

'Second Opinion' on Fortum's Green Bond framework

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Summary

Fortum Värme's green bond framework and environmental policies provide a sound framework for non fossil fuel investments in the energy sector. Sustainability in general and climate mitigation in particular is well integrated in the company's business model. Fortum Värme has an impressive target of producing district heating only from renewables and recovered energy sources at the latest in 2030.

The framework defines eligible projects as those that fall within the categories of renewable energy, energy efficiency and reduced environmental impact (limited to 20 per cent). Fortum Värme's framework explicitly excludes coal and fossil fuels projects from green bond financing, in line with CICERO's long-term view on a low carbon and climate resilient future. The framework clarifies that peat projects are not eligible under the framework. Projects in infrastructure and improvements in combustion processes in the combined coal and biomass installation at the existing Värtenvarket, which might be significant, will only be eligible if the investments result in an increased share of biomass. CICERO recommends that these investments in an existing coal fired plant are followed up closely in order to ensure that the actual share of biomass is increased, that emissions are reduced accordingly and that these investments actually contribute to the phase out of fossil fuels at the latest in 2030, hopefully much earlier.

Environmental specialists in the company have to approve all eligible projects. Eligible projects must result in a significant improvement in line with the green bonds projects definitions. Fortum Värme will provide an annual letter to investors. This letter will include a list of financed projects, a selection of project examples and a summary of Fortum Värme Green Bond development. Projects will be measured and followed up according to defined methodologies depending of the project type. CICERO is impressed by the Fortum Värme's life cycle reporting keeping track of both upstream and downstream emission data. This gives the company an important tool in reducing the company's carbon footprint, and hence reduces the economic risk from climate change.

The company has no pending processes on climate adaptation, but monitor the knowledge base for how climate change impacts the Stockholm area.

1. Introduction and background

As an independent, not-for-profit, research institute, CICERO (Center for International Climate and Environmental Research - Oslo) provides second opinions on institutions' framework and guidance for assessing and selecting eligible projects for green bond investments, and assesses the framework's robustness in meeting the institutions' environmental objectives. The second opinion is based on documentation of rules and frameworks provided by the institutions themselves (the client) and information gathered during meetings, teleconferences and e-mail correspondence with the client. CICERO

encourages the client to make this Second Opinion publically available. If any part of the Second Opinion is quoted, the full report must be made available.

CICERO has established the global Expert Network on Second Opinions (ENSO), a network of independent non-profit research institutions on climate change and other environmental issues, to broaden the technical expertise and regional experience for second opinions. CICERO works confidentially with other members in the network to enhance the links to climate and environmental science, building upon the CICERO model for second opinions. In addition to CICERO, ENSO members include Basque Center for Climate Change (BC3), International Institute for Sustainable Development (IISD), Stockholm Environment Institute (SEI), and Tsinghua University 's Institute of Energy, Environment and Economy.

CICERO's Second Opinions are normally restricted to an evaluation of the mechanisms or framework for selecting eligible projects at a general level. CICERO does not validate or certify the climate effects of single projects, and, thus, has no conflict of interest in regard to single projects. CICERO is neither responsible for how the framework or mechanisms are implemented and followed up by the institutions, nor for the outcome of investments in eligible projects.

This note provides a Second Opinion of Fortum Värme's Green Bond Framework and policies for considering the environmental impacts of their projects. The aim is to assess Fortum Värme's Green Bond Framework as to its ability to support Fortum Värme's stated objective of a transition to a low-carbon and resource efficient growth.

Climate change will have significant impacts on economic development, both from the perspectives of sustainable future development pathways and from the perspective of adapting to changing circumstances. The recently released Intergovernmental Panel on Climate Change report (IPCC, 2014) highlighted the seriousness of human-induced climate effects. The report can be viewed as an immediate call to action on the challenge of reducing greenhouse gas (GHG) emissions and adapting to climate change. The 195 countries that have ratified the United Nations Framework Convention on Climate Change (UNFCCC) have agreed to reduce GHG emissions to limit global temperature increase to below 2°C above pre-industrial level. Reaching this target requires shifting development pathways towards low- or zero-emitting economies without delay, and avoiding locking-in high-emitting capital.

CICERO takes a long-term view on activities that support a low-carbon climate resilient society. In some cases, activities or technologies that reduce near-term emissions result in net emissions or prolonged use of high-emitting infrastructure in the long-run. CICERO strives to avoid locking-in of emissions through careful infrastructure investments, and moving towards low- or zero-emitting infrastructure in the long run. Proceeds from green bonds may be used for financing, including refinancing, new or existing green projects as defined under the mechanisms or framework. CICERO assesses in the second opinion projects likeliness of meeting expectations for a low carbon and climate resilient future.

2. Brief description of Fortum Värme and the Green Bond framework and environmental policies

AB Fortum Värme Holding samägt med Stockholms stad (publ) (Fortum Värme) is the leading provider of district heating, cooling, electricity and gas in the greater Stockholm area. The gas, both natural gas and biogas, is sold through its 100 per cent owned daughter company Stockholm gas. The company has 9500 district heating and district cooling customers. Fortum Värme is jointly owned by Fortum Corporation (90.1% of the shares and 50.1% of the votes) and the City of Stockholm (9.9% of the shares and 49.9 % of the votes).

The company has contributed in making Stockholm one of the world's cleanest capitals. In 2010 the EU named Stockholm the world's first Green Capital.

Fortum Värme aims at reducing the climate impact of its district heating by an interim target of 40% by 2020, through switching to renewable energy, waste to energy production efficiency measures and, as a last resort, carbon offsetting. By 2030 at the latest, production will be 100% based on renewables or recovered energy. The aim is to achieve this target significantly earlier than 2030.

To achieve this target and promote the transition to a low carbon and resource efficient growth the company has developed a green bonds strategy and framework. The use of proceeds from these green bonds will mainly finance new investments and to a lesser extent reinvestment and refinancing of eligible projects.

Table 1 Documents received from Fortum Värme

Ref. nr.	File name
Policies and guidelines	
1.	Annual report 2013
2	Annual environmental report 2013
3	Fortum Code of Conduct
4	Fortum Värmes Sustainability Policy
5	ISO 14001 Certificates
6	Green Bond Framework
7	Presentation Green Bond Strategy
8	Checklist for classification of sustainability of investments
9	EHS - Review project
10	Project management directions – environmental project plan

11	Presentation of decision making
12	Project management and planning
13	Significant environmental impacts
14	Assessment of environmental impacts
15	Environmental management systems – principles
16	Environmental management systems – actions
17	Reporting guidelines
18	Waste to energy - Fortum Värme's position
19	Sustainable use of Bioenergy
20	Haga initiative climate reporting 2013

Environmental policies that guide Fortum Värme

Fortum Värme has developed an overarching sustainability policy focusing on economic efficiency, and environmental and social responsibility. This sustainability policy is well integrated in Fortum Värme's business values and operational procedures. Fortum Värme was ISO 14 001:2004 certified in 2013.

The sustainability policy lays strong emphasis on climate and resource efficiency, but also broader environmental considerations are included. The company systematically assesses environmental impacts in all its decision-making processes, including when entering into contractual negotiations with third parties. The sustainability policy is incorporated in the organisation by detailed operational directions and procedures. The company's sustainability performance, including on climate, is assessed every month. Twice a year a more in-depth progress reports are produced. The policy is revised every year.

The company has no pending processes on climate adaptation, but monitor the knowledge base for how climate change impacts the Stockholm area.

Eligible projects

To promote the transition to low carbon and resource efficient growth the company has developed a green bonds strategy and framework to fund, in whole or in part, its green bonds activities in the Stockholm greater area. The framework defines eligible projects as those that fall within the categories of renewable energy, energy efficiency and reduced environmental

impact (limited to 20 per cent). The framework explicitly says that coal and fossil fuels projects are not eligible for green bond financing.

Examples of renewable energy projects are new capacity for production of renewable energy (new plants or production units, modification of existing facilities), new or improved waste handling solutions that increases the use or share of renewable energy (heat, power, biogas), upgrading distribution systems that enables change in operations, or enables connecting end users with district heating and by that replacing local fossil supply and investments in transport infrastructure (harbour, rail, loading technology etc.), vehicles, ships, fuel shifts.

Examples of efficiency projects are change or improvement of equipment, operations and adjustments in distribution system as well as in buildings, demand side Management (DSM), energy recovery measures at production site as well as locally at customer and district cooling (new production or connecting customer to grid) and by that achieve a higher Coefficient of Performance (COP). Also new capacity in waste to energy solutions or change of energy source in existing production in order to reduce primary energy usage in society falls under this category.

A maximum of 20 per cent of the green bonds proceeds will be used to finance environmental improvement projects. By introducing best available technology the target is to immobilize hazardous compounds. Examples of projects that will be financed are flue gas and waste water cleaning, construction of areas designed for eco system services (wetlands or likewise), measures to additionally increase biodiversity and use of fly ash or other biogenic residuals in forestry or agriculture.

The use of proceeds from the Fortum Värme Green Bonds will be used exclusively for projects that meet the certification criteria for Eligible projects.

Transparency and reporting

Fortum Värme will provide an annual letter to investors. This letter will include a list of financed projects, a selection of project examples and a summary of Fortum Värme Green Bond development. This investor letter will be made available on the Company's webpage.

3. Assessment of Fortum Värme's Green Bond framework and environmental policies

Overall, Fortum Värme's green bond framework and environmental policies provide a sound framework for non fossil fuel investments in the energy sector. Sustainability in general and climate mitigation in particular is well integrated in the company's business model.

Table 2: Eligible project categories

Primary objective	Eligible project categories	Likelihood of meeting objectives – concerns
Renewable energy	Biomass	Good – Observe complex impacts of some biofuels. Consider life cycle emissions, and avoid negative impacts on biodiversity.
	Solar	Good – Consider lifecycle pollution.
	Wind	Good - Consider negative impacts on wildlife, nature.
	Wave	Good - Consider negative impacts on wildlife, nature.
	Geothermal	Good – Potential for heavy metal pollution.
	Energy from lake or sea	Good - Consider negative impacts on wildlife, nature.
	Waste handling solutions that increases the use or share of renewable energy (heat, power, biogas)	Good – Observe complex impacts of some biofuels. Consider life cycle emissions, including reducing incineration of fossil fuel waste, and avoid negative impacts on biodiversity.
	Distribution systems that enables change in operations, or connecting end users with district heating and by that replacing local fossil supply	Good
	Transport infrastructure (harbour, rail, loading technology etc.), vehicles, ships, fuel shift	Good – Consider effects on fossil fuel transport.
Efficient use of resources	Change or improvement of equipment	Good – Consider recycling into material of fossil fuel waste instead of incineration.
	Operations and adjustments in distribution system as well as in buildings	
	Demand side Management (DSM)	
	Energy recovery measures at production site as well as locally at	

	customer	
	District cooling (new production or connecting customer to grid) and by that achieve a higher Coefficient of Performance (COP)	
	New capacity in waste to energy solutions or change of energy source in existing production in order to reduce primary energy usage in society	
Environmental improvement	Flue gas and waste water cleaning	Good for environment as a whole, but no climate mitigation objective.
	Constructing of areas designed for eco system services (wetlands or likewise)	Good for environment as a whole, but no climate mitigation objective. Consider resilience measures.
	Measures to additionally increase biodiversity	Good for environment as a whole, but no climate mitigation objective. Consider resilience measures.
	Use of fly ash or other biogenic residuals in forestry or agriculture	Good for environment as a whole, but no climate mitigation objective.

Strengths

Fortum Värme has an impressive target of producing district heating only from renewables and recovered energy sources at the latest in 2030. According to the company's annual report for 2013, the share of renewables and recovered energy in producing district heating is now 84 per cent.

In the period 2010–2015 Fortum Värme is investing SEK 6.5 billion in combined heat and power production in the Stockholm region in order to increase renewables and waste to energy, something that will enable Fortum Värme to gradually phase out fossil fuels.

The new combined heat and power station in Brista has a capacity of handling 240,000 tonnes of waste per year, which equals the amount to waste originating from the population of Stockholm. This year Fortum Värme has launched its Open District Heating concept, which aims to increase energy recovery from various suppliers. Customers that supply surplus heat to the district-heating network will receive market price for this heat that would otherwise be wasted.

The company says in their annual report that they are stepping up their approach to customers in providing energy efficiency advices. Altogether the above mentioned actions together with introducing a green bond framework the company is aiming at closing down its fossil-based production at the latest in 2030, hopefully earlier.

After decreasing for several years, emissions in 2013 increased around 9 per cent. The company explains this with operational problems at its coal plant in 2012, which resulted in lower than normal emissions in that year, combined with lower carbon and coal prices. These factors resulted in more use of coal than previous years, and as a consequence higher emissions. The company bought mainly gold standard credits in order to offset the increase in emissions from the previous year. They explicitly state in their annual environmental report that an increase in emissions is not in line with the company's strategy and offsetting is not taking focus away from reaching the fossil free target at the latest in 2030.

A strong emphasis on environmental aspects, including climate impacts, of investment decisions is well integrated in the company profile and its activities. The green bond framework and strategy fits well into this picture. CICERO takes a long-term view on climate change, and we are therefore very encouraged by the company's goal of being fossil free at latest in 2030 and hopefully much earlier.

We recommend excluding projects that support prolonged use of fossil fuel-based infrastructure that will contribute to GHGs in the long run. Fortum Värme's framework that explicitly says that coal and fossil fuels projects are not eligible for green bond financing is therefore in line with our long-term view on climate change. The framework also explicitly clarifies that Fortum Värme does not classify peat as a renewable energy source and peat projects will therefore not be eligible under the framework. Fortum Värme has informed us that installations for renewable energy production might use some fossil fuels at start-up and closedown of production, and as an emergency fuel. This represents only a small amount of the installations total fuel consumption.

Fortum Värme has good procedures in place for the selection of projects. Eligible Projects within the Green Bonds framework are selected and proposed by project managers, and approved by the Treasury department together with environmental specialists in the Sustainability unit. It's a strength that environmental specialists have to approve all the projects. We also see it as a strength that eligible projects must result in a significant improvement in line with the green bonds projects definitions. Smaller projects might be grouped into programs in order to qualify. The latter is in CICERO's view important in order to capture the potential of energy savings in small efficiency projects.

Weaknesses

We find no obvious weaknesses in the framework as it now stands.

Pitfalls

The company is building a new highly efficient combined heat and power plant (Värtaverket) with a production capacity of 280 MW heat and 130 MW electricity. The plan is to start up production in 2016. The advanced boiler technique will allow for application of a full range of

solid biofuels and reduce the use of fossil fuels significantly. By using forest residues, the plant will support sustainable management of forests. The residuals might come from Finland, the Baltic, Russia and even Transatlantic. Lifecycle assessments will secure that the climate impacts are low compared to fossil fuels.

Waste incineration with energy recovery is a sound environmental and climate friendly option to divert waste away from landfilling. Impressively less than one per cent of household waste now ends up at landfills in Sweden. Waste incineration is, however, best combined with ambitious recycling policies. In Sweden such policies are in place and in 2013 a significant percentage of plastic was recycled (more than 36 per cent). With the newly built plant the waste to energy capacity is increasing. When the capacity of waste incineration is high it might be an incentive to burn waste for energy purposes instead of material recycling. Hence there is a particular need to continue to improve in that regard, in particular to recycle more fossil fuel waste such as plastic into new materials.

Investments in infrastructure and improvements in combustion processes at the existing Värtenvarket installation that runs on coal and a small share of biomass, will only be eligible if the investments result in an increased share of biomass use. Fortum has informed us that these investments might be significant. New investments in existing coal plants might support a prolonged use of coal. We therefore recommend that these investments are followed up closely in order to ensure that the actual share of biomass is increased, that emissions are reduced accordingly and that they contribute to the phase out of fossil fuels at the latest in 2030, hopefully much earlier.

Impacts beyond project boundaries

Due to the complexity of how socio-economic activities impact the climate, a specific project is likely to have interactions with the broader community beyond the project borders. These interactions may or may not be climate-friendly, and thus need to be considered with regards to the net impact of climate-related investments.

Fortum Värme takes a lifecycle approach in its sustainability policy, taking responsibility for all stages in the process including waste deposition. It follows from the company's procedure that environmental impacts in all decision-making processes are systematically assessed, including when entering into contractual negotiations with third parties. Lifecycle analysis to ensure that only sustainable biofuel is used in the production and assessment of climate impacts of imported waste are such examples.

Rebound effects

Another macro-level concern is the potential for rebound effects. For example, energy efficiency improvements that lower energy costs, inducing more energy use and partially offsetting energy savings. This can have the end result of lower reduction in GHG emissions than anticipated. While these effects can never be entirely avoided, it is recommended to be aware of possible rebound effects and avoid investing in projects where the risk of such effects is particularly high. This is however probably a greater concern in developing countries.

Transparency, monitoring, reporting and verification

Fortum Värme reports on emissions from core activities according to Swedish regulations. In addition to reporting these direct emissions the company voluntarily keeps track of and reports indirect emissions from purchased electricity and district heating and emissions from business travel through the Haga Initiative emission disclosure project. CICERO is impressed by this life cycle reporting keeping track of both upstream and downstream emission data. This gives the company an important tool in reducing the company's carbon footprint, and hence reduces the economic risk from climate change.

Fortum Värme will provide an annual letter to investors. This letter will include a list of financed projects, a selection of project examples and a summary of Fortum Värme Green Bond development. The investor letter will be made available on the Company's webpage. Projects will be measured and followed up according to defined methodologies depending of the project type. Emission of greenhouse gases per produced energy unit and use of primary energy per kWh used energy are examples of methodologies in order to measure impacts of projects.