36%	6
(M)	2019	90%	45	45	Expected	91	49%	12
(M)	2019	90%	36	36	Expected	73	49%	9

PROJECT-BY-PROJECT REPORTING

Green buildings and energy efficiency, cont.

#	Sub-category	Borrower	Project location	Type of building	Project description
131	New Buildings	Lidköping Municipality	Lidköping	Non-residential	Sjölunda school. Certification: Environmental Building Silver. Minimized use of hazardous chemicals.
132	New Buildings	Lidköping Municipality	Lidköping	Non-residential	Majåker preschool. Certification: Environmental Building Silver. Minimized use of hazardous chemicals.
133	New Buildings	Lidköping Municipality	Lidköping	Non-residential	Sjölunda preschool. Certification: Environmental Building Silver. Minimized use of hazardous chemicals
134	New Buildings	Region Gotland	Gotland	Non-residential	Major renovation and new construction of Säve House, home to Wisby high school. Environmental Building Certification Gold.
137	New Buildings	Vännäs Municipality	Vännäs	Non-residential	Vega school and Vännäs library, international passive house certification, Environmental Building Gold.
142	Energy Efficiency	Stiftelsen Östhammarshem (Östhammar Municipal Housing Company)	Östhammar	Residential	Installing waterborne geothermal heating to replace direct-acting electricity. Installing more climate-friendly ventilation.
145	New Buildings	Gävle Municipality	Gävle	Non-residential	Premises for various leisure activites including track & field, ball and indoor sports, and cultural activities. Rooftop solar energy panels. Preliminary Environmental Building certification Silver.
147	New Buildings	Hebygårdar AB (Heby Municipal Housing Company AB)	Heby	Residential	Multi-family residential building.
149	New Buildings	Skövde Municipality	Skövde	Residential	Ekedal residential project, three multi-family buildings comprising 150 apartments. Two buildings equipped with solar energy, expected production 2.0 kWh/sq.m. and year.
150	New Buildings	Skövde Municipality	Skövde	Residential	Frostaliden residential project, six multi-family buildings comprising 189 apartments. All buildings equipped with solar energy, expected production 5.6 kWh/sq.m. and year. Core wood construction.
151	New Buildings	Växjö kommunföretag AB (Växjö Municipal Group AB)	Växjö	Non-residential	Saga preschool. Environmental Building certification Silver.
152	New Buildings	Gävle Municipality	Gävle	Residential	Sörby Backe residential project, including three multi-family buildings with 111 apartments and one group home comprising 6 units. Sedum roof on low-rise building.
154	New Buildings	Skellefteå Stadshus AB (Skellefteå Municipal Group AB)	Skellefteå	Residential	31 energy efficient apartments in three multi-family buildings (Hofgränd).
155	New Buildings	Skellefteå Stadshus AB (Skellefteå Municipal Group AB)	Skellefteå	Residential	Odenskrapan high-rise multi-family housing with 43 apartments over 12 floors.
156	New Buildings	Skellefteå Stadshus AB (Skellefteå Municipal Group AB)	Skellefteå	Residential	48 energy efficient apartments in Ringduvan.
159	New Buildings	Robertforsbostäder (Robertsfors Municipal Housing Company)	Robertsfors	Residential	Multi-family housing with 16 units at Mårsgården 4.
161	New Buildings	Leksandsbostäder AB (Leksand Municipal Housing Company AB)	Leksand	Residential	Multi-family housing with 15 units (Länsmannen).
163	New Buildings	Uppsala Municipality	Uppsala	Non-residential	City Hall 2020 project, involving major renovations and new construction. BREEAM Excellent certification.
Subtotal for Green buildings and energy efficiency					

Kommuninvest share of total investment

* (A)=Adaptation, (M)=Mitigation, (E)=Environmental Management

** Value represents Kommuninvest's share of the total energy reduced/avoided, based on disbursed amounts

*** Based on the share financed by Kommuninvest (disbursed amounts)

PROJECT-BY-PROJECT REPORTING

(A), (M) or (E) *	Project Completion	KI Share of Financing	Committed Amount	Disbursed Amount	Expected or Actual impact	Annual energy reduced/avoided		GHG-emissions reduced / avoided ***
	Year	%	MSEK	MSEK		MWh **	%	Tonnes of CO_2e/year
(M)	2018	35%	130	45	Expected	72	58%	27
(M)	2019	0%	130	0	Expected	0	54%	0
(M)	2014	100%	29	29	Actual	49	76%	19
(M)	2017	93%	250	250	Expected	486	54%	70
(M)	2015	36%	104	42	Actual	177	78%	26
(M)	2016	67%	50	50	Actual	233	32%	25
(M)	2017	0%	130	0	Expected	0	74%	0
(M)	2010	100%	53	53	Actual	78	36%	9
(M)	2018	100%	140	140	Expected	1	66%	0
(M)	2020	99%	350	346	Expected	632	45%	78
(M)	2018	91%	60	60	Expected	116	58%	15
(M)	2019	45%	200	100	Expected	195	44%	20
(M)	2016	98%	100	100	Expected	130	27%	13
(M)	2016	0%	90	0	Expected	0	41%	0
(M)	2014	95%	100	100	Expected	153	28%	17
(M)	2018	50%	30	15	Expected	26	36%	2
(M)	2017	0%	27	0	Expected	0	53%	0
(M)	2021	0%	1,000	0	Expected	0	50%	0
		71%	**12,657**	**9,778**		**26,259**	**43%**	**3,693**

PROJECT-BY-PROJECT REPORTING

Energy efficiency

#	Borrower	Project location	Project description
44	Falu Energi & Vatten AB (Falun Energy & Water AB)	Falun	Linking together the district heating networks of Falun and Borlänge through a pipeline.
66	Skellefteå Stadshus (Skellefteå Municipality)	Skellefteå	Flue gas condensation investment at the Hedensbyn bioenergy production plant.
82	Köping municipality	Köping	Connecting the Köping and Arboga district heating grids and increasing the use of surplus heat recovery
Subtotal for Energy efficiency			

* (A)=Adaptation, (M)=Mitigation, (E)=Environmental Management

** Based on the share financed by Kommuninvest (disbursed amounts)

Public transportation

#	Borrower	Project location	Project description
8	Trelleborg municipality	Trelleborg	Co-financing for regional train network Trelleborg-Malmö
16	Umeå municipality	Umeå	Electric buses for local transport.
42	Kristianstad municipality	Kristianstad	Public transport thoroughfare connecting train station with key city destinations
58	Kifab i Kalmar AB (Kalmar Municipal Industrial Property Company AB)	Kalmar	Railway maintenance depot in Kalmar.
Subtotal for Public transportation			

* (A)=Adaptation, (M)=Mitigation, (E)=Environmental Management

** Based on the share financed by Kommuninvest (disbursed amounts)

Waste management

#	Borrower	Project location	Project description
60	Halmstads kommun (Halmstad municipality)	Halmstad	Optical waste sorting facility at Kristinehed, targeting household waste and up to six fractions. Approval for 75,000 tonnes capacity.
Subtotal for Waste management			

* (A)=Adaptation, (M)=Mitigation, (E)=Environmental Management

** Based on the share financed by Kommuninvest (disbursed amounts)

PROJECT-BY-PROJECT REPORTING

(A), (M) or (E) *	Project Completion	KI Share of Financing	Committed Amount	Disbursed Amount	Expected or Actual impact	Annual energy reduced		GHG-emissions reduced / avoided **
	Year	%	MSEK	MSEK		MWh**	%	Tonnes of CO_2e/year
(M)	2015	50%	64	64	Expected	25,000	50%	1,322
(M)	2016	86%	71	71	Expected	85,542	19%	18,372
(M)	2017	30%	100	100	Expected	303	7%	2,662
		43%	**235**	**235**		**110,845**	**24%**	**22,355**

(A), (M) or (E) *	Project Completion	KI Share of Financing	Committed Amount	Disbursed Amount	Expected or Actual impact	GHG-emissions reduced/avoided **	Other indicators
	Year	%	MSEK	MSEK		Tonnes of CO_2e/year	
(M)	2011	85%	241	240	Expected	442	Reduced car travel: 6 million km/year; in 2016, increased use of public transport between Trelleborg–Malmö by 18% vs 2015.
(M)	2014	100%	76	76	Expected	n/a	Reduced energy use by 2 MWh/year. Increased use of public transport by 5 % or 5,000 trips per year.
(M)	2013	100%	54	54	Actual	n/a	Follow-up shows that public transport trips have increased by 390,000, from 3.14 to 3.53 million trips, in large part probably due to the investment.
(M)	2017	95%	100	100	Expected	290	Frees up 2,000 hours of capacity per year on the intensely used Southern Main Line.
		91%	**471**	**470**		**732**	

(A), (M) or (E) *	Project Completion	KI Share of Financing	Committed Amount	Disbursed Amount	Expected or Actual impact	GHG-emissions reduced / avoided **	Other indicators
	Year	%	MSEK	MSEK		Tonnes of CO_2e/year	
(M)	2017	97%	125	125	Expected	486	Sorting of food waste and other organic waste to result in increased production of biogas and biofertiliser.
		100%	**125**	**125**		**486**	

PROJECT-BY-PROJECT REPORTING

Water management

#	Borrower	Project location	Project description
11	Karlskoga Energi & Miljö AB (Karlskoga Energy & Environment Company)	Karlskoga	Upgrading of wastewater treatment facility to comply with EU requirements regarding nitrogen purification.
30	Falu Energi & Vatten AB (Falun Energy & Water AB)	Falun	New drinking water source for 110,000 people in Falun and Borlänge municipalities, replacing the current surface water source with ground water.
55	Borås Stad (Borås Municipality)	Borås	Sobacken - new wastewater treatment plant
57	Syvab (Southwest Stockholm Wastewater Treatment Company, Södertälje Municipality)	Botkyrka	Upgrading of Himmerfjärden wastewater treatment plant
69	Rättviks Teknik AB (Rättvik Municipal Technical Comp. AB)	Rättvik	Upgrading and expansion of Rättvik wastewater treatment facility
70	Leksands Vatten AB (Leksand Municipal Water Company AB)	Leksand	Upgrading and expansion of Leksand wastewater treatment facility
100	Nyköping municipality	Nyköping	Upgrading and expansion of Brandholmen wastewater treatment facility
108	Varberg municipality	Varberg	Upgrading of Kvarnagården drinking water treatment facility
135	Lidköping municipality	Lidköping	Ängens ARV - new wastewater treatment plant
141	Nordanstig Vatten AB (Nordanstig Municipal Water Company AB)	Nordanstig	Sörfjärden - expansion of municipal water and wastewater system to connect 450 properties.

PROJECT-BY-PROJECT REPORTING

(A), (M) or (E) *	Project Completion	KI Share of Financing	Committed Amount	Disbursed Amount	Expected or Actual impact	GHG-emissions reduced / avoided **	Other indicators
	Year		MSEK	MSEK		Tonnes of CO_2e/year	
(E)	2015	90%	35	35	Expected	n/a	Nitrogen reduction from 19 mg/l to 10 mg/l. Ammoniacal nitrogen from 15 mg/l to 4 mg/l.
(M), (E)	2015	50%	217	217	Expected	n/a	900 tonnes of chemicals to be phased out from water preparation. Reduction in CO_2 emissions from transports.
(M), (E)	2019	30%	1,100	500	Expected	n/a	Expected to meet pollution requirements of BOD (Biochemical Oxygen Demand) 8 mg/l; nitrogen 8 mg/l; phosphorus 0.2 mg/l.
(M), (E)	2009	19%	268	268	Expected	n/a	Reduced nitrogen emissions from 10 mg/l to 8 mg/l. Phosphorus from 0.5 mg/l to 0.4 mg/l. Increased biogas production.
(M)	2018	93%	85	82	Expected	n/a	Reduction of BOD from 8 mg/l to 4 mg/l, phosphorus from 0.5 mg/l to 0.2 mg/l. Increase in population equivalent from 8,000 to 25,000.
(M)	2019	70%	115	80	Expected	n/a	Reduction of BOD from 11 mg/l to 4 mg/l, phosphorus from 0.2 mg/l to 0.1 mg/l. Increase in population equivalent from 13,000 to 19,000.
(M)	2016	0%	55	0	Expected	n/a	Increased capacity and modernisation of sludge treatment resulting in increased purification efficiency and energy production (biogas for electricity 1-1.5 MWh/year and heating 2-3 MWh/year).
(M), (A)	2017	97%	105	105	Expected	n/a	Adding new purification stage, based on membrane technology, to comply with legal requirements for microbiological barriers and future needs for increased separation of organic matter (partly due to ongoing climate change)
(M)	2021	43%	575	250	Expected	n/a	New wastewater treatment plant for 61,000 Population Equivalents (PE). Digestion of sludge for on-site production of biogas.
(M)	2017	66%	50	50	Expected	n/a	Reduced phosphorus emissions, from 60 kg/year to 10 kg/year. BOD from 1,000 kg/year to 250 kg/year. Reduced transport of sludge.

PROJECT-BY-PROJECT REPORTING

Water management, cont.

#	Borrower	Project location	Project description
158	Skellefteå municipality	Skellefteå	New water supply system
162	Vamas (Malung-Sälen Municipal Water & Waste Company AB)	Malung-Sälen	Upgrading of Yttermalung wastewater treatment facility

Subtotal for Water management

* (A)=Adaptation, (M)=Mitigation, (E)=Environmental Management

** Based on the share financed by Kommuninvest (disbursed amounts)

Adaptation measures

#	Borrower	Project location	Project description
90	Kristianstad municipality	Kristianstad	Construction of levee to protect the city from flooding

Subtotal for Adaptation measures

* (A)=Adaptation, (M)=Mitigation, (E)=Environmental Management

** Based on the share financed by Kommuninvest (disbursed amounts)

(A), (M) or (E) *	Project Completion	KI Share of Financing	Committed Amount	Disbursed Amount	Expected or Actual impact	GHG-emissions reduced / avoided **	Other indicators
	Year		MSEK	MSEK		Tonnes of CO_2e/year	
(M)	2018	0%	610	0	Expected	n/a	New water supply system for 48,000 Population Equivalents (PE) as well as large industrial users, utilizing natural purification and storage.
(M)	2017	0%	4	0	Expected	n/a	Wastewater treatment facility for 270 population equivalent. Energy consumption reduced by 25 %.
		31%	**3,219**	**1,587**			

(A), (M) or (E) *	Project Completion	KI Share of Financing	Committed Amount	Disbursed Amount	Expected or Actual impact	GHG-emissions reduced / avoided **	Other indicators
	Year	%	MSEK	MSEK		Tonnes of CO_2e/year	
(A)	2016	100%	16	16	Expected	n/a	Reduced risk of contamination of the Helgeå stream.
		100%	**16**	**16**			

Baselines for CO_2 emissions

The baseline emission factors (used to calculate emissions for alternative scenario) and project emission factors (used to calculate emissions from actual projects) are presented on the next page. Below, the considerations for electricity and district heating project are outlined.

Electricity

The highly interconnected regional electricity market is the cornerstone of the Nordic energy system, and it can serve as a key enabler for further emissions reductions in the decades ahead. It can also be expected that European energy markets will be increasingly interconnected, with energy traded cross-border to an increasing degree.

In line with the recommendations of the Nordic Position Paper, Kommuninvest has chosen a mainland European mix, including 26 European Union countries as well as Norway, as the relevant baseline for electricity. The rationale is that a non-negligible interconnection and export surplus from the Nordic countries to European energy markets exist already today and is planned to increase in the coming decades.

In line with IFI recommendations[1], we apply a Combined Margin (CM) for the grid that is comprised of an Operating Margin (OM) and a Build Margin (BM). However, for simplicity and relevance to the Swedish context, Kommuninvest applies a CM of 50% OM and 50% BM for all relevant projects, as opposed to the IFIs which apply different combinations of the OM and BM depending on the type of project financed. This also means adopting a more conservative approach than if the IFI methodology had been applied. The CM used in this report is 380 kg CO_2e per MWh.

District heating

In the Nordic countries, district heating[2] has successfully enabled the transition from fossil fuel based heating systems to heating systems based primarily on renewable energy sources. Remaining fossil fuel use is today being gradually substituted and phased out.

The systems of district heating (and district cooling) are fundamentally local/regional and not interconnected on a national or Nordic basis. Kommuninvest has commissioned an external advisor (Profu) to develop a baseline emission factor for district heating for Sweden, based on avoided mix of alternative heating technologies. This estimated baseline figure for district heating in Sweden amounts to 117 kg/MWh, representing an avoided alternative heating mix of 20% wood pellet boilers, 45% geothermal heat pumps, 28% air/water heat pumps and 7% air to air heat pumps.

Readers are advised that this figure represents a national average for what are essentially locally based energy systems, in order to facilitate calculations. Using national averages is feasible for most investment projects financed by Kommuninvest, but local circumstances and actual changes in production mix are considered for certain projects related to increased interconnection, energy efficiency and other changes in the production mix.

For the calculation of impact, Kommuninvest compares baseline emissions with actual or expected project emissions. For district heating projects in the renewable energy category, Kommuninvest seeks to calculate project emissions based on the national average emission factor for district heating in Sweden. An additional environmental benefit of 41 kg/MWh, as a national average, is ascribed due to avoided alternative waste treatment (land fill and methane leakage). In certain cases, where financed projects target a change in fuel mix, Kommuninvest calculates impact based on local data.

For district heating projects in the energy efficiency category, Kommuninvest calculates project emissions based on local emissions. No additional benefit for avoided alternative waste treatment is added.

1) International Financial Institution (IFI) Framework for a Harmonized Approach to Greenhouse Gas Accounting, November 2015.

2) District heating is a system for distributing heat generated in a centralized location for residential and commercial heating requirements. In Sweden, the heat is often obtained from a cogeneration plant burning principally renewable energy sources, including biomass, but plants also use waste and excess heat, and to a minor extent, fossil fuels. District heating plants may also be used to produce electricity (combined power and heating plants, CHP), and cooling.

Baseline emission factors (used to calculate alternative emissions scenario), Scope 1 and 2

Type	Emission factor	Comment
Variable electricity generation, e.g. wind and solar power projects	380 kg CO_2e/MWh	EU 26 (mainland) plus Norway, average 2011-2013: Combined Margin (50% Operating Margin (OM) 483 kg CO_2e/MWh + 50% Build Margin (BM) 277 kg CO_2e/MWh)[1]
Firm electricity generation e.g. hydropower projects	380 kg CO_2e/MWh	See above
Electricity consumption from the grid, e.g. green buildings and energy efficiency projects	380 kg CO_2e/MWh	See above
Electricity generation in district heating projects	380 kg CO_2e/MWh	See above
Heat consumption from the grid, e.g. green building and energy efficiency projects	59 kg CO_2e/MWh	Swedish average for heating production from district heating[2]
Heat generation in district heating projects	117 kg CO_2e/MWh	Estimated national Swedish average for avoided alternative heating[3]
Waste incineration in district heating projects	41 kg CO_2e/MWh	Estimated national Swedish average for avoided alternative waste treatment[4]
Biogas generation projects	188 kg CO_2e/MWh	Swedish average (diesel)[5]

1) Calculation by Kommuninvest, based on IFI Interim Dataset of Harmonized Grid Factors v 1.0, as provided by Nordic Investment Bank

2) Swedenergy

3) Profu

4) Swedenergy (calculations by Profu)

5) Swedish Environmental Agency

Project emission factors (used to calculate actual project emissions), Scope 1 and 2

Type	Emission factor	Comment
Variable electricity generation, e.g. wind and solar power projects	0 kg CO_2e/MWh	-
Firm electricity generation, e.g. hydropower projects	0 kg CO_2e/MWh	-
Electricity generation in district heating projects	97 kg CO_2e/MWh	Swedish average for electricity production from district heating[1]
Heating generation in district heating projects	59 kg CO_2e/MWh	Swedish average for electricity production from district heating[1]
Biogas generation projects	0 kg CO_2e/MWh	-

1) Swedenergy

Collected data and Climate impact calculation

Collected data represents the information that Kommuninvest asks borrowers to provide in Green Loan applications and annual follow-up reporting. Not all projects have provided all of the information indicated in this section.

Renewable energy

Eligible Projects in the Renewable energy category exploit or intend to exploit various types of renewable energy sources, in order to expand capacity or replace or offset existing or planned fossil fuel-based energy production and supply.

Renewable energy sources that can be approved for Kommuninvest financing include solar and wind power, geothermal energy, bioenergy, bioenergy and biogas from waste, as well as small-scale hydro power. The maximum share of fossil fuels in district heating projects is 10 percent (peat is treated as a fossil energy source). If fossil waste fractions are used for energy extraction the share of fossil energy is a maximum 20 percent.

The table below outlines the data input collected from Eligible Projects as well as the methodology applied when calculating the environmental impact.

Sub-category	Collected data	Climate impact calculation
Bioenergy	• Annual production of bioenergy (biodiesel, bioethanol, biogas, CNG[1] and other biofuels), measured in MWh. • Annual delivery of specific bioenergy measured in MWh.	Annual climate impact (CO_2e) = Annual production of renewable energy in MWh * baseline emissions factor - Annual production of renewable energy (MWh)* project emission factor Note: Different baseline emission factors and project emission factors are applied to different sub-categories. These are presented on page 19.
Wind, wave, solar and geothermal	• Installed capacity, in MW. • Estimated annual production of electricity, in MWh.	See above
District heating	• Estimated or actual annual output of heating and electricity, in MWh.	See above

Energy efficiency in energy systems

Eligible Projects in this category are intended to improve energy efficiency in predominantly fossil-free energy systems, resulting in either a reduction in energy use or the increased delivery of energy to end users. As of 31 December 2016, all Eligible Projects in this project category were related to District heating systems.

Sub-category	Collected data	Climate impact calculation
District heating systems	See Renewable energy	See Renewable energy

1) Compressed Natural Gas (Sw:"fordonsgas") from bioenergy plants

Green buildings

Eligible Projects in this category are intended to reduce energy usage in new or existing buildings, resulting in a reduction in net external energy demand and a reduction in CO_2 emissions.

Impact is reported in relation to the building regulation in force upon launch of the Kommuninvest Green Bonds Framework (BBR 21). The regulation has since been revised and the regulation in force upon publication of this document is BBR 25.

Sub-category	Collected data	Climate impact calculation
New buildings	• Heated surface area in square metres (Atemp). • Estimated annual heating consumption of the building, measured in kWh/Atemp in accordance with applicable Swedish regulations. • Estimated annual electricity consumption of the building, measured in kWh/Atemp. • Required maximum energy consumption of the building, measured in kWh/Atemp. • Annual production of installed solar panels, measured in kWh/ Atemp.	Annual climate impact (CO_2e) = ((Heat consumption of reference building in MWh * baseline emissions factor for heat consumption + electricity consumption of reference building in MWh * baseline emissions factor for electricity consumption) - (Heat consumption of project building in MWh * baseline emissions factor for heat consumption + electricity consumption of the project building in MWh * baseline emissions factor for electricity consumption)) Note: The relationship between heat and electricity consumption of the reference building may differ from the project building.
Energy efficiency	• Heated surface area square metres (Atemp), • Annual energy use before the investment, in MWh. • Annual energy use after the investment, in MWh.	Annual climate impact (CO_2e) = ((Heat consumption of building pre investment in MWh * baseline emissions factor for heat consumption + Electricity consumption of building pre investment in MWh * baseline emissions factor for electricity consumption) - (Heat consumption of building post investment in MWh * baseline emissions factor for heat consumption + electricity consumption of building post investment in MWh * baseline emissions factor for electricity consumption) Note: The relationship between heat and electricity consumption of the building pre investment may differ from that of the building post investment.

Other project categories

For project categories outlined below, no generally applicable calculation model is used, Kommuninvest relies on reported data from projects. More elaborate impact analysis is possible to undertake in relation to these projects, and we aim to develop our reporting in the future. The choice of indicators can also be expected to undergo revision as more knowledge is gathered and best practices are developed.

Public transportation

Eligible Projects are intended to increase transportation of goods and passengers while consuming a minimal or zero amount of fossil fuels, resulting in a reduction of greenhouse gas emissions.

Collected data

- Number of people the project will affect each year.
- An estimate of the number of cars/road kilometres the project will replace.
- If feasible: Annual energy savings, reduction in greenhouse gas emissions and/or local emissions, or amount of greenhouse gas emissions and/or local emissions that will be avoided as a result of the investment.

Waste management

Eligible Projects are intended to either increase recycled waste capacity, improve energy efficiency, reduce the amount of release of harmful substances or meet other appropriate conditions set by Kommuninvest.

Collected data

- Number of tonnes of waste expected to be processed by the facility each year.
- An estimate of the reduction in greenhouse gas emissions/the amount of greenhouse gas emissions that will be avoided as a result of the investment, in tonnes of CO_2e.
- If feasible: Estimate annual energy savings attributable to the investment, in kWh.
- Expected improvement in material recovery rate or other target for improved resource use.
- For biogas plants: Expected annual production volume.

Water management

Eligible Projects are intended to reduce leakage or improve filtration of harmful substances in the water purification process, increase output measured in person equivalents (PE) or meet other appropriate conditions set by Kommuninvest.

Collected data

- Number of metres of piping/conduit laid, upgraded or replaced.
- Number of person equivalents (PE) of water or wastewater the plant processes, identifying any increase that can be attributed to the investment.
- Qualitative indicators/targets for adaptation to climate change (managing urban runoff etc.), with a description of weather-related or climate-related problems that will be mitigated by the investment.
- Where relevant, amount of electricity, biogas or other energy carrier expected to be produced each year.

Adaptation measures

This category is dedicated towards adaptation measures to new environmental conditions, due to inter alia anticipated increasing rainfall, rising sea levels, or increased drought. Projects deemed eligible on a case by case basis. Relevant indicators are dependent on the characteristics of the project, and determined by Kommuninvest in consultation with the borrower.

Environmental management

Eligible Projects are intended to promote sustainable environment development in areas other than climate change. Measures include preserving biodiversity, sustainable agriculture and improvement of eco-systems. Projects are deemed eligible on a case by case basis. Relevant indicators are dependent on the characteristics of the project, and determined by Kommuninvest in consultation with the borrower. No project applications by 31 December 2017.

Kommuninvest is a Swedish municipal cooperation set up in 1986 to provide cost-efficient and sustainable financing for local government investments in housing, infrastructure, schools, hospitals etc. The cooperation comprises 288 out of Sweden's 310 local governments, of which 277 municipalities and 11 county councils/regions. Kommuninvest is the largest lender to the Swedish local government sector and the sixth largest credit institution in Sweden. At year-end 2017, total assets were SEK 357 billion (USD 43.4 billion), with a loan portfolio of SEK 310 billion (USD 37.7 billion). The head office is located in Örebro.

KOMMUNINVEST