

'Second Opinion' on MuniFin's Green Bond Framework

December 17, 2018

Summary

Overall, MuniFin's Green Bond Framework (GBF) provides a clear and sound framework for climate friendly investments. This is an amended framework (original GBF 23.02.2016; previously updated 30.08.2017). The framework lists eligible categories of projects that are supportive of the objective of promoting a transition to low-carbon and climate-resilient growth and is supported by a strong governance structure. The framework promotes renewables, energy efficiency, sustainable transportation, waste management, water and waste water management, sustainable buildings, as well as environmental management. Climate change related projects will make up 80% of the projects, with the remaining 20% going to environmental management projects including nature conservation. The framework excludes nuclear based projects, but does not comprehensively exclude fossil fuel investments. In such cases, additional screenings will be performed to ensure sustainability. Green bonds can be used to finance both new projects as well as refinance existing eligible projects, though the focus will be on new projects.

In previous updates of their framework (GBF 30.08.2017) MuniFin adjusted the project category eligibility requirements related to sustainable buildings. Furthermore, they strengthened their selection process by including an assessment process and are in the process of finalizing their corporate responsibility and sustainability strategy, both of which are encouraging signs. In this update (GBF 2.11.2018), MuniFin has further adjusted the project category requirements related to sustainable buildings – due to updates in Finnish energy efficiency regulations.

The overall assessment of the governance structure of MuniFin gives it a rating of Good. MuniFin has a strong environmental competence and formalized procedures for screening and an established framework for reporting, but lacks specific eligibility criteria in many of its project categories, specific screenings for resilience, and verification of results. MuniFin has capacity and environmental expertise in place within their Green Evaluation Team which ensures appropriate selection of eligible projects for loans. MuniFin publishes an annual report on its results for its investors, which is based on the guidance from the Joint Position Paper on Green Bonds Impact Reporting of the Nordic Public Sector Issuers.

Based on the overall assessment of the project types that will be financed by the green bond and governance and transparency considerations, MuniFin's Green Bond Framework gets a Medium Green shading. The project categories were rated either Medium or Dark Green. To reach a Dark Green level, MuniFin would need a higher ambition for some of the project categories (e.g. complete abandonment of fossil fuel use), a stronger focus on adaptation and resilience, as well as the assessment and reporting of impacts to a larger extent.



CICERO
Medium Green

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1 Introduction and background

The global Expert Network on Second Opinions (ENSO), a network of independent non-profit research institutions on climate change and other environmental issues, was established by CICERO (Center for International Climate and Environmental Research – Oslo) 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.

This Second opinion was produced by SEI and CICERO on behalf of ENSO. SEI is an independent international research institute that has been engaged in environment and development issues at local, national, regional and global policy levels for more than 25 years. CICERO is an independent, not-for-profit, research institute, focused on providing reliable and comprehensive knowledge about all aspects of the climate change problem. A more detailed description of each of these institutions can be found at the end of this report. SEI and CICERO are both independent of the entity issuing the bond, its directors, senior management and advisers, and is remunerated in a way that prevents any conflicts of interests arising as a result of the fee structure.

The CICERO-led ENSO 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 institution themselves (the client) and information gathered during meetings, teleconferences and email correspondence with the client. ENSO encourages the client to make this Second Opinion publicly available. If any part of the Second Opinion is quoted, the full report must be made available.

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

This note provides a Second Opinion of MuniFin's Green Bonds Framework and policies for considering the environmental impacts of their projects. The aim is to assess the MuniFin Green Bonds Framework as to its ability to support MuniFin's stated objective of promoting the transition to low-carbon and climate resilient growth.

This Second Opinion is based on the green bond framework presented to ENSO by the issuer. Any amendments or updates to the framework require that ENSO undertake a new assessment. ENSO 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. ENSO 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. ENSO assesses in this Second Opinion the likeliness that the issuer's categories of projects will meet expectations for a low carbon and climate resilient future.

Expressing concerns with ‘shades of green’

CICERO/ENSO Second Opinions are graded dark green, medium green or light green, reflecting the climate and environmental ambitions of the bonds and the robustness of the governance structure of the Green Bond Framework. The grading is based on a broad qualitative assessment of each project type, according to what extent it contributes to building a low-carbon and climate resilient society. The shading methodology also aims at providing transparency to investors when comparing green bond frameworks exposure to climate risks. A dark green project is less exposed to climate risks than a lighter green investment.

This Second Opinion will allocate a ‘shade of green’ to the green bond framework of MuniFin:

- **Dark green** for projects and solutions that are realizations today of the long-term vision of a low carbon and climate resilient future. Typically, this will entail zero emission solutions and governance structures that integrate environmental concerns into all activities.
- **Medium green** for projects and solutions that represent steps towards the long-term vision but are not quite there yet.
- **Light green** for projects and solutions that are environmentally friendly but do not by themselves represent or is part of the long-term vision (e.g. energy efficiency in fossil-based processes).
- **Brown** for projects that are irrelevant or in opposition to the long-term vision of a low carbon and climate resilient future.

Assessing governance

In assessing the governance quality of the issuer, three aspects are studied: The policies and goals of relevance to the green bond framework; the selection process used to identify eligible projects under the framework; and the reporting on the projects to investors. Based on these aspects, an overall grading is given on governance strength falling into one of three classes: Fair, Good or Excellent.

Overall shading

The project types that will be financed by the green bond primarily define the overall grading. However, governance and transparency considerations are also important because they give an indication whether the institution that issues the green bond will be able to fulfil the climate and environmental ambitions of the investment framework. Hence, the governance assessment plays a role in the overall shading of the framework. Investments in all shades of green projects are necessary in order to successfully implement the ambition of the Paris agreement. The overall shading reflects an ambition of having the majority of the project types well represented in the future portfolio, unless otherwise expressed by the issuer.

2 Description of MuniFin's Green Bond Framework and rules and procedures for climate-related activities

Municipality Finance Plc (Kuntarahoitus Oyj; MuniFin) is a credit institution specialized in financing the local government sector and state-subsidised social housing production. MuniFin is Finland's third largest financing institution. MuniFin has the responsibility of securing the availability of competitive funding under all market conditions. MuniFin's goal is to promote welfare through the financing of local level projects related to infrastructure, healthcare, education and the environment. It provides its customers (municipalities, municipal federations, companies owned and controlled by the municipalities as well as housing corporations) with financing solutions, such as loans and leasing for property and equipment management, risk management and debt issuance.

In Finland, there are currently 295 municipalities and 139 joint authorities, which have been set up by two or more local authorities to tend to specific tasks on a permanent basis. Municipal Finance ownership structure is as follows:

- 53% owned by municipalities, municipal federations and municipality owned companies
- 31% owned by Keva, a local public sector pension fund
- 16% owned by the Finnish national government.

MuniFin acquires its funding in a diversified manner from both inter-national and domestic capital markets. All of its funding is guaranteed by the Municipal Guarantee Board. MuniFin views its responsibility towards society from many perspectives. Social responsibility is considered to be central to the projects that are financed and is further promoted through sponsorship of children and youth related activities. In 2018, MuniFin published its first Responsibility Policy (2017) relating to corporate social responsibility, including social and environmental responsibility. It is available on its website, along with its Responsibility Report 2017.

Environmental responsibility can be seen through their WWF Green Office certification, promotion of environmental awareness, green procurement policies, and offering investors sustainable investment options. Furthermore, MuniFin is also in the process of developing a strategy related to corporate social responsibility and sustainability. Finally, MuniFin focuses on staff well-being and has been named one of Finland's best workplaces.

MuniFin started its work with Green Bond activity in 2012 and has continued actively since. MuniFin has experience with green bonds in the domestic market, but project financing has been limited by the small size of the Finnish market. Green bonds enable MuniFin to lend money to their customers for eligible projects. MuniFin published its first Green Bonds Framework in February 2016 and updated it in August 2017. This second opinion is an assessment of a second update of their framework dated 16 August 2018. In the new GBF, MuniFin has adjusted the project category eligibility requirements related to sustainable buildings.

Use of proceeds:

Projects eligible under the Green Bond Framework (GBF) are to promote in part or in whole, “the transition to low carbon and climate resilient growth”. They include climate change mitigation projects, climate change adaptation projects, as well as projects which are related to environmental management rather than directly climate related. Green bonds can be used to finance both new projects as well as refinance existing eligible projects. The focus will be on new projects which are defined as loans to projects where disbursements have been made no earlier than one year of Green Bond issuance. Green bonds will not finance nuclear or fossil fuel-based projects with possible exceptions within the project categories energy efficiency, public transportation and waste incineration. The Green Evaluation Team will only approve such projects if it can be shown with a life cycle analysis or in other ways that the longer-term net impact on the environment will be positive.

Selection:

Eligible projects will be selected based on initial identification and verification at the customer and potential customer level (municipalities, municipal federations, companies owned and controlled by the municipalities as well as housing corporations). Approval takes place at the Municipal Finance Lending department. A review and final approval, which is based on consensus, is determined by the Municipality Finance’s Green Evaluation Team on a quarterly basis. This team includes at least two members from the environmental functions of Municipality Finance’s customers and/or other environmental experts from relevant public sector entities/organisations. Each loan and leasing will be analyzed independently by the Green Evaluation Team and will only be approved if the assessed long-term net environmental impact is positive.

Management of proceeds:

MuniFin will establish a dedicated account for the net proceeds of the issued Green Bonds. As long as the Green Bonds are outstanding, and the special account has a positive balance, at the end of every fiscal quarter, funds will be deducted from the special account and added to Municipality Finance’s lending pool in an amount equal to all disbursements from that pool made during such quarter in respect of Eligible Projects. Until disbursement to Eligible Projects, the special account balance will be placed in liquidity reserves.

Transparency and Accountability:

To enable investors to follow the development and provide insight to prioritized areas, MuniFin will provide an annual Green Bond Impact Report to investors. Reporting will include 1) a list of projects financed exceeding EUR 5 million 2) a selection of project examples and 3) a summary of MuniFin’s Green Bond development. It will also include information about the ratio between new financing and re-financing of eligible projects. The Green Bond Impact Report will be made publicly available on the MuniFin web page. Third party verification or auditing of the Investor Report is not performed.

The table below lists the documents that formed the basis for this and previous Second Opinions:

Document Number	Document Name	Description
1	MuniFin’s Green Bonds Framework 02.11.2018	This document comprises the latest version of the Green Bonds Framework and how the company intends to use proceeds, how it plans to evaluate and select eligible

		projects, manages the proceeds and reports to investors.
2	Strategic Programme of the Finnish Government	Finnish governmental strategy document
3	Association of Municipalities - Study about the climate work in the Finnish Municipalities	Municipality level study
4	National Energy and Climate Strategy (2013)	Finnish governmental strategy document
5	National assessment of sustainable development	Finnish governmental strategy document
6	Ministry of Environment - Annex to the explanatory memorandum for the Ministry of the Environment Decree on improving the energy performance of buildings undergoing renovation or alteration: Calculation	Annex to a Finnish governmental strategy document
7	Example of a Finnish Energy Certificate	Example of Energy Certificate used in Finland
8	Nature Conservation Act	Finnish legislative document
9	Nature Conservation Decree	Finnish legislative document
10	National Waste Plan	Finnish governmental strategy document
11	Oil and chemical spill response in Finland	Memo of 2014 situation by Finnish Environment Institute
12	Environmental Ministry Regulation for energy efficiency in new buildings	Memo of 2017 change in Environmental Ministry Regulation related to the energy efficiency in new buildings

13	MuniFin's Green Bonds Framework Details concerning the changes in Framework	Brief statement describing changes as compared to earlier frameworks and justification
14	Responsibility Policy	MuniFin CSR policy
15	Responsibility Report 2017	MuniFin reporting on CSR
16	MuniFin Green Bonds Impact Report 2017	MuniFin reporting on green bonds 2017

Table 1. Documents reviewed

3 Assessment of MuniFin’s Green bond framework and environmental policies

Overall, the MuniFin Green Bond Framework provides a detailed and sound framework for climate-friendly investments.

The framework and procedures for MuniFin’s green bond investments are assessed and their strengths and weaknesses are discussed in this section. The strengths of an investment framework with respect to environmental impact are areas where it clearly supports low-carbon projects, whereas the weaknesses are typically areas that are unclear or too general. Pitfalls are also raised in this section to note areas where issuers should be aware of potential macro-level impacts of investment projects.

Overall shading

Based on the project category shadings detailed below, and consideration of the issuer’s systematic sustainability work and governance structure of MuniFin’s green bond framework in terms of management and use of proceeds, we rate the framework CICERO Medium Green.

Eligible projects under the Green Bond Framework

At the basic level, the selection of eligible project categories is the primary mechanism to ensure that projects deliver environmental benefits. Through selection of project categories with clear environmental benefits, green bonds aim to provide certainty to investors that their investments deliver environmental returns as well as financial returns. The Green Bonds Principles (GBP) state that the “overall environmental profile” of a project should be assessed and that the selection process should be “well defined”.

Category	Eligible project types	Green Shading and some concerns
Renewable Energy 	<ul style="list-style-type: none"> wind small hydro¹ solar geothermal – mainly ground heating related to building projects bioenergy and biogas from waste 	<p>Dark green (bioenergy and biogas from waste is Medium green)</p> <ul style="list-style-type: none"> ✓ Wind, hydropower, and bioenergy: consider broader impacts, such as potential negative impacts on biodiversity, nature, and local communities. ✓ For solar, bioenergy and biogas from waste: consider impacts and emissions over the lifecycle of the

¹ Small scale hydro power is defined as hydropower plants less than 10 megawatts (MW) of generating capacity. Refurbishment of existing hydro power plants (above 10MW generating capacity) without increase in size of impoundment as well as use of existing impoundment for pump and storage technology is regarded as eligible projects to be included in green bonds financing.

		<p>(e.g. production and disposal phases of solar; peat). MuniFin has informed us that peat will be treated as an eligible energy source, though only on very small scale.</p> <ul style="list-style-type: none"> ✓ Geothermal: in cases other than building related ground heating, consider broader impacts, such as the potential for heavy metal pollution.
<p>Energy efficiency</p> 	<ul style="list-style-type: none"> • incl. district heating/cooling, recovered energy, smart grids 	<p>Medium green</p> <ul style="list-style-type: none"> ✓ Be aware of lock-in effects and rebound effects.
<p>Sustainable public transportation</p> 		<p>Medium green</p> <ul style="list-style-type: none"> ✓ Should consider larger context to ensure potential emissions reductions: aspects of planning, degree of urbanization, vehicle technologies and fuel type utilized, etc. ✓ Should consider potential lock-in effects and life-cycle analysis. ✓ Should avoid fossil fuels use.
<p>Waste management</p> 	<p>Project examples:</p> <ul style="list-style-type: none"> • recycling and re-use • rehabilitation of contaminated areas 	<p>Medium green</p> <ul style="list-style-type: none"> ✓ Should consider lifecycle emissions and potential lock-in effects. ✓ Should avoid fossil fuels use. ✓ Good practices should include recycling of resources and reduction of methane emissions.
<p>Water- and waste-water management</p> 		<p>Dark green</p> <ul style="list-style-type: none"> ✓ Key issue for climate adaptation in Finland. ✓ Consider utilizing green infrastructure when possible.

Sustainable buildings



- New buildings (public buildings and social housing) in class A in the Finnish energy classification for buildings. Class B may be accepted if some one of the following are incorporated in or acquired for the building: renewable energy, LCA, recyclable or low carbon materials, EIA, efficient and smart technology choices or a certification from Nordic Swan Ecolabel, LEED, BREEAM or equivalent with high ratings. Overall, prerequisite factors for class B buildings are willingness to execute the project significantly better, more environmentally friendly and efficiently than average or than minimum directives require. Only the best of class B buildings eligible.
- Major renovations leading to a reduction of energy use per m2 in year of at least 25%

Medium green

- ✓ Building criteria are considered adequate but may not reflect best available technology nor the highest level of standards possible in Finland.
- ✓ 25 percent improvement is in the lower end for existing buildings. According to the International Energy Agency (IEA), efficiency of buildings needs to improve by 30% by 2025 in order to reach the Paris Agreement well below 2°C climate goal.
- ✓ In addition to climate issues, Nordic Swan, BREEAM and LEED cover a broader set of issues, which is important to overall sustainable development.
- ✓ Potential issues with rebound effects. Should avoid fossil fuels use and include climate screening for resilience.

Environmental management



- Maximum allocation 20%
- incl. nature conservation

Medium green

- ✓ Positive sustainability related project.
- ✓ Not necessarily climate related

Table 2. Eligible project categories

Governance assessment

In assessing the governance quality of the issuer, three aspects are studied: The policies and goals of relevance to the green bond framework (1); the selection process used to identify eligible projects under the framework (2); and the reporting on the projects to investors (3). Based on these aspects, an overall grading is given on governance strength falling into one of three classes: Fair, Good or Excellent.

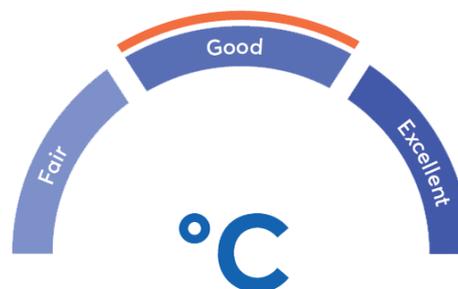


Figure 1 Governance assessment

The overall assessment of the governance structure of the MuniFin gives it a rating of Good. The MuniFin GBF includes a comprehensive list of project categories that are important for low-carbon and climate change resilient

growth. Implementation of EU and national legislation and applicable environmental policies and targets of customers and potential customers, as well as MuniFin's Responsibility Policy (2017) form the basis for MuniFin's GBF. MuniFin has a strong environmental competence, formalized procedures for screening and an established framework for reporting, all of which help ensure that projects produce long-term positive environmental impacts. It is also encouraging that MuniFin reports results based on the guidance provided in the Position Paper on Green Bond Impact Reporting which it participated in drawing up along with other Nordic public sector issuers. A further step that would strengthen MuniFin's green bond governance system would be specific eligibility criteria and verification of the management of proceeds and Green Bond Impact Report by an internal or external auditor. Also, climate risk screening could be added to relevant project categories to strengthen the overall focus on resilience, e.g. using climate scenario analysis as recommended in the Task Force on Climate-Related Financial Disclosures (TCDF) recommendations (2017).

Strengths

Formalized application and selection process

MuniFin has in place an online application portal through which customers apply for the green loans, providing the requested information and supporting documentation. This standardized procedure ensures a minimum level for applications. Additionally, MuniFin will utilize screenings to ensure that selected projects have high likelihood of long-term positive environmental impacts. Selection will take into account environmental impact assessments when they are available for projects (e.g. transport). Operationalization and documentation of screenings and selection criteria, including formalized thresholds for improvement in all project categories, would further strengthen the overall system. Furthermore, including specific climate risk related assessments to investments in relevant categories, such as water and wastewater management and even environmental management, could potentially identify opportunities for contribution to climate resilience.

Capable Green Evaluation Team

MuniFin has a solid structure for approval of projects in place. Eligible projects have to be approved by consensus vote in the Green Evaluation Team, which has at least two environmental experts on it. It is reassuring to see that the Green Evaluation Team reflects strong research and practitioner-based expertise through the Finnish Environment Institute, Association of Finnish Local & Regional Authorities, and a municipality. Furthermore, MuniFin intends to have low turnover in the Green Evaluation Team members, unless change is needed. The team will meet at least quarterly.

Weaknesses

We find no substantial weaknesses in MuniFin's Green Bond Framework.

Pitfalls

ENSO takes a long-term view on climate change. One way to better ensure long-term positive effects is through impact assessments and certifications, e.g. in green building. However, these certifications do not necessarily ensure improved energy performance or that resilience aspects are taken into consideration. The buildings sector accounts for 40% of primary energy consumption in most International Energy Agency (IEA) member countries (IEA/UNDP, 2011). Energy efficiency improvements in buildings are thus important building blocks for reaching the 2-degree climate change goal. MuniFin applies criteria for both new buildings and in renovation of existing buildings with energy efficiency requirements over and above status quo. In some cases, they require that additional steps towards sustainability be taken, ranging from conducting a lifecycle analysis to environmental certification. The GBF would benefit from a clearer requirement that best environmental technology is used in eligible green bond building projects. MuniFin is largely reliant on data provided by

applicants that are seeking financing for their investments. It is therefore recommended, that in the absence of compelling evidence of strong environmental performance, MuniFin will exercise caution in project selection to mitigate the risk of investment in projects with questionable “green” credentials.

It is also recommended to exclude projects that support prolonged use of fossil-fuel based infrastructure that will contribute to GHGs in the long run. The MuniFin GBF allows for fossil-fuel investments in the project categories of energy efficiency, public transportation, and waste incineration. In these cases, additional screenings will be conducted to ensure positive long-term environmental effects. However, there is a residual risk of financing of assets that include elements of fossil-fuel based technologies which can, in turn, delay the transition to more climate friendly technologies. It is acknowledged that assessing sustainability in the transport sector is complex.

The largest amount of carbon savings come from switching from inefficient modes of transport (e.g. private cars) to mass transit. Where projects aim at like-for-like replacement of transport infrastructure, the improvements in environmental performance depend on the fuel type and efficiency. As EU policies aim for alternative fuel use, there is a concern related to the inclusion of fossil fuel public transport projects within the GBF. MuniFin has previously informed that fossil-fuel busses will not be considered eligible projects and that the Finnish EIA for public transport projects require statements about the modal shift from private to mass transit. However, as the fossil-fuels are eligible for financing in certain categories, it is the responsibility of the Green Evaluation Team to ensure that such projects have long-term positive impacts.

One way to better ensure long term positive effects is through screenings and impact assessments already at the project planning and selection phase, e.g. to evaluate projects for eligibility. Project categories should be screened for climate impacts on resilience and mitigation. Such a screening would ensure that categories, such as Environmental management which is currently sustainability focused also promotes the climate related efforts. MuniFin will use the results of ex-ante impact analysis in the project applications, as well as Environmental Impact Assessments, which are mandatory for public transport projects, in project selection. Furthermore, the Green Evaluation Team will conduct special screenings for certain type of projects, such as bioenergy and fossil-fuel related projects, to ensure the broader and longer-term sustainability of the projects. The issuer has informed us that they will also encourage the use of impact reporting (ex-post) and performs its own impact reporting based on the guidance provided in the Position Paper on Green Bond Impact Reporting which it participated in drawing up along with other Nordic public sector issuers. An additional way for MuniFin to promote the use of impact analysis and impact reporting is to clarify that such projects will be prioritized. Impact analysis and a standardized set of indicators against which to assess the projects could help avoid selection of projects that may not represent a significant improvement over status quo.

The use of biomass further represents a potential pitfall when it comes to supporting a low carbon and climate resilient future. MuniFin has informed us that peat will be treated as an eligible energy source, though only on very small scale. Despite the small-scale nature of the use, there is a need to minimize and avoid the use of energy sources such as peat, which significantly contribute to greenhouse gas emissions.

Impacts beyond the project boundary

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.

Rebound effects

Efficiency improvements may lead to rebound effects. When the cost of an activity is reduced there will be incentives to do more of the same activity. From the project categories in Table 2, an example is that an unintended result of energy efficiency projects may actually be increased overall energy use or a failing to reach the potential reductions. Another example is public support schemes for renewable energy that increase energy supply, leading to reduced energy prices and thus potentially more energy consumption. A third relevant example is with waste incineration with energy recovery, which is a sound environmental and climate friendly option to divert waste away from landfills. However, waste incineration is best combined with ambitious recycling policies because if the capacity for waste incineration is too high it might create an incentive to prioritize incineration over recycling. Hence, there is a particular need to continue to improve in this regard, in particular to recycling more fossil fuel waste such as plastics, into new materials. MuniFin should be aware of such effects and possibly avoid Green Bond funding of projects where the risk of rebound effects is particularly high.

Appendix:

About CICERO and SEI

CICERO Center for International Climate Research is Norway's foremost institute for interdisciplinary climate research. We deliver new insight that helps solve the climate challenge and strengthen international climate cooperation. We collaborate with top researchers from around the world and publish in recognized international journals, reports, books and periodicals. CICERO has garnered particular attention for its work on the effects of manmade emissions on the climate and the formulation of international agreements and has played an active role in the UN's IPCC since 1995.

CICERO is internationally recognized as a leading provider of independent reviews of green bonds, since the market's inception in 2008. CICERO received a Green Bond Award from Climate Bonds Initiative for being the biggest second opinion provider in 2016 and from Environmental Finance for being the best external review provider (2017).

CICERO Second Opinions are graded dark green, medium green and light green to offer investors better insight in the environmental quality of green bonds. The shading, introduced in spring 2015, reflects the climate and environmental ambitions of the bonds in the light of the transition to a low-carbon society.

CICERO works with both international and domestic issuers, drawing on the global expertise of the Expert Network on Second Opinions. Led by CICERO, ENSO is comprised of trusted research institutions and reputable experts on climate change and other environmental issues, including the Basque Center for Climate Change (BC3), the Stockholm Environment Institute, the Institute of Energy, Environment and Economy at Tsinghua University and the International Institute for Sustainable Development (IISD). ENSO operates independently from the financial sector and other stakeholders to preserve the unbiased nature and high quality of second opinions.

cicero.oslo.no/greenbonds

SEI is an independent international research institute that undertakes policy oriented and applied research on environment and development issues. Our innovative, integrated systems research forms the basis for our work on policy advice, capacity development, decision support and implementation of policy and practice. Our mission is to support decision-making and induce change towards sustainable development around the world by providing integrative knowledge that bridges science and policy in the field of environment and development.

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