Fossil Free Sweden

Supporting local government climate action through Green Loans & Green Bonds

Björn Söderlundh, Head of Lending, Kommuninvest
Green Bonds & Green Finance Conference, Beijing 7 April 2016
KOMMUNINVEST
Swedish Local Government Debt Office

• Founded 1986 by ten local governments. Currently 281 owners/members (total=310), of which 272 municipalities and 9 county councils/regions.

• AAA/Aaa, stable outlook.

• Balance sheet FY ’15: USD 41bn/EUR 37bn

• Lending portfolio FY ’15: USD 30/EUR 28bn

• Funding on international and domestic capital markets. Lending in Sweden.

• Mission: provide members with cost-efficient and stable investment funding.
## Kommuninvest Green Bonds Framework

### Adhering to the four pillars of the Green Bond Principles

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<th>1. Use of Proceeds</th>
<th>2. Project Evaluation and Selection</th>
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<td>Investment projects undertaken by Swedish local governments that promote the transition to a low-carbon and climate-resilient society.</td>
<td>i) Project identification and verification by the environmental and treasury functions in Kommuninvest’s member municipalities/county councils;</td>
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<td>ii) screening and pre-approval by Kommuninvest’s Lending department;</td>
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<td>iii) review and final approval by consensus vote in the Kommuninvest Green Bonds Environmental Committee.</td>
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<tr>
<td>Earmarked account for proceeds. Lending to Eligible Projects precedes Green Bond issuance.</td>
<td>i) Annual investor impact report regarding green bond issuance and Eligible Projects;</td>
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<td>ii) Annual sustainability reporting.</td>
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### 2nd opinion from Cicero (environmental research institute)

[www.kommuninvest.se](http://www.kommuninvest.se)

Bloomberg ticker: KOMINS
Eligible project categories

- Environmental management
- Energy efficiency
- Waste management
- Public transportation
- Renewable energy
- Green buildings
- Adaption measures
- Water management

Kommuninvest
Green loan

www.kommuninvest.se

Bloomberg ticker: KOMINS
Process

Eligible Projects
Swedish local government investment projects which promote the transition to low carbon and climate resilient growth. Eligible Projects shall be:
• part of applicant’s systematic environmental work;
• be related to the national or regional environmental goals;
• target mitigation or adaption to climate change, or environmental mgmt.

Green Bonds
• Majority of Green Bonds proceeds to new projects (on-going, planned or completed max 9 months before issue).
• Guideline: Green Bonds to be issued against max. 75 % of Eligible Loans portfolio.

Eligible Loans
• Loan application must be signed by applicant’s Finance and Environmental departments
• Screening and pre-approval by Kommuninvest’s Lending department
• Quarterly: Eligible Projects reviewed and finally approved by consensus vote in the Kommuninvest Green Bonds Environmental Committee.
Sustainability criteria

All 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
- Target either mitigation of climate change, adaptation to climate change, or be a project related to environmental management in other areas than climate change.

Additional requirement for Green buildings and energy efficiency

Be either:

1. New buildings with at least 25 per cent less energy use per square metre and year than required by applicable regulations (Swedish Building Regulations (BBR 21)). Preferably a minimum certification of either 1) LEED gold, 2) BREEAM very good, 3) Environmental Building (Miljöbyggnad silver), 4) Svanen, 5) EU Green Building or 6) Feby-12 (Mini-energy building)

2. Energy efficiency measures in existing buildings, activities and operations leading to at least 25 per cent less energy use

3. Major renovation of buildings leading to a reduced energy use per square metre per year of at least 35 per cent or compliance with applicable regulations for new buildings (Swedish Building Regulations (BBR 21)).
Environmental Committee

Committee members (left to right):
Sara Pettersson, Urban Development Officer, City of Gothenburg
Susanne Arneborg, Energy Coordinator, Municipality of Borås
Björn Söderlundh, Head of Lending, Kommuninvest
Hanna Arneson, Sustainability Mgr, Municipality of Örebro
Andreas Hagnell, Senior Advisor Environment and Energy, Swedish Association of Local Authorities and Regions
Marta Fallgren, Environmental Mgr, Uppsala County Council
Petra Mangnäs, Client Advisor, Kommuninvest

AREAS OF EXPERTISE
• Energy and climate strategy
• Urban development and planning
• Waste management and circular economy, ecological economics
• Environmental management
• Environmental engineering
• Sustainability reporting

TASKS
• Audit and final approval of Green Loan applications
• Advisory board to Kommuninvest and Kommuninvest borrowers
• Review and decide on Green Loan reporting by borrowers
• Review and approve Green Loans impact reporting in annual investor report
• Participate in development of Kommuninvest Green Bonds framework
Thank you

For additional information, please consult Kommuninvest’s Investor Presentation and Investor Factbook:

www.kommuninvest.org

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Eligible Loans as of 7 March 2016 (1/3)

Committed funds SEK 8.8 bn
- Public Transportation 4%
- Green Buildings 27%
- Energy Efficiency 2%
- Renewable Energy 67%

Projects may include
- Wind
- Wave
- Solar
- Hydro
- Geothermal
- Bioenergy
- Biogas from waste

Disbursed SEK 6.4 bn
- Public Transportation 5%
- Green Buildings 36%
- Energy Efficiency 3%
- Renewable Energy 55%

New financing vs refinancing
SEK 8.8 bn in committed funds
- Refinancing 18%
- New financing * 82%

* Project is planned, on-going or completed a maximum of nine months before end of Q1 2016
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<tr>
<th>Borrower</th>
<th>Committed, SEK mn</th>
<th>Disbursed, SEK mn</th>
<th>Project category</th>
<th>Description</th>
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<tr>
<td>Eskilstuna municipality</td>
<td>165</td>
<td>165</td>
<td>Renewable Energy</td>
<td>Four new wind power turbines</td>
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<tr>
<td>Skellefteå Stadshus</td>
<td>650</td>
<td>650</td>
<td>Renewable Energy</td>
<td>Blaiken wind power plant, phase 2 and 3</td>
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<tr>
<td>Järfälla municipality</td>
<td>317</td>
<td>300</td>
<td>Green Buildings</td>
<td>Herresta School in Barkarby district</td>
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<tr>
<td>Karlstad municipality</td>
<td>900</td>
<td>900</td>
<td>Renewable Energy</td>
<td>Heden 3 - new bio-fuelled combined power and heating plant (district heating)</td>
</tr>
<tr>
<td>Borås municipality</td>
<td>2,500</td>
<td>250</td>
<td>Renewable Energy</td>
<td>Sobacken - new wastewater treatment plant and new bio-fuelled combined power and heating plant (district heating)</td>
</tr>
<tr>
<td>Årehus AB</td>
<td>44</td>
<td>40</td>
<td>Green Buildings</td>
<td>New nursery school in Undersåker</td>
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<td>Biogasbolaget i Mellansverige AB</td>
<td>49</td>
<td>49</td>
<td>Renewable Energy</td>
<td>Facility for biogas production located at Mosserud recycling station in Gottebol</td>
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<tr>
<td>Trelleborg municipality</td>
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<td>240</td>
<td>Public Transportation</td>
<td>Co-financing for regional train network Trelleborg-Malmö</td>
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<tr>
<td>Trollhättans Tomt AB (Trollhättan Ground Plot Company)</td>
<td>5</td>
<td>0</td>
<td>Energy Efficiency</td>
<td>Energy efficiency measures in two municipal properties</td>
</tr>
<tr>
<td>Trollhättans Tomt AB (Trollhättan Ground Plot Company)</td>
<td>43</td>
<td>40</td>
<td>Green Buildings</td>
<td>Construction of new nursery school</td>
</tr>
<tr>
<td>Karlskoga Energi &amp; Miljö AB</td>
<td>250</td>
<td>250</td>
<td>Renewable Energy</td>
<td>Refinancing of 24 existing small scale hydropower plants. Total annual production (normalised): 100,600 MWh, equivalent to heating 6,700 houses.</td>
</tr>
<tr>
<td>Kommunfastigheter i Knivsta AB</td>
<td>163</td>
<td>150</td>
<td>Green Buildings</td>
<td>Construction of the new Högås school (Sweden's first school built as a passive house)</td>
</tr>
<tr>
<td>Borrower</td>
<td>Committed, SEK mn</td>
<td>Disbursed, SEK mn</td>
<td>Project category</td>
<td>Description</td>
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<tr>
<td>Gävle municipality</td>
<td>120</td>
<td>0</td>
<td>Ren. Energy</td>
<td>Forsbacka biogas production facility</td>
</tr>
<tr>
<td><strong>Karlskoga Energi &amp; Miljö AB</strong> (Karlskoga Energy &amp; Environment Company)</td>
<td>190</td>
<td>190</td>
<td>Energy Efficiency</td>
<td>Facilities for district heating, including combined power and heating plant and distribution pipelines.</td>
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<tr>
<td><strong>Karlskoga Energi &amp; Miljö AB</strong> (Karlskoga Energy &amp; Environment Company)</td>
<td>35</td>
<td>35</td>
<td>Water Management</td>
<td>Upgrading of wastewater treatment facility to comply with EU requirements regarding nitrogen purification.</td>
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<tr>
<td>Umeå municipality</td>
<td>76</td>
<td>76</td>
<td>Public Transportation</td>
<td>Electric buses for local transport.</td>
</tr>
<tr>
<td>Umeå municipality</td>
<td>300</td>
<td>300</td>
<td>Green Buildings</td>
<td>New nursery schools (Solbacken, Margonstjärnan &amp; Hedlunda) and new schools (Flurkmark &amp; Storsjö)</td>
</tr>
<tr>
<td>Umeå municipality</td>
<td>268</td>
<td>268</td>
<td>Green Buildings</td>
<td>Dedicated buildings for public admistration, care and sports</td>
</tr>
<tr>
<td><strong>AB Bostaden i Umeå</strong> (Umeå Housing AB)</td>
<td>276</td>
<td>276</td>
<td>Green Buildings</td>
<td>Energy efficiency measures in existing multi-family housing units, including Sustainable Ålidhem area</td>
</tr>
<tr>
<td><strong>AB Bostaden i Umeå</strong> (Umeå Housing AB)</td>
<td>674.5</td>
<td>674.5</td>
<td>Green Buildings</td>
<td>Production of new low-energy multi-family housing units, including Sustainable Ålidhem area</td>
</tr>
<tr>
<td><strong>Eksta Bostads AB</strong> (Eksta Housing AB)</td>
<td>119</td>
<td>119</td>
<td>Green Buildings</td>
<td>Passive houses (Vallda Heberg geriatric care housing unit in Kungsbacka)</td>
</tr>
<tr>
<td><strong>Eksta Bostads AB</strong> (Eksta Housing AB)</td>
<td>76,5</td>
<td>77</td>
<td>Green Buildings</td>
<td>Passive houses (Vallda Heberg senior housing units 55+ in Kungsbacka)</td>
</tr>
<tr>
<td><strong>Trosabygdens Bostad AB</strong> (Trosabygden Housing AB)</td>
<td>33</td>
<td>33</td>
<td>Green Buildings</td>
<td>Multi-family housing in Trosa. 16 apartments based on Kombo housing concept developed by SABO (the Swedish Association of Public Housing Companies)</td>
</tr>
<tr>
<td><strong>Fastigheter i Linde AB</strong> (Lindesberg Property AB)</td>
<td>104</td>
<td>52</td>
<td>Green Buildings</td>
<td>Multi-family housing in Lindesberg with 70 apartments (Åkilisbacken)</td>
</tr>
<tr>
<td><strong>Södertörns Energi AB</strong> (Södertörn Energy AB)</td>
<td>1,250</td>
<td>1,250</td>
<td>Renewable Energy</td>
<td>District heating, district cooling and electricity for the Botkyrka, Huddinge and Salem municipalities.</td>
</tr>
</tbody>
</table>
Herresta School in Järfälla

Sweden’s first school built entirely from cross laminated timber

<table>
<thead>
<tr>
<th>Committed funds</th>
<th>Whereof disbursed</th>
<th>Project start</th>
<th>Project completion</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEK 317 million</td>
<td>SEK 300 million</td>
<td>1 Jan. 2014</td>
<td>15 Nov 2015</td>
<td>Green Buildings</td>
</tr>
</tbody>
</table>

- Part of Barkarbystaden, the largest urban development in Stockholm area – a new city within the city with 18,000 new housing units and workspaces for 10,000 people.
- Nursery school for 100 children, school for 300 children ages 6-11, approx 8,500 sq.m.
- Built according to specifications for Environmental Building (Miljöbyggnad) Gold
- Energy use for building estimated at 57 kWh per sq.m, nearly CO2-neutral. Solar panels on roof provides electricity amounting to 16 kWh per sq.m.
- One of Sweden’s contributions at the 2014 World Sustainable Building Conference
Blaiken wind farm – phases 2 & 3

One of Europe’s largest onshore wind farms

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</table>

- Skellefteå Kraft (owned by Skellefteå Municipality) develops one the largest wind farms in Europe, in collaboration with energy company Fortum.
- Once completed, in 2017, the wind farm will contain 99 wind turbines with an installed capacity of 247.5 MW
- Annual production of 700 GWh, equivalent to annual electricity use in 161,500 apartments.
- Phases 2 and 3 consist of 30 + 30 wind turbines.
Sobacken – Borås municipality

New wastewater treatment plant and new bio-fuelled combined power and heating plant

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<tr>
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<th>Project completion</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEK 2.5 billion</td>
<td>SEK 250 million</td>
<td>1 Jan. 2012</td>
<td>31 Dec. 2015</td>
<td>Renewable Energy</td>
</tr>
</tbody>
</table>

- Objectives: 1) Safeguard delivery of district heating and wastewater purification 2) meet regulatory emissions standards for wastewater 3) allow the city to grow 4) contribute to vision of becoming fossil-free.

- Co-localization of wastewater treatment plant and combined power and heating plant, together with recycling center and biogas production facility, creates synergy effects.

- Climate benefits:
  - Significant increase in renewable energy, both heating and electricity (electricity ~80 GW/year).
  - Nitrogen and phosphorus emissions as well as BOD7 to be reduced; N from 16 mg/litre to 8 mg/litre, equivalent to wastewater from 25,400 people.
  - Increased efficiency
  - Reduced amount of transports in the city.
Umeå – Electric buses for public transport

Energy-efficient, clean and quiet system for public transport

<table>
<thead>
<tr>
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<th>Whereof disbursed</th>
<th>Project start</th>
<th>Project completion</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEK 77 million</td>
<td>SEK 77 million</td>
<td>1 Jan. 2012</td>
<td>30 Apr. 2016</td>
<td>Public Transportation</td>
</tr>
</tbody>
</table>

• The city of Umeå, in northern Sweden, is investing in a sustainable system for local transport, based on ultra-rapidly-charged electric buses (10 min. charging – 30 min. driving)

• Electrical buses replace diesel buses, reducing noise and emissions of carbon dioxide, nitrogen dioxide and particulate matter.

• In 2016 there will be 9 electric buses and two fast charging stations in regular traffic.

• Vision 2020:
  - another 24 buses in operation
  - share of electric bus transport kilometers to have increased from zero in 2010 to 70 percent.

• Due to high degree of renewables in local energy mix, there is near-zero emissions of greenhouse gases.
All projects are located in Sweden

Applicable legislation and guidelines
- EU Law
- The Swedish Environmental Code (Miljöbalken)
- Sweden’s 16 environmental quality objectives [www.miljomal.se](http://www.miljomal.se)
- Applicable municipal/county council environmental policies
- OECD Guidelines for Multinational Enterprises

Kommuninvest sustainability perspective and indicators:

Top-10 countries, Social Progress Index 2015
- Norway
- Sweden
- Switzerland
- Iceland
- New Zealand
- Canada
- Finland
- Denmark
- Netherlands
- Australia

Source: [socialprogressimperative.org](http://socialprogressimperative.org)

Top-10 countries, Good Country Index
1. Ireland
2. Finland
3. Switzerland
4. Netherlands
5. New Zealand
6. **Sweden**
7. United Kingdom
8. Norway
9. Denmark
10. Belgium

Source: [goodcountry.org](http://goodcountry.org)
View on Fossil energy – fossil reduction vs fossil-free

The overall aim of the Kommuninvest Green Bonds framework is to contribute to the transition to low-carbon and climate-resilient growth, through projects that address mitigation of climate change, adaptation to climate change or environmental management in other areas than climate change (the latter max 30% of volume).

In its Second Opinion, Cicero points to the fact that some of Eligible projects may include fossil energy to a non-negligible extent (over 10-20%). This applies to the framework categories Renewable energy, Energy efficiency in energy systems and Public transportation and sustainable transportation.

The framework has a broad scope, as it is aimed at supporting climate and environment initiatives across Sweden’s local government sector, all over Sweden. The projects address sectors of society with great impact on CO₂-emissions, but which are not totally CO₂-free.

We will not approve investment projects that lead to a lock-in of fossil energy-based infrastructure. However, we may approve projects with a component of fossil energy if the project enables the transition to a climate-neutral infrastructure and similar solutions, whilst reducing climate impact. Impact analysis and impact reporting is an absolute requirement for projects partly encompassing fossil energy to a non-negligible extent (over 10-20%).

The Environmental Committee is responsible for assuring that any project that includes a fossil component to a non-negligible extent will have significant positive climate and/or environmental impacts.

Our views on fossil with regards to the project categories listed above is outlined in this paper. A complete exclusion of fossil energy from any project is virtually impossible to achieve, since fossil energy is often embedded in components, building materials and energy production equipment, even in solar cells.

The Swedish energy system – a background

Sweden’s energy system uses a very low proportion of fossil fuels, especially in the production of electricity and district heating. The total share of renewables in the energy system, at over 50 percent, is the highest in the European Union. In addition, Sweden has a large proportion of nuclear power for electricity generation, at about 40 percent. Fossil energy is mainly used in the transport sector and for industrial processes.

A particular Swedish feature is that half of the energy used for heating purposes is supplied by district heating. The expansion of district heating and its conversion from fossil fuels to biomass and waste is the main factor behind Sweden’s reduced fossil CO₂ emissions by some 25 percent since 1990.

Why we allow a small share of fossil energy in district heating (max. 10 %)

In the district heating sector, a fossil energy component sometimes cannot be completely avoided. Fossil energy may be required to start up processes, to use for peak energy at times of extreme energy demand and for back-up purposes. District heating is a flexible energy system capable of extracting energy from various types of energy sources and waste. We only accept projects with positive climate impact, e.g. a reduced carbon footprint, and which uses a limited amount of fossil energy (max 10 percent).

We favor using waste for energy extraction as a resource-efficient and more climate-positive solution than landfill and other permanent deposits. However, waste often includes fractions of plastics, which according to international standards is regarded as fossil energy. Therefore, fossil waste incineration will not be accepted as a major component of eligible projects. (In general, maximum 10 per cent fossil component).

POSITION PAPER ON FOSSIL DATED 5 FEBRUARY 2016
We view peat as a non-renewable energy source. A possible exception is peat whose extraction can be shown to reduce methane leaking emissions from peat bogs. Such peat could be tolerated as climate positive.

Kommuninvest also benefits from operating in a country where systems and regulations regarding waste sorting and smoke gas purification are highly developed.

Why some energy efficiency projects may include fossil energy
We support energy efficiency measures because they lead to a reduction in energy use, thereby contributing to a reduction in CO₂ emissions. The principal way for property owners to reduce climate impact is to make energy use more efficient. The focus of the projects will be on energy reduction, however the energy supply, which will generally not be a part of the project, may include a fossil energy component. Given the increasingly interconnected electricity system in the Nordic region and Europe¹, it is difficult for property owners to completely exclude fossil components in the energy mix. Property owners that are supplied with district heating also have limited opportunity to influence the energy mix. The share of renewables in the energy system is mainly a task for national and EU regulation.

Why public transport and sustainable mobility projects may include fossil energy
We support public transport-related projects in order to increase the use of such systems, thereby reducing car use and hence the use of fossil energy. However, in the support of a build-up of public transport infrastructure, for example, we generally cannot be certain that this infrastructure will only be used by transport vehicles that run on renewable energy. This usually is outside the scope of the project.

Further, fuel mixtures for renewables often include minor fossil components, this generally is the case for both biodiesel, ethanol, biomethane and electricity. The actual shares of renewables is often a question for national regulation and market. It is thus problematic to completely exclude fossil components.

If vehicles are part of the application, they generally should be powered by renewable fuels. Fossil fuel buses (i.e. diesel and hybrid) can only be approved if the municipality/county council shows that the investment:

• reduces total Greenhouse Gas emissions by promoting public over private transportation more for the same cost than a solution based on green fuel-only buses; or
• includes a plan to use a substantial portion of green fuels (for example biodiesel) in these buses; and
• includes impact analysis and impact reporting.

Given that few municipalities and regions operate their own bus fleets, such projects are expected to be limited in number.

Impact analysis and reporting required
The framework clearly specifies that a project that includes fossil energy to a non-negligible extent will only be approved if an impact analysis shows that there will be significant positive climate and/or environmental impact and impact reporting afterwards is required. The individual loan application should state why fossil components are part of the energy mix. The above will ensure a high environmental standard in execution.

¹) The Swedish electricity mix is approximately 60 g CO₂ per kWh. This can be compared with about 100 g CO₂ per kWh for the Nordic electricity mix; 1000 g CO₂ per kWh for coal-generated electricity and nearly 400 g CO₂ per kWh for gas condensation, a common form of electricity generation in Europe. As electricity markets in the Nordic region and Europe become increasingly interconnected, it is not entirely clear how to assess the environmental impact. Furthermore, the share of renewable electricity in Sweden and Norway are regulated with green certificates rather than by individual buying of certified renewable electricity.
KOMMUNINVEST

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