Green Impact Report 2022

MuniFin

Contents

MuniFin

Cover and page 2: Äänekoski Ice hockey arena

Green investments help to build a socially, economically and ecologically sustainable Finland

We are committed to building a better and more sustainable future with our customers. Sustainability is a key part of our strategy and work, best made concrete through our business operations. We have offered our customers green finance for sustainable investments since 2016. In 2020, we complemented it by launching social finance, which is offered for projects that produce widespread social benefits. We source the funding for our green and social finance products from the international capital markets by issuing green and social bonds. For investors, these products offer a way to finance positive change.

Promoting the United Nations Sustainable Development Goals (*SDGs*) has played an important role in the planning of our green and social finance offering. As a public sector lender, we wish to address the national challenges of sustainable development highlighted in Finland's Voluntary National Review on the implementation of the 2030 Agenda[1], such as reducing greenhouse gas emissions, inequality and social exclusion.

MuniFin is signatory to the Society's Commitment to Sustainable Development, entitled The Finland We Want by 2050, and we are thus committed to promoting national sustainability goals in all our work. The projects funded with our green and social finance promote the strategic themes of the Finnish Government Programme[2] that builds on sustainability. One of these themes is to strive for a carbon neutral Finland that protects biodiversity. This includes the objective of Finland achieving carbon neutrality by 2035. With the amendment of Finland's Climate Act in 2022, the objectives of carbon neutrality and carbon negativity after 2035 were set down also in Finnish legislation.

MuniFin's green and social finance can be granted to investments that produce widespread environmental or social benefits. The socially significant investments of the Finnish municipal sector and affordable social housing organisations play a key role in advancing solutions designed to promote the achievement of the SDGs, the Finnish Government Programme and the Climate Act. In terms of climate goals, Finnish municipalities are doing pioneering work: 92 municipalities have already joined the Carbon Neutral Municipalities (Hinku) network[3] and are thus committed to striving for 80% reductions in their greenhouse gas emissions by 2030. These municipalities are home to more than 2.3 million people, so this work touches the lives of over 40% of Finns. Another important cooperation body is the Finnish Sustainable Communities (Fisu) network of Finnish municipalities committed to working towards becoming carbon neutral and waste-free and curbing overconsumption by 2050[4].

The aim of our green and social finance is to create significant benefits for the environment and society. We want to enable our customers' positive development and make sustainable choices even more accessible. In this report, we summarise the impact of our green finance projects. The impact of our social finance is described in a separate report.

[1] *https://julkaisut.valtioneuvosto.fi/handle/10024/162268*
[2] *https://valtioneuvosto.fi/en/marin/government-programme*
[3] *https://hiilineutraalisuomi.fi/en-US/Hinku/Hinku_municipalities*
[4] *https://www.fisunetwork.fi/en-US*

Change presents new opportunities

Green finance has solidified its position in MuniFin's product range. In customer conversations, we often find ourselves not just discussing green finance, but also exploring the topics of responsibility, sustainability and climate work more broadly. At the end of 2022, we had committed EUR 3,9 billion to financing our customers' green projects and were steadily on our desired growth path. This is largely thanks to our highly committed customers, bold trailblazers who have chosen to open-mindedly adopt new solutions instead of settling for the old.

A few years ago, I wrote a column about why new developments all too often require a crisis, a black swan that forces us to change our ways because we have no other options left. Russia's invasion of Ukraine has quickly induced changes that were previously considered unlikely or even impossible by many. The price of the unjustified war is inconceivable by all standards – especially humane – so we must do everything in our power to turn what we can of the crisis into an opportunity to create a better tomorrow.

All over Europe, the most concrete effects of the war are surfacing through the energy crisis. MuniFin's customers play a key role in finding solutions to this crisis. Many of our customers had already invested in energy efficiency and fossil-free energy before it, making them better equipped to not only

adapt to the growing costs, but also seize new opportunities. Municipalities can also make their carbon neutrality work a competitive advantage with businesses: when they can offer companies a low-carbon operating environment, their vitality improves both directly and indirectly.

In my opinion, the hot topics of 2022 have further underlined the importance of the goals that our green finance promotes: efficient and fossil-free energy use and the extensive consideration of sustainable implementation, not forgetting the protection of biodiversity.

In order for rapid developments to continue, we need even closer collaboration and dialogue between different parties. Positive examples of such collaboration include the Finnish construction sector, led by the Green Building Council Finland (FIGBC), starting to work on more specific interpretations of what activities in the national context are aligned with the EU Taxonomy for Sustainable Activities. This work is crucial for finding shared ways to determine and interpret criteria originally created for the entire continent and to reach a shared understanding for investors, constructors and financiers alike.

The need for stakeholders to interact with each other is increasingly related to information needs. Various stakeholder groups have a growing need to acquire information about the environmental impacts of projects and project participants. The importance of knowledge-based management and especially of the ability to establish and communicate a clear link between financial and environmental sustainability will only keep increasing.

In 2022, MuniFin updated its Green Bond Framework. As part of the changes, we decided to start using only our own experts in project evaluation and incorporated EU Taxonomy requirements in the eligibility criteria. We believe this will increase our customers' understanding of the objectives the EU seeks to achieve through the financial markets as part of its climate policy.

Change always presents new opportunities. An effective and non-violent measure we can collectively take as a response to the war is to transfer to a fossil-free world as quickly as possible. The same measure will also help contribute to the more long-lasting battle against climate change. The latter crisis is our own making, but it is also one that we can solve together if we are prepared to put in the effort.

Rami Erkkilä
Senior Specialist, sustainable finance

The author is responsible for green and social finance products at MuniFin.

Case

Cost-effective emission reductions and cross-municipal collaboration – in Vihti, climate work cuts across municipal sectors

The Municipality of Vihti is committed to Finland's national climate and environmental goals and aims to cut greenhouse gas emissions by 50% per resident by 2030. In Vihti, climate work is guided by the municipality's climate strategy working group, and its implementation is coordinated by an inter-administrative climate team. The municipality drafted its first ever climate budget for 2023, including an emissions budget and the operative goals of climate work.

In April 2021, the Ministry of the Environment granted funding for the Municipal Climate Solutions Programme developing a cost-effective model for climate work in small and medium-sized municipalities. Vihti works closely with its neighbouring municipality Kirkkonummi in climate matters, and the municipalities have hired a joint climate coordinator tasked with mapping cost-effective ways to reduce emissions in both municipalities.

Climate work has been a success in Vihti. The municipality is currently building an EUR 36.5 million school and day-care centre that will have geothermal heating and cooling. The building will have LED lights, and solar panels will be installed on the roof. Solar panels have already been installed at the Myrskylänmäki day-care centre and child health clinic, the Kuoppanummi school and the municipal hall's support services building. The solar panels have been financed with MuniFin's green finance.

MuniFin

Regulation cultivates the green finance market

MuniFin's history of green finance dates back to 2016, when we issued our inaugural green bond. Since then, we have been bridging the gap between international capital markets and the sustainable investments of Finnish municipalities and affordable social housing organisations. Between 2016 and today, the global proportion of green finance has increased many times over thanks to investors increasingly looking for sustainable investments and organisations such as MuniFin's customers making investments with sustainability in mind.

The rapid development of green finance has been largely driven by pioneering organisations under market conditions. Now that green finance is quickly becoming mainstream, voluntary frameworks such as the Green Bond Principles of the International Capital Markets Association (ICMA) are being accompanied by regulation. The EU Taxonomy for Sustainable Activities and the EU Green Bond Standard, which is still being prepared, aim to create a regulated playing field for green finance. Regulation also pushes financial institutions to consider climate-related and environmental risks even more extensively in all their operations. With the increased reporting requirements, investors and stakeholders have access to more information than ever before.

In MuniFin's green finance and in the green finance market more generally, the focus has mainly been on solutions that are sustainable for the environment and climate. Less focus has been placed on the risk aspect, but because sustainability aspects are priced more rigorously in green investments, they may also be less prone to transition risks, such as additional costs introduced by new regulation, or impairment losses. Each sustainable investment plays its part in reducing the vulnerability of physical risks of climate change. These themes are not new, but regulation is now aimed at harmonising risk assessments and increasing risk reporting.

We understand how important transparent reporting is for our stakeholders. In green finance, the importance of impact reporting is particularly great. We have chosen to invest in high-quality impact reporting, and our efforts have been recognised by investors. We are also involved in developing Nordic recommendations on green bonds impact reporting as part of the Nordic issuer group, which has jointly published the Position Paper on Green Bonds Impact Reporting. The section Reporting principles of this report describes how we meet these reporting recommendations.

Improvements in climate-related and environmental risk management

Financial institutions are improving their management of climate-related and environmental risks, largely spurred on by regulatory pressure. At MuniFin, we consider climate-related and environmental risks as a natural part of our risk management and continuously hone our ability to detect such risks. Our business model also naturally keeps our climate-related and environmental risk position low.

Our customers, and MuniFin as their lender, are nevertheless exposed to both the physical and the transition risks of climate change, which may materialise especially in the medium and long term. Although our customers' climate-related and environmental risks are not expected to have a strong impact on MuniFin, we continue to make these risks an

even more integral part of our risk management processes. We also plan to further enhance our cooperation and engagement with our customers in this regard because of their key role in managing these risks. We already routinely assess all our customers in terms of their climate-related and environmental risks, and our investment process follows our Sustainable Investment Framework. The risk assessment process is the same for all of our finance, including our green finance.

More information on our climate and environmental risks and their management is available in our separate Pillar III Disclosure Report.

A successful year despite the challenging market situation

Despite the challenging market situation marked by the gradually subsiding pandemic, the accelerating inflation, the energy crisis and the war in Ukraine, the past year was successful for our green finance. Our green finance portfolio continued to grow by EUR 923 million from EUR 2.328 billion at the end of 2021 to EUR 3.251 billion at the end of 2022. This year's green projects were dominated by construction and renovation. Active companies in sustainable building included TA Companies, Avain Yhtiöt Oy, Asuntosäätiö sr and M2-Kodit. In the transportation category, a major new project was the Crown Bridges, which promotes emission-free transport by creating new routes for walkers, bicyclists and public transport in Helsinki while allowing for dynamic urban development and denser city structure.

In May 2022, we continued our green funding operations by issuing a green bond of EUR 500 million maturing in 2029. This many times oversubscribed bond attracted as high as 80% participation from dedicated ESG investors. The successful issuance and the '2022 Green Bond of the Year' award by Environmental Finance that we won in the local authority or municipality category are again testament to the high confidence the market has in our green finance.

MuniFin's green finance has many positive effects on society. The green projects are concrete proof of how we can actively reduce human impact on nature and the climate. With energy-efficient construction becoming mainstream, we no longer have to make compromises between things like affordable and energy-efficient housing. We must adapt to changes caused by global warming, but sustainable lifestyle is becoming accessible to an increasing number of people. The more innovative green projects also address natural capital and risks related to climate change more broadly. This the direction we encourage our customers to choose more and more often, and we take such broader aspects of sustainability into consideration in our project evaluation. Starting from this report, we will introduce them in our reporting through short project descriptions.

Renewed Green Bond Framework

To keep up with the evolving market, we continued to develop our green finance in 2022. The most visible result of this work was the renewal of our Green Bond Framework[1] in September. The framework was originally published in 2016 and updated in 2017, 2018 and 2019. In the 2022 update, the most notable changes concerned the introduction of more transparent and ambitious project eligibility criteria and a more streamlined project evaluation process. The purpose of these changes was to help both investors and our customers better understand the types of projects that are eligible for our green finance.

To improve the clarity of our framework, we reduced the number of project categories from seven to four. One of the categories that we took out was energy efficiency, but investments in energy efficiency continue to be eligible under the buildings category also under the new framework. The other two removed categories were waste management and environmental management. We have never had any projects in these categories in all our years of green finance, so we decided to leave them out for the time being. To allow us to finance projects related to biodiversity and climate change adaptation, we added a new subcategory for them under buildings and transportation categories.

Our Green Bond Framework was designed in accordance with the Green Bond Principles of the International Capital Market Association. To guide our customers and green investments increasingly towards common practices, we have also used the EU Taxonomy for Sustainable Activities and the proposed EU Green Bond Standard as guiding tools in defining our eligibility criteria and overall framework structure.

[1] *https://www.kuntarahoitus.fi/app/uploads/sites/2/2022/12/MuniFin-Green-Bond-framework.pdf*

MuniFin's renewed Green Bond Framework has four project categories:

Although we used the EU Taxonomy as a guiding tool when we updated our framework, we believe that it is still too early to fully align our framework with it. In its external review of our Green Bond Framework, Cicero Shades of Green assessed how well our project categories currently align with the EU Taxonomy's technical screening criteria. This assessment is available in the second opinion on the Green Bond Framework[2] on our website. We also summarise its results in this report in the section *EU Taxonomy boosts green investments*.

In its Second Party Opinion, Cicero Shades of Green gave MuniFin's Green Bond Framework the second-best rating of Medium Green, with an excellent rating in the governance assessment.

In updating our Green Bond Framework, we also improved our project impact reporting. In this report, we mainly present direct and measurable environmental impacts. We also report the criteria that new projects have met in order to be approved for green finance. In addition, we respond to our stakeholders' wishes by providing short descriptions of new projects to better allow our stakeholders to understand the funded investments.

Ratings by Cicero Shades of Green for MuniFin's Green Bond Framework

°CICERO
Medium Green

[2] *https://www.kuntarahoitus.fi/app/uploads/sites/2/2022/09/Second-Opinion-CICERO-GREEN.-final.-Munifin.-15.08.2022.pdf*

EU Taxonomy boosts green investments

EU Action Plan on Financing Sustainable Growth
MuniFin closely follows the progress of the European Commission's Action Plan on Financing Sustainable Growth, especially the EU Green Bond Standard and the EU Taxonomy for Sustainable Activities. We consider both initiatives very welcome. The definitions of environmentally sustainable activities need to be harmonised, and investments in such activities need to be increased.

Market practices regarding the EU Taxonomy are evolving constantly, but the availability of information poses a market-wide challenge, making the verification of taxonomy alignment more difficult. Especially practices regarding the 'do no significant harm' (DNSH) principle and the minimum social safeguards (MSS) must be developed further. MuniFin participates actively in developing these practices. In 2022, we were involved in the work of Green Building Council Finland (FIGBC) seeking to solve taxonomy challenges in the building and construction sector.

We also considered the EU Taxonomy as a guiding tool when we updated our Green Bond Framework, seeking to harmonise our eligibility criteria with taxonomy requirements where applicable. For example, we included taxonomy considerations in our project assessment for new buildings, but we do not yet require the testing of air-tightness and thermal integrity or the calculation of the life-cycle global warming potential (GWP). By doing so, we want to monitor how these measures start gaining ground and encourage our customers to leverage them in their projects. We believe that this will encourage our customers to increasingly consider taxonomy criteria in their green projects.

Cicero Shades of Green has carried out an external review of our Green Bond Framework, including an assessment of how well its eligibility criteria align with the EU Taxonomy's technical screening criteria for climate change mitigation. The assessment found most of our project subcategories to be likely aligned with the technical screening criteria.

Some project subcategories were found to be likely partially aligned. The alignment of water and waste water management project criteria could not be assessed because Finland's practices and therefore also our framework criteria differ significantly from the taxonomy criteria. A more detailed assessment is available in the second opinion on the Green Bond Framework[1] on our website. The results are summarised in the tables below. The alignment of the projects in our green portfolio with the EU Taxonomy's technical screening criteria can be read against this information.

[1] *https://www.kuntarahoitus.fi/app/uploads/sites/2/2022/09/Second-Opinion-CICERO-GREEN.-final.-Munifin.-15.08.2022.pdf*

Alignment of the Green Bond Framework criteria with the EU Green Taxonomy's technical screening criteria

	Buildings	Transportation	Renewable energy	Water and waste water management
Likely aligned	7.2 Renovation of existing buildings 7.3 Installation, maintenance, and repair of energy efficiency equipment 7.5 Installation, maintenance, and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings 7.6 Installation, maintenance, and repair of renewable energy technologies	6.1 Passenger interurban rail transport 6.3 Urban and suburban transport, road passenger 6.5 Transport by motorbikes, passenger cars and light commercial vehicle 6.7 Inland passenger water transport 6.8 Inland freight water transport 6.10 Sea and coastal freight water transport, vessels for port operations and auxiliary activities 6.11 Sea and coastal passenger water transport 6.14 Infrastructure for rail transport 6.15 Infrastructure enabling low carbon road transport and public transport	4.1 Electricity generation using solar photovoltaic 4.3 Electricity generation from wind power 4.6 Electricity generation from geothermal energy 4.22 Production of heat/cool from geothermal energy 4.25 Production of heat/cool using waste heat	
Likely partially aligned	7.1 Construction of new buildings 7.7 Acquisition and ownership of buildings	6.13 Infrastructure for personal mobility, cycle logistics	4.24 Production of heat/cool from bioenergy	
Not possible to assess alignment				5.1 Construction, extension and operation of water collection, treatment and supply systems 5.2 Renewal of water collection, treatment and supply systems 5.3 Construction, extension and operation of waste water collection and treatment 5.4 Renewal of waste water collection and treatment

Green finance in figures

Outstanding amount of green finance
3,251
EUR million

Total committed green finance
3,883
EUR million

Green portfolio duration
13 years

Number of green projects
263

Annual energy savings (avoided/reduced)
39,215[1] MWh

Annual CO_2 emissions avoided/reduced
104,739[2] tCO_2

Annual production of renewable energy
191,695 MWh

Renewable energy production capacity
78 MW

Annual amount of treated waste water in existing plants immediately after project completion
27,896,515 m^3

Annual amount of treated waste water with increased capacity in the future
30,407,158 m^3

Figures based on the outstanding amount of green finance on 31 December 2022

MuniFin

[1] 39,215 MWh: Equals the annual consumption of about 2,252 electrically heated single-family houses *(Source: Motiva)*
[2] 104,739 tCO_2: Equals the average annual carbon footprint of about 10,169 Finns *(Source: Sitra)*

Our green finance portfolio is composed entirely of new projects. In accordance with our Green Bond Framework, new projects are ones that have been completed less than 12 months before the Green Finance Team has approved them for our green finance portfolio. Our portfolio does not include refinanced projects, i.e. projects completed more than one year before their approval.*

As an exception to our normal assessment and approval process in which each project is approved on a case-by-case basis, the Green Finance Team decided in early 2022 that new electric vehicles acquired by our customers do not require approval as individual purchases, but are instead accepted into the portfolio as updated figures, based on the change in the financed amount from to the time of the previous reporting. At the time of the decision, this included electric cars purchased by our customers in late 2021. In accordance with our normal approval and reporting practices, we report these projects in the 2022 impact report.

At the end of 2022, MuniFin's outstanding amount of green finance stood at EUR 3,251 million, exceeding the outstanding amount of green bonds, which was EUR 2,330 million.

**Nordic Public Sector Issuers: Position Paper on Green Bonds Impact Reporting (2020) recommends reporting the financing/refinancing share as per the EU Green Bond Standard. MuniFin does not report this figure because the EU Green Bond Standard is not yet valid.*

New projects

100%

Outstanding amount of green bonds, EUR million

2,330

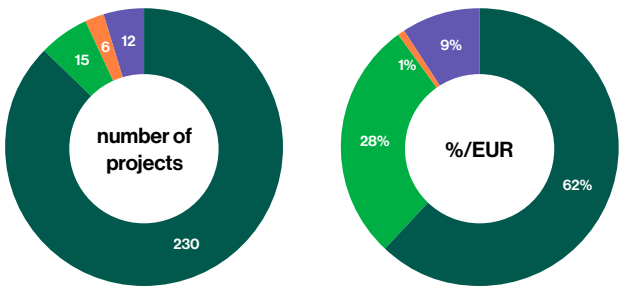
Outstanding amount of green finance, EUR million

3,251

Figures as at 31 December 2022

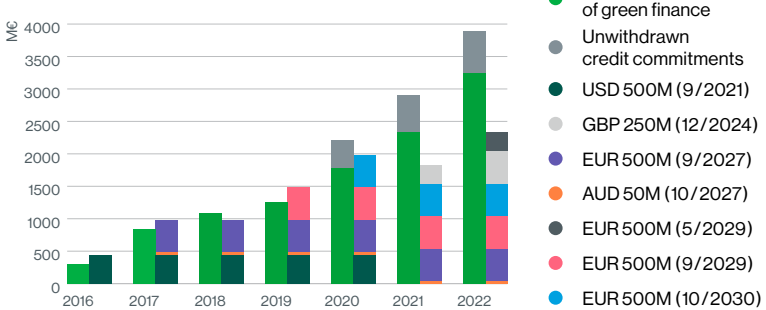
Executive summary

Green finance project breakdown



- Buildings
- Transportation
- Renewable energy
- Water and waste water management

Development of green finance and green bonds



- Outstanding amount of green finance
- Unwithdrawn credit commitments
- USD 500M (9/2021)
- GBP 250M (12/2024)
- EUR 500M (9/2027)
- AUD 50M (10/2027)
- EUR 500M (5/2029)
- EUR 500M (9/2029)
- EUR 500M (10/2030)

Project category	Outstanding amount, EUR million	Annual CO_2 emissions avoided/reduced, tCO_2	Impact, tCO_2 per EUR million
Buildings	2,009	3,597	2
Transportation	901	8,813	10
Renewable energy	51	92,329	1,799
Water and waste water management	290	0	-
Total	**3,251**	**104,739**	**N/A**

Other impact indicators	
Annual energy savings (avoided / reduced MWh)	39,215
Annual production of renewable energy (MWh)	191,695
Renewable energy production capacity (MW)	78
Annual amount of treated waste water in existing plants immediately after project completion (m^3)	27,896,515
Annual amount of treated waste water with increased capacity in the future (m^3)	30,407,158

Impact attributable to green bond investors				71.7%
Outstanding amount of green bonds divided by outstanding amount of green finance (in EUR) as of 31 Dec 2022. Capped at 100%.				
Amount	ISIN	Issue date	Maturity date	
500m EUR	XS2242924491	14 Oct 2020	14 Oct 2030	15.4%
500m EUR	XS2023679843	10 July 2019	6 Sept 2029	15.4%
500m EUR	XS2480922389	17 May 2022	17 May 2029	15.4%
50m AUD	XS1706174015	25 Oct 2017	25 Oct 2027	1.0%
500m EUR	XS1692485912	3 Oct 2017	7 Sept 2027	15.4%
250 m GBP	XS2404205119	2 Nov 2021	16 Dec 2024	9.1%

Basic information	
Green bonds frameworks applied to the green finance portfolio	MuniFin Green Bonds Framework August 2022, May 2019, November 2018, August 2017 and February 2016
Reporting period	The reporting is based on the green finance portfolio as at 31 Dec 2022
Report publication date	7 March 2022
Reporting frequency	Annual
Next report planned for	March/April 2024
Reporting approach	Portfolio-based and project-by-project reporting
Reporting framework	Nordic Public Sector Issuers: Position Paper on Green Bonds Impact Reporting (February 2020)

Our seventh green bond was again well received by investors

At the end of 2022, MuniFin had six outstanding green bonds. We have issued a total of seven green bonds, the first of which matured in September 2021.

In May 2022, we issued our fourth green bond denominated in euros. The EUR 500 million, 7-year green benchmark was quickly over three times oversubscribed and attracted nearly 80% participation from dedicated ESG investors. This issuance increased the total amount of our outstanding green bonds from EUR 1,830 million to EUR 2,330 million. None of our green bonds matured in 2022.

Total amount of outstanding green bonds €m

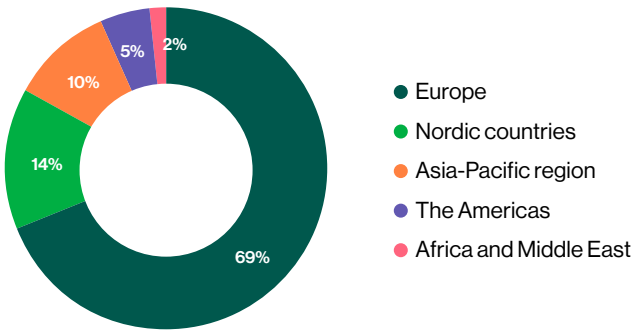
2,330

Foreign currencies in euros

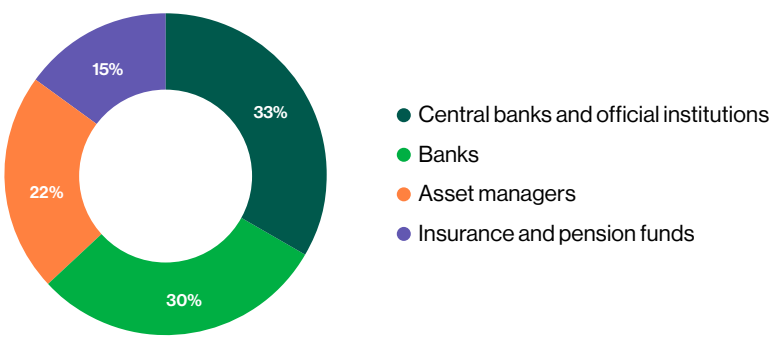
Outstanding green bonds

GBP 250m 12/2024
EUR 500m 9/2027
AUD 50m 10/2027
EUR 500m 5/2029
EUR 500m 9/2029
EUR 500m 10/2030

Investor breakdown by geography



Investor breakdown by investor type



The charts describe the investor breakdown of the primaryissuance of outstanding green bonds. Figures as at 31 December 2022

MuniFin

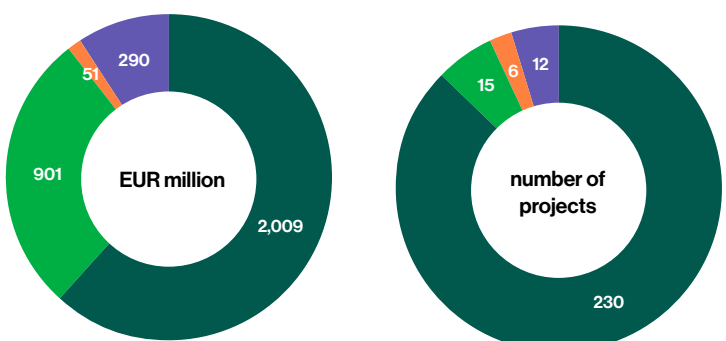
Green finance portfolio

At the end of 2022, the number of projects in our green finance portfolio was 263, of which 246 projects had begun to withdraw finance. The outstanding amount of green finance, which means the amount of finance disbursed minus repayments, totalled EUR 3,251 million at year-end. Total committed finance, which is the sum of the outstanding amount and the amount of unwithdrawn credit commitments, was EUR 3,883 million. The green finance projects are situated in 84 different municipalities across Finland. A summary of the impacts of these projects can be found on page 31 and a detailed list of our green finance projects can be found on pages 46-61.

In 2022, we accepted a total of 55 new projects into our green finance portfolio, of which 41 had begun to withdraw finance at the end of the year. For projects approved in 2022, the outstanding amount of green finance totalled EUR 424 million and the credit commitments totalled EUR 798 million at the end of the year.

The largest category of projects approved in 2022 was buildings with 45 approved projects. In addition, we granted green finance to 10 transportation projects. There were no new renewable energy projects or water and waste water management projects in 2022.

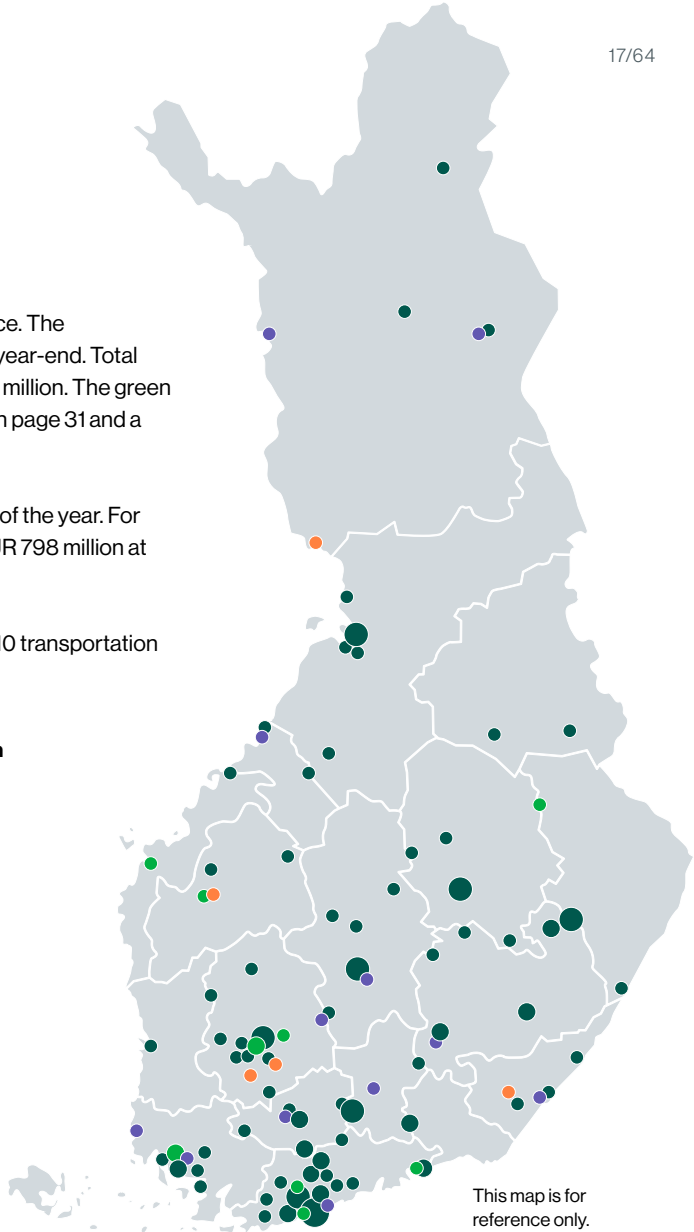
Vihreän rahoituksen hankkeiden jakauma



Outstanding amount of green finance EUR million

€ 3,251

- Buildings
- Transportation
- Renewable energy
- Water and waste water management



This map is for reference only.

MuniFin

Project compatibility under the updated Green Bond Framework[1]

Because our green finance applies a portfolio approach, different projects have been approved under different versions of our Green Bond Framework. In the 2022 update, we improved the transparency of our green project eligibility criteria. The new criteria are stricter than before, which is why some projects approved under previous frameworks do not fulfil the new criteria. For the sake of transparency, we re-evaluated past projects using the new criteria.

We are committed to maintaining a sufficient number of green finance projects in our portfolio to cover the funds raised by green bonds issued after the publication of our updated Green Bond Framework. We have not yet issued new green bonds after the update.

A total of 263 projects out of 228 fulfil the new Green Bond Framework[1] criteria. The combined outstanding amount of these projects was EUR 2,885 million at the end of 2022. For each project, its compatibility with the new criteria is disclosed in the separate Green Impact Report Spreadsheet published concurrently with this report on the MuniFin website. This report's allocation assurance covers only the projects that are aligned with the criteria included in the Green Bond Framework published in 2022.

We re-evaluated projects approved under previous versions of the Green Bond Framework, now applying the updated framework and a conservative approach. If we did not have enough information to verify a project's compatibility with the updated criteria, the project was deemed incompatible. We ascertained that none of our green projects contain any solutions that use fossil fuels, excluding specific exceptions in the bioenergy category (3.3) detailed in the framework.

Most projects approved under previous versions of our Green Bond Framework belonged to the sustainable buildings category. For these projects, the most important thing was to verify that they do not include any solutions that use fossil fuels as their source of energy, and that the energy efficiency of these buildings corresponds to energy class A in the updated national energy efficiency decree (1010/2017) that took effect in 2018. To achieve this, we re-calculated their energy consumption using the coefficients for forms of energy according to the updated Government Decree (788/2017). For other buildings, such as ice hockey arenas and swimming halls, we examined the share of the building's own renewable energy production compared to the building's total energy demand, as well as other proven environmental benefits. For renovation projects, we verified that the energy efficiency of buildings improved by at least 30%, measured as an average across all buildings in the same project. We used the same approach in other individual projects related to improving energy efficiency, such as ESCO projects.

In sustainable public transportation projects, we checked that they serve traffic with zero tailpipe emissions. In renewable energy projects, we focused mainly on the project's primary energy source. In water and waste water management projects, we made sure that they exceed the quality requirements specified in their environmental permit and that the facilities are not heated with fossil energy sources. For existing facilities we ensured checked that the purification becomes more efficient or the purification quality improves as a result of the changes made.

	Aligned with the criteria[1]		Not aligned with the criteria[1]	
	Projects	MEUR	Projects	MEUR
1. Buildings	198	1,683	32	326
2. Transportation	14	876	1	25
3. Renewable energy	5	43	1	8
4. Water and waste water management	11	282	1	7
Total	**228**	**2,885**	**35**	**367**

[1] *https://www.kuntarahoitus.fi/app/uploads/sites/2/2022/12/MuniFin-Green-Bond-framework.pdf*

Fossil fuels and nuclear power in projects under the updated framework

When updating our Green Bond Framework, we specified that we will no longer accept projects involving solutions that are directly powered by fossil fuels. Notably for buildings, this also excludes hybrid solutions, peak load and backup systems. With this change, we want to make sure that investments will no longer be directed towards technologies that depend on fossil fuels. Properties with district heating can still be accepted into our portfolio even if the area's district heating production still involves a fossil fuel component. Finnish district heating is becoming less carbon-dependent every year.

In some bioenergy heating plants, the fossil energy component cannot be completely avoided, because it may be required for the start-up of the plant and to guarantee the security of supply in situations where renewable fuel is unavailable (cf. Green Bond Framework, project category 3.3). At the end of 2022, our green finance portfolio included bioenergy heating plants in four municipalities: Kangasala, Kemi, Seinäjoki and Taipalsaari.

MuniFin's business model does not allow financing of nuclear power. Because this automatically excludes nuclear power from green finance projects, it is not mentioned in our Green Bond Framework.

Fossil fuels in exceptional projects under previous frameworks

At the end of 2022, our green finance portfolio included two projects that involve a fossil fuel component at the commissioning stage of the investment. These two projects are the Kvarken Archipelago car and passenger ferry in the sustainable public transportation category and the Energy Self-Sufficient Lempäälä project in the renewable energy category, both of which were approved for green finance before our Green Bond Framework was updated. Both projects are looking to substitute natural gas with biogas once its availability becomes sufficient. Project documentation suggests that the environmental impact of these projects will be significantly improved compared to prior technology, even using natural gas, and this positive effect will only increase once biogas becomes a technically and economically feasible option.

In the sustainable buildings category, Huvimäentie 16, a project by Joensuun Kodit Oy, was approved in 2021. Even though fossil fuel is used for heating in this building, the renovations we finance will reduce its overall CO_2 emissions by more than 50%.

Experimental project

In the sustainable buildings category, the construction of apartment building for Kiinteistö Oy Oulun Tarve at Pohjantikankuja 4 by TA-Yhtymä Oy was accepted into the green finance portfolio in 2019 due to its value as an interesting pilot project, even though its energy efficiency (energy class C, 2018) did not fulfil the framework criteria. The intent of the project is to prove that by utilising brick construction and traditional architectural engineering, the original energy efficiency calculations of the project can be overturned once the building is in use. If the project reaches its goals, it will also fulfil the energy efficiency criteria of our framework. On the basis of the building's initial energy certificate, the project does not currently have any effect on the presented impact calculations.

The first year's experiences and measurements cannot be used to estimate the project's long-term impacts because the implementation phase involves technical and operational specifications and testing that cannot be used as a reference point for the building's efficiency in the long term. We continued to monitor the project in 2022.

We are committed to monitoring and reporting on the use-phase experiences and measurement results from each of the aforementioned projects, as well as to making sure that the original aims of the projects are fulfilled and in line with our Green Bond Framework. We will give out further information on the projects if requested.

The Green Finance Team

Projects eligible for MuniFin's green finance must comply with our Green Bond Framework at the time of their approval. MuniFin's Customer Solutions division screens loan and lease applications and submits potential applications for review to MuniFin's Green Finance Team (GFT).

We made substantial changes to our project assessment and approval process in autumn 2022. These changes stemmed from the more transparent eligibility criteria set out in our updated Green Bond Framework and our long experience in customer project evaluation. Before, our green projects were assessed by a team of independent experts, but from now on, we will rely on our newly established Green Finance Team, which is made up of internal sustainability experts only. This improves not only the efficiency of the process, but also enhances customer experience and allows us to accumulate our own sustainability expertise. In addition to adopting the internal assessment and approval process, we will also introduce an external verification for it. A statement of this is included at the end of this report.

Each project is reviewed independently and approved by the GFT only if it meets the requirements of our updated Green Bond Framework and is thereby considered a favourable option for the environment and climate. To make environmentally friendly investments more attractive to our customers, we grant approved green finance projects a margin discount of 0–10 basis points. The discount is based on the project's estimated environmental benefits and the extent of its sustainability considerations in both design and implementation. We encourage our customers to consider sustainability aspects when producing project documentation, because the documentation is used in estimating the strength of the project's positive impact. The GFT scores each project on a scale of 0 to 10 points. Dark green projects are typically granted 7–10 points, medium green 4–6 points, and light green 1–3 points.

The GFT holds the right to remove any eligible green projects already funded by green bond proceeds if a project for whatever reason no longer meets the eligibility criteria or is found to be or becomes controversial after its approval. The decision to remove a project from the green project portfolio requires the approval of two GFT members and appropriate documentation.

Members of the Green Finance Team

”Despite the difficult year, our customers have been able to continue planning and launching new green projects. Energy-efficient construction is now widely seen as a profitable endeavour, and other aspects of sustainability have gradually begun to gain ground through the introduction of concrete indicators in project management, planning and budgeting. Natural capital has also been getting increasing consideration in large projects. The sooner climate and nature goals are brought to the design table and incorporated into the tendering criteria, the better. This way the business models of all project participants change in sync and no bottlenecks are created.”

Mikko Noronen
Sustainability Analyst,
Funding and sustainability

"Especially during a crisis, it is essential to keep your eye on long-term goals and focus on the things you have control over. Many of the benefits of our green finance projects are particularly prominent in the current situation, which is challenging especially in terms of energy. The principles of sustainability create resilience and benefits for decades to come.”

Rami Erkkilä
Senior Specialist,
Green finance

”Our customers have been making a voluntary effort to build a more sustainable society for many years now. At the moment, regulatory developments in the financial sector also put a strong emphasis on sustainability. We are doing our part to support the green transition, regardless of whether the change takes place voluntarily or through regulation. Both approaches are needed to accelerate the transition.”

Kalle Kinnunen
Sustainability Manager,
Funding and sustainability

Reporting principles

Our Green Bond Framework defines the contents of this annual Green Impact Report. Our impact reporting is based on the recommendations of the Nordic Position Paper on Green Bonds Impact Reporting[1]. This report describes the impacts of the financed projects based on the available facts.

Our approach to impact evaluation

Our reporting applies a bond-programme-based approach, which is also known as the portfolio approach. In this approach, one dynamic portfolio consisting of green bonds is used to finance one dynamic portfolio consisting of green finance projects. We do not allocate green bond proceeds to single projects within the project portfolio. According to the portfolio approach, we may refinance a green bond at maturity in order to maintain an appropriate balance between the green bonds portfolio and the green finance project portfolio.

We carry out our impact reporting in accordance with the following principles:

- The reporting is based on the situation at the end of 2022, taking into account new withdrawals, repayments and redemptions. This report includes projects that the Green Evaluation Team had approved by the end of the year and whose offer of financing the customer had accepted. In the report, the project year refers to the year in which the evaluation team approved the project.
- Some projects in the green portfolio have not yet withdrawn any finance. Their impact is therefore not included in the impact assessment, and the outstanding amount of their finance is EUR 0. Projects that were approved before 2022 but only began to withdraw finance in 2022 are included in the total portfolio figures.
- The impacts of a financed project are calculated based on our estimated share of the project's total finance. Our estimated share of the project's total finance refers to our outstanding amount of green finance in relation to the project's estimated total finance. If we are the project's only financier, the project's estimated total finance equals the finance that we have granted. If the project has other financiers as well, the estimated total finance is the project's total liabilities or total cost based on information derived from the customer and public sources. This figure does not include the project's self-financing or grants.
- Our reporting is based on ex-ante evaluation conducted prior to project implementation. The source data for the calculations is not changed annually, but the parameters used in the calculations, such as the electricity and district heating emission factors, may be updated to correspond to those of the reported year. In 2022, we applied updated emission factors for electricity and district heating.
- When calculating the relative proportion of the impact of different bonds, the notional value of foreign currency denominated bonds is converted into euros using the exchange rate of the cross-currency interest rate swap of the trade date. We have chosen this approach because upon issuance, we enter into a cross-currency interest rate swap to convert the foreign currency denominated funding into euros. The projects are financed in euros.
- Our impact assessment includes both quantitative and qualitative impacts. In 2022, we started including short project descriptions in this report.
- In the most recent Green Bond Framework that was published in 2022, we introduced clearer eligibility criteria for project evaluation and selection than before. We have analysed all projects that were approved into the green portfolio prior to publication of the new Green Bond Framework to assess whether those meet the criteria of the new framework. We present the results on a portfolio level in the chapter Green finance portfolio on page 18. On a project level the alignment information can be found in the Excel spreadsheet available on our website.

[1] Nordic Public Sector Issuers: Position Paper on Green Bonds Impact Reporting (2017, 2019, 2020)

- We engage in active discussion with investors and other market participants. We also constantly develop our reporting and welcome development proposals.

Terms used in this report:
- Outstanding amount = disbursed amount minus repayments
- Unwithdrawn credit commitment = amount of finance granted to the customer but not yet withdrawn
- Total committed finance = outstanding amount + unwithdrawn credit commitment

We have selected the UN 2030 SDGs based on the direct impact of the projects. All projects may also have indirect impacts on the environment, individuals and society at large. The SDGs and related targets are reported by project category.

Changes to impact evaluation

We carried out our first green bonds impact reporting in 2016 and have published the Green Impact Report annually ever since. In the 2016 and 2017 reports, the estimated impact was presented per year for projects financed that year. The 2018 report was the first in which we analysed the impact of the entire green finance portfolio. In 2020, we introduced new indicators for projects in the water and waste water management category. In 2021, we updated the parameters used in our calculations for the first time, including the emission factors for electricity and district heating. The developments in our reporting are driven by the harmonisation of the calculation principles that have taken place after our first evaluation. More information on these changes is available in the corresponding year's impact report.

This report shows the status of our green finance portfolio at the end of 2022. We have updated the impact of our portfolio to reflect our estimated share of the projects' total finance at the end of 2022. This figure represents our share of the estimated impact of the entire project, explained in more detail on previous page .

Changes to impact calculations

Compared to previous years, the key changes we have made to our impact calculations have to do with the used emission factors, and the 2018 decree on the energy efficiency of new buildings.

In the previous years' impact reporting we've followed the Nordic Public Sector Issuers recommendation (Nordic Position Paper on Green Bonds Impact Reporting, 2020) for the electricity emission factor, which was 315 gCO_2/kWh. In 2022 impact report we use Finland's transmission system operator Fingrid's published emission factor for electricity consumed in Finland[2] that is based on production, import and export data. In 2022, the emission factor for electricity consumed in Finland was 60 gCO_2/kWh. Change of the used emission factor for electricity reduces significantly the CO_2 avoided/reduced. In our view the Fingrid's emission factor better reflects the realized impact during the reporting period.

For district heating, we have previously used the latest available municipality-specific emission factors for each year. For most municipalities, the district heating emission factors have gone down from previous years. From 2021 onwards, we have used the updated emission factors for all projects in the portfolio. As energy production becomes less carbon-dependent, it reduces the emission factors and therefore decreases the calculated avoided and reduced CO_2 emissions. The updated emission factors and the recalculation of impacts do not affect the annual energy savings (avoided/reduced).

[2] https://www.fingrid.fi/en/electricity-market-information/real-time-co2-emissions-estimate/

We changed the approach for calculating avoided emissions for electric vehicles. In the calculation, we shifted to use average emission target for car manufacturers set by the EU. This harmonised the calculation with EU's target and reflects the impacts of the electric vehicles in the portfolio more equally.

The impact calculations for 2019–2022 have been significantly influenced by the Decree of the Ministry of the Environment on the energy efficiency of new buildings (1010/2017), which came into effect in 2018. With the tightening of E-value limits, the relative impact of the buildings category is now considerably lower than in the previous years. Because we use the E-value to determine a reference building, the lower value affects the calculated benefit. The impact of projects that applied for a building permit before the E-value limits were tightened, but whose impact assessment has been done later, is calculated using an E-value limit that is in line with the Finnish regulation mentioned in the building's energy certificate. We primarily refer to the energy certificate drawn up during the building permit phase or, if available, the energy certificate procured by the customer when the building was commissioned.

Changes to terms used in this report

- In our 2019 Green Bonds Impact Report, we reported a figure called *disbursed amount*, which we have referred to as the *outstanding amount of green finance* since the 2020 report. These figures are the same and thus directly comparable. In our 2016–2018 reports, we reported another figure called *disbursed amount*, which did not account for repayments. The figures from the 2016–2018 reports cannot therefore be compared with the disbursed amount presented in the 2019 report and the outstanding amount of green finance presented in the subsequent reports.
- In our 2016–2019 green bonds impact reports, we reported a figure called *committed amount*, which meant the contractual granted amount of finance. Since the 2020 report, we have instead reported the total *committed finance*, which is the granted amount of finance deducted with repayments. These two figures are not comparable.

Changes to report presentation

The renewal of the Green Bond Framework triggered needs to make some changes to the reporting and its presentation

- In the renewal of the Green Bond Framework, we reduced project categories and combined energy efficiency category into the buildings category. We present the energy efficiency projects approved into the portfolio prior to the framework renewal under the building category.
- In the report, we present sub-category and the criteria, based on which the project has been included in the green portfolio or which the project meets (the projects approved into the portfolio prior to the framework renewal).
- We include into the report brief descriptions of the projects which gives the reader more comprehensive picture of the projects impacts and the environmentally friendly aspects that were taken into consideration in the project.

Calculation principles

The calculations presented in this report are based on the Position Paper on Green Bonds Impact Reporting (2020) drawn up jointly by Nordic public sector issuers.

Since 2021, we have carried out the environmental impact calculations of our green finance ourselves. Since then, we've recalculated the impacts for projects which impact calculation should use updated calculation parameters. Primarily these projects include Building category's projects which impact calculation utilises emission factors for electricity and heat. The environmental impact calculations of the 2016–2020 projects in the other project categories were carried out by the consultancy firm Deloitte.

The calculations are based on data of the financed projects and on pre-determined calculation assumptions. We have used information from public sources (e.g. the emission factors) as well as data and reports directly related to the projects (e.g. project-specific environmental calculations) in the calculations. Where necessary, we have requested further information from the project owners.

In accordance with the Greenhouse Gas Protocol, the reported impacts cover scope 1 and scope 2 emissions, and in some cases possibly also the carbon handprint impact.

The weighted impact has been calculated based on our estimated share of a project's total finance. Our estimated share of finance has been calculated based on the outstanding amount of green finance on 31 December 2022. A more detailed explanation of our estimated share of a project's total finance is available on page 22. The calculations present the status of the outstanding portfolio as of 31 December 2022.

The calculations for the years 2016–2021 have been updated with our estimated share of finance and to correct any errors. Since 2021, we have also updated the emission factors used for electricity and district heating. More information is available in the section Changes to impact calculations.

In some projects, the estimated impact of a project is based on calculations presented in project-specific environmental impact assessments or other preparatory documents. In these cases, the emission factors applied are those used in the original calculations of these documents. In all other cases, the emission factors are as presented below.

Emission source	Emission factor	Methodology and remarks	Source
Consumption electricity	60 g CO_2 / kWh	https://www.fingrid.fi/en/electricity-market-information/real-time-co2-emissions-estimate/	Fingrid, CO_2 emissions estimate, Emission factor for electricity consumed in Finland 2022
District heating*			
Location specific emission factors for district heating	0–393 g CO_2 / kWh depending on the project location	Benefit sharing method	klpaastolaskuri.fi/en
Average district heating CO_2-emission factor in Finland (2022)	102 g CO_2 / kWh	Benefit sharing method and energy method	Finnish Energy
Separate generation of district heating*	103 g CO_2 / kWh	Heat sales weighted average	Motiva.fi
Gasoil	253 g CO_2 / kWh	Assumed to contain average 4.0% biofuel share of the energy content.	Stat.fi; Fuel classification (2022)
Internal combustion engine vehicles			
Cars	95 gCO_2 / km	WLTP emission test procedure	climate.ec.eu/eu-action/transport-emissions_en
Vans	147 gCO_2 / km		

** Regions with separate generation of district heating include 1) regions specified as such by Motiva and 2) regions where the separate generation of district heating is the primary method based on district heating statistics by Finnish Energy and other public information. The emission factor for the separate generation of district heating is applied for these regions, while the Finnish average emission factor for district heating is used for other regions.*

Specific calculation principles for each project type are listed in the tables below.
The emission factors for electricity and district heating referred to in the table below are the ones presented in the table on the previous page.

Project category	Indicator	Energy or CO_2 emissions avoided/ reduced compared to reference situation	Methodology	Situation after project implementation	Reference scenario
Buildings	Annual energy savings (avoided/reduced), MWh	Avoided (new buildings) or reduced (renovation and other energy efficiency measures)	New buildings Difference in energy consumption between reference scenario and situation after project implementation (see a more detailed description below the table) Renovation projects and other energy efficiency measures Difference in energy consumption between reference scenario and situation after project implementation	New buildings Consumption of electricity or district heating according to the building's energy certificate. We primarily refer to the energy certificate drawn up during the building permit phase or, if available, the energy certificate procured by the customer when the building was commissioned. Renovation projects and other energy efficiency measures Estimated new consumption of electricity, heating and fuel after the renovation or other energy efficiency measures, according to the project plans	New buildings E-value limit, which is in line with the Finnish regulation mentioned in the building's energy certificate. We primarily refer to the energy certificate drawn up during the building permit phase or, if available, the energy certificate procured by the customer when the building was commissioned. The share of electricity, district heating and fuel are calculated according to the building's energy certificate. Renovation projects and other energy efficiency measures Consumption of electricity, heating and fuel prior to the project, based on the building's energy certificate or plan for energy efficiency measures
	Annual CO_2 emissions avoided/ reduced, tCO_2	Avoided (new buildings) or reduced (renovation and other energy efficiency measures)	CO_2 emissions resulting from production of avoided/reduced CO_2 emissions calculated using emission factors for electricity, district heating and fuel	CO_2 emissions equivalent to energy consumption after project implementation calculated using emission factors for electricity, district heating and fuel	CO_2 emissions equivalent to energy consumption in reference scenario calculated using emission factors for electricity, district heating or fuel

Buildings – new construction: We assess annual energy efficiency improvements and the amount of CO_2 emissions avoided in relation to applicable energy efficiency regulation in Finland. The energy efficiency of a building is presented as an E-value. The National Building Code of Finland determines maximum E-values for different building types, which a new building cannot exceed in order to gain a building permit. We use the maximum E-value allowed for a new building as the basis for calculating the energy efficiency of buildings. With the new Ministry of the Environment decree (1010/2017), the limit values for E-value were tightened at the beginning of 2018. In the calculations, we use the E-value limit that is in line with the Finnish regulation mentioned in the building's energy certificate. We primarily refer to the energy certificate drawn up during the building permit phase or, if available, the energy certificate procured by the customer when the building was commissioned.

The E-value represents a building's calculated annual consumption of purchased energy per the heated net area (kWh/m²/a) based on the usage default values and of the building's intended use category and weighted by energy source coefficients. In our calculations, solar or wind energy generated on the property is treated as a reduction in the demand for purchased energy.

The estimated emission avoidance impact is calculated by using the emission factors for electricity and district heating production. Different forms of energy are weighted according to how their proportions are presented in the building's energy certificate.

In special cases where no E-value limit has been defined for a building category, energy savings are calculated compared to a theoretical reference building. We have used one of the following two possible methods for this calculation. The first method is based on assessing the environmental impact from using renewable energy sources. An example of this is ice hockey arena in Äänekoski, which uses its own solar energy and geothermal heat. In such cases, we assume that the reference building has the same energy consumption as the building being examined, but that it only uses purchased energy. The second method is based on the environmental impact of new or unusual energy efficiency technology, which can be, for example, a more energy efficient cooling solution like in the Vuokatti Arena. In such cases, we calculate the CO2 emissions avoided by comparing the project building's emissions to those of a reference building that is the same size and otherwise similar, but that does not employ this new or unusual technology.

Project category	Indicator	Energy or CO_2 emissions avoided/ reduced compared to reference situation	Methodology	Situation after project implementation	Reference scenario
Transportation	Annual CO_2 emissions avoided/ reduced, tCO_2	Avoided or reduced depending on the project	Public transportation projects: calculations included in project plans	N/A	N/A
	Annual CO_2 emissions avoided/ reduced, tCO_2	Avoided or reduced depending on the project	Purchase of electric cars: difference in CO2 emissions between electric car and comparable car with internal combustion engine	Standardised electricity consumption as specified by manufacturer, with emission factor for electricity accounted for	EU fleet-wide CO2 emission targets (2020-2024) set under Regulations (EC) No 443/2009 and (EU) No 510/2011.
Renewable energy	Annual production of renewable energy, MWh	N/A	Project plans and other project information	N/A	N/A
	Annual CO_2 emissions avoided/ reduced, tCO_2	Avoided or reduced depending on the project	CO_2 emissions from generating the same amount of energy calculated using emission factors for electricity and district heating or based on project documentation	N/A	CO_2 emissions from generating the same amount of energy calculated using emission factors for electricity and district heating
	Renewable energy production capacity, MW	N/A	Project plans and other project information	N/A	N/A
Water and waste water management	Annual amount of treated waste water in existing plants immediately after project completion, m^3	N/A	Current average inflow of waste water before possible expansions or after expansions, if they result in an immediate increase in the amount of water treated. The calculations are based on the actual flow rate when it is available and on the rated value when actual flow rate is not available.	N/A	N/A
	Annual amount of treated waste water with increased capacity in the future, m^3	N/A	New purification plant The rated value of the average inflow of waste water in the future (review year depends on project plan and may vary between projects) Expansion of existing purification plant Difference in average inflow after project completion compared to the reference scenario	New purification plant N/A Expansion of existing purification plant Future rated value of the average flow of waste water after expansion measures (review year depends on the project plan and may vary between projects)	New purification plant N/A Expansion of existing purification plant Average flow of waste water before expansion. The calculations are based on the actual flow rate when it is available and on the rated value when actual flow rate is not available.
	Annual production of renewable energy, MWh	N/A	Project plans and other project information	N/A	N/A

Nordic reporting recommendations harmonise the green bonds market
MuniFin is one of ten Nordic public sector issuers who have jointly published the Position Paper on Green Bonds Impact Reporting. The position paper was first published in October 2017 and most recently updated in February 2020.

The recommendations were drawn up by Nordic green bond issuers specialising in the public sector, with MuniFin as the only Finnish issuer in the group. The other signatories include two of MuniFin's counterparts – Kommunalbanken in Norway and Kommuninvest in Sweden – as well as several Swedish public sector entities that have issued bonds. The aim of the Nordic issuers' guide on green bonds impact reporting is to facilitate the work of green finance applicants, lower the threshold for new issuers entering the green bond market and provide international investors with a tool for evaluating green portfolios.

The Nordic guidelines are based on the international Green Bond Principles and the recommendations of multilateral development banks, but they complement these with an interpretation of impact indicators for projects focusing on issues such as public transportation and sustainable buildings. The Norwegian research institute CICERO, the Nordic Investment Bank, SEB, Crédit Agricole CIB and a group of international investors also took part in preparing the guidelines with the group of public sector issuers.

On this and the following page we present how we follow the Nordic recommendations. In addition, we deem worth mentioning that in this years report we deviate for the first time from the emission factor for electricity suggested by the recommendations. Instead we use the emission factor for electricity consumed in Finland published by Fingrid. Read more about the change and the used emission factor in section Changes to impact calculations.

The Nordic reporting recommendations in the MuniFin Green Impact Report

1. **Report expected impact, aiming for actual impact**
Our reporting is based on ex-ante evaluation conducted prior to project implementation.

2. **Report based on annual impact**
As recommended, our impact report describes the annual impact of the reporting year as opposed to lifetime results. More information about this is available in the section Calculation principles on page 25.

3. **Provide annual reporting**
We use a portfolio approach in our green finance, which means that the contents of our portfolio change annually. We report the status and impact of our portfolio by the calendar year.

4. **Provide quantitative and qualitative reporting**
We have determined quantitative indicators for each project category, and we report these for each project. More information about our indicators is available in the section Calculation principles on page 25. In 2022, we started including short project descriptions in this report. More information about the qualitative impact of the projects is available in the section Other impacts of our projects on page 38.

5 **Report based on the share financed**
We calculate the impacts of the financed projects based on our estimated share of the project's total finance. More information about this is available in the section Reporting principles on page 22.

6 **Focus on environmental impact**
Our selected indicators focus on environmental impact.

7 **Report project-by-project, where feasible**
We report the impact of each financed project in the section Green finance projects and impacts and in a separately published spreadsheet.

8 **Report impact by $ only when quantifiable and relevant**
We report the annual CO_2 emissions avoided/reduced per invested monetary unit in all other project categories except the water and waste water management category. We do not consider it relevant to report the impact of the other indicators in relation to the share of finance. More information about this is available in the section Executive summary on page 15.

9 **Report bond-by-bond or on bond-programme basis**
We use a portfolio approach in our reporting. Our reporting covers all the projects that are included in our green finance portfolio at the end of the reporting year. More information about our approach is available in the section Reporting principles on page 22.

10 **Provide both allocation and impact reporting**
Our impact report includes both allocation and impact reporting. In 2022, we had our allocation reporting verified by an independent external verifier for the first time.

11 **Distinguish between financing and refinancing**
We use a portfolio approach. We do not allocate green bond proceeds to single projects within the project portfolio, nor do we distinguish between financing and refinancing. Our green finance portfolio consists 100% of new projects. More information is available in the section Green finance in figures on page 13.

12 **Provide breakdowns on asset type, geography and sector**
Our reporting includes a list of the projects that we finance, all of which are investments in tangible assets and located in Finland. The category of the project indicates the sector of the investment.

13 **Maximise transparency and useability**
We provide extensive aggregate information and data on individual projects in our reporting. We also provide an executive summary of the key information. In addition to this impact report, we have also compiled the impact data in spreadsheet format. We publish both the report and the green finance spreadsheet in Finnish at www.kuntarahoitus.fi and in English at www.munifin.fi. In addition to our own channels, we also publish the impact of our green finance portfolio on the Green Assets Wallet and the Nasdaq Sustainable Bond Network platforms.

14 **Incorporate climate-related physical risks when possible**
We discuss the impact of environmental and climate risks on MuniFin in the section *Regulation cultivates the green finance market* also in terms of our risk management. We improved our environmental and climate risk management in 2022. We discuss our approach and risks in more detail in our separate Pillar III Disclosure Report.

15 **Report contributions to the Sustainable Development Goals (SDGs)**
For each green finance project category, we describe the UN SDGs that these projects promote. More information about this is available in the section The impacts of green finance on page 30.

16 **Consider reporting contributions to the EU Environmental Objectives**
Our green finance projects contribute to the EU Environmental Objectives. In 2022, we updated our Green Bond Framework and evaluated the compatibility of our criteria with the EU Taxonomy. More information on this is available in the section EU Taxonomy boosts green investments.

We comply with the reporting recommendations
We partly comply with the reporting recommendations
We do not comply with the reporting recommendations

The impacts of green finance

MuniFin

Photo: City of Tampere tramway

Project category	Number of projects	Outstanding amount on 31 Dec 2022, EUR	Annual energy savings (avoided/ reduced, MWh)	Annual CO_2 emissions avoided/reduced (tCO_2)	Annual amount of treated waste water in existing plants immediately after project completion (m^3)	Annual amount of treated waste water with increased capacity in the future (m^3)	Annual production of renewable energy (MWh)	Renewable energy production capacity (MW)
Buildings	230	2,009,431,765	39,215	3,597	-	-	170	-
Transportation	15	900,737,496	-	8,813	-	-	-	-
Renewable energy	6	51,309,204	-	92,329	-	-	191,097	78
Water and waste water management	12	289,580,799	-	-	27,896,515	30,407,158	428	-
Entire portfolio	263	3,251,059,264	39,215	104,739	27,896,515	30,407,158	191,695	78

Buildings

Construction is a necessity in modern society because people need homes, hospitals, schools, workplaces and many other facilities. The built environment has a significant impact on national emissions and the carbon footprint of municipalities and individual people through the use of energy. There is an ongoing effort to better understand emissions, including those generated during construction. The low-carbon roadmaps, the development of national and uniform carbon assessment methods of buildings, the Land Use and Building Act Reform, as well as regulations on the climate assessment and material statement of buildings are all indications of the prominence of sustainable construction. In sustainable construction, environmental impacts are taken into account already in the design stage, for example by carefully choosing between new and repair construction and by leveraging new energy solutions and environmentally friendly, low-carbon building materials, such as wood and recycled materials. Buildings in our green projects employ local renewable energy production, life cycle thinking, smart control systems and other environmentally sound technologies.

Projects in this category include both housing and public construction as well as the renovation of existing buildings. In 2022, we accepted a wide range of energy-efficient housing projects into our portfolio, such as the two separate projects of energy class A apartment buildings equipped with geothermal energy in Gunillantie street in Helsinki. We also won the tendering to finance the Etelä-Nummela school and day-care centre in Vihti, which was exceptional in terms of its energy efficiency and use of the Finnish RTS environmental classification and carbon footprint calculation.

Entire portfolio		Projects approved in 2022	
Number of projects	230	Number of projects	45
Total committed finance	EUR 2,641,862,167	Annual energy savings (avoided/reduced)	3,091 MWh
Outstanding amount	EUR 2,009,431,765	Annual CO2 emissions (avoided/reduced)	374 tCO_2
Annual energy savings (avoided/reduced)	39,215 MWh		
Annual CO_2 emissions (avoided/reduced)	3,597 tCO_2		
Annual production of renewable energy	170 MWh		
Renewable energy production capacity	0.2 MW		

Transportation

Transportation projects reduce traffic emissions and the need for private cars through projects that invest in low-emission public transportation or directly support it. Examples of past projects include the West Metro Extension in the capital region and the Tampere Tramway. West Metro Extension (from Lauttasaari to Matinkylä) had on average 83,200 users per day in 2022 and it is estimated that Tampere Tramway will have 55,000 users per day by 2025. In addition to reducing emissions, modern public transportation solutions often have wide-reaching indirect impacts: for example, they can allow a denser and safer urban environment and thus make the city more welcoming for its residents.

In 2022, we accepted one new important project for emission-free public transport to our portfolio, namely the Crown Bridges project of the City of Helsinki. According to estimates, the new light rail connection over the bridge would serve around 23,000 passengers every day after the Kruunuvuorenranta and Kalasatama districts are completed. Currently the shortest way from Kruunuvuorenranta to the city centre is 11 kilometres by car, but the bridge over the bay will shorten this significantly.

In addition to public transportation projects, we have also financed the acquisition of electric cars that help organise public services, for example. In 2022, the amount of transportation project financing grew by EUR 152,263,442 in our portfolio.

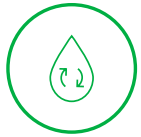
Entire portfolio		Projects approved in 2022	
Number of projects	15	Number of projects	10
Total committed finance	EUR 900,737,496	Annual CO_2 emissions (avoided/reduced)	2,212 tCO_2
Outstanding amount	EUR 900,737,496		
Annual CO_2 emissions (avoided/reduced)	8,813 tCO_2		

Renewable energy

Renewable energy production has key importance in mitigating global climate change. Renewable energy generates zero or close to zero greenhouse gas emissions at the production stage, and it directly cuts down greenhouse gas emissions by reducing fossil fuel use. Moreover, energy can be produced locally, reducing delivery, distribution and transmission losses. This has both environmental and economic implications for society. By financing renewable energy projects, we promote Finland's long-term goal of becoming a carbon neutral society by 2035.

Our renewable energy projects include the Kangasalan Lämpö Ltd biomass heating plant, which produces thermal energy from forest industry side streams, the Kemi Energy and Water bioheating plant and the Energy Self-Sufficient Lempäälä project. In 2022, we did not add new renewable energy projects into our portfolio.

Entire portfolio		Projects approved in 2022	
Number of projects	6	Number of projects	0
Total committed finance	EUR 51,309,204	Annual CO_2 emissions (avoided/reduced)	0 m^3
Outstanding amount	EUR 51,309,204	Annual production of renewable energy	0 MWh
Annual CO_2 emissions (avoided/reduced)	92,329 tCO_2	Renewable energy production capacity	0 MWh
Annual production of renewable energy	191,097 MWh		
Renewable energy production capacity	78 MW		



Water and waste water management

Our green finance promotes projects that ensure the availability of safe and clean drinking water and the effective treatment of waste water across Finland. Climate change and migration pose new challenges to water and waste water management, and preparing for them requires substantial investments. Water purification helps to maintain high waste water quality, prevent the eutrophication of waterways and enable the reuse of nutrients, such as phosphorus and nitrogen. In addition, sludge separated from waste water can be composted and utilised in biogas production.

Since 2016, we have financed twelve projects in the water and waste water management category, all of which were part of our portfolio on 31 December 2022. These projects support the water treatment capacity extensions of existing water purification plants, the introduction of more efficient purification technologies and methods, and the construction of new water purification plants. Example projects include waste water treatment plants of Kalajokilaakso (Vesikolmio Ltd), Blominmäki (Helsinki Region Environmental Services) and Sahanniemi (City of Heinola). No new water or waste water management projects were added into our portfolio during 2022.

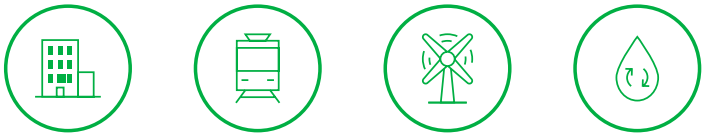
Entire portfolio		Projects approved in 2022	
Number of projects	12	Number of projects	0
Total committed finance	EUR 289,580,799	Annual amount of treated waste water in existing plants immediately after project completion	0 m^3
Outstanding amount	EUR 289,580,799	Annual amount of treated waste water with increased capacity in the future	0 MWh
Annual amount of treated waste water in existing plants immediately after project completion	27,896,515 m^3	Annual production of renewable energy	0 MWh
Annual amount of treated waste water with increased capacity in the future	30,407,158 m^3		
Annual production of renewable energy	428 MWh		

Green projects promote the following UN Sustainable Development Goals

6 CLEAN WATER AND SANITATION	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimising release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally				●
	6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity				●
	6.6	By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes				●
7 AFFORDABLE AND CLEAN ENERGY	7.2	By 2030, increase substantially the share of renewable energy in the global energy mix			●	
	7.3	By 2030, double the global rate of improvement in energy efficiency	●			
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human wellbeing, with a focus on affordable and equitable access for all	●	●		●
	9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	●	●		●

11 SUSTAINABLE CITIES AND COMMUNITIES	11.1	By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums	●		
	11.2	By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons		●	
	11.3	By 2030, enhance inclusive and sustainable urbanisation and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	●		
	11.6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management		●	
	11.7	By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities	●		
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	12.2	By 2030, achieve the sustainable management and efficient use of natural resources	●		
13 CLIMATE ACTION	13.1	Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	●	●	
14 LIFE BELOW WATER	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution			●
15 LIFE ON LAND	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	●	●	

Other impacts of our projects



Besides the quantitative impacts discussed in this report, our green finance projects also have other wide-ranging benefits. In addition to their environmental benefits, all the projects include various social and economic impacts, both locally and regionally.

Through our finance, we support regional vitality and attractiveness. We enable projects aimed at improving individual wellbeing and promoting the introduction of new, more environmentally friendly technologies and materials. For example, our green portfolio includes several wooden schools, which help tackle indoor air problems.

All categories
- Climate change mitigation and adaptation
- Regional vitality and attractiveness
- Support for employment
- Innovations, new environmental technologies and pilot projects
- Wide-ranging cooperation with stakeholders

Buildings
- Support for early education and teaching
- Welcoming green and communal urban spaces
- Flexible multipurpose facilities that serve diverse population groups
- Safe and healthy premises and the renovation of old premises
- The use of green factor as a tool for land use planning, climate change mitigation and adaptation, and for promotion of city nature.

Transportation
- More pleasant and welcoming urban environment
- Accessibility of services and ease of everyday life
- Denser city structure
- Reduced noise pollution

Renewable energy
- Efforts to pilot and deploy new environmental technologies
- Improved health through better air quality
- Regional competitiveness
- Finland's energy self-sufficiency and the minimisation of energy distribution and transfer losses

Water and waste water management
- Recovery of bioenergy for energy production
- Improved water quality
- Climate change adaptation

Projects approved in 2022

Buildings		Number approved: 45	Share of all projects approved in 2022 82%
Customer	**Project**	**Sub-category**	**Description**
City of Akaa	Comprehensive school of Viiala with Nordic ecolabel	1.1a Buildings	A new comprehensive school for 750 pupils. Adheres to the criteria of the Nordic Swan Ecolabel, Kuivaketju10 and purity class P1. The building's energy class is A, and its E-value (87 kWhE/m²/year) is 13% better than the level required by the building permit (100). The building utilises geothermal energy and has the technical capability for solar panels.
A-Kruunu Oy	Apartment building, Lavakatu 9b, Helsinki	1.1a Buildings	A Housing Reform Helsinki 2020 competition entry. The project is a wooden apartment building. The building's energy class is A, and its E-value (75 kWhE/m²/year) is 17% better than the level required by the building permit (90). The building has a green roof with solar panels, and space for heat pumps has been reserved on the balconies. The yard has been designed with the green factor method, which promotes climate change adaptation and mitigation as well as the diversity of urban nature. The project will include a carbon footprint assessment.
Yrjö ja Hanna-säätiö/ Asoasunnot Uusimaa Oy	Apartment building, Kuokkalan kalon, building 1	1.1a Buildings	The winning entry to the Housing Reform 2018 competition. It aims to be a model for eco-friendliness and communality. The project promotes lifecycle thinking and circular economy and reduces the carbon footprint of construction by using solid wood.
Mangrove Asumisoikeus Oy	Apartment building, Kuurankatu 2 ja 4	1.1a Buildings	A six-storey apartment building heated by a hybrid solution of geothermal and district heating. The building's energy class is A, and its E-value (74 kWhE/m²/year) is 18% better than the level required by the building permit (90).
TA-Asumisoikeus Oy	Apartment building Nordic Ecolabel, Rapukuja 2	1.1a Buildings	The site adheres to the criteria of the Nordic Swan Ecolabel. The building is heated by district heating. Its energy class is A, and its E-value (75 kWhE/m²/year) is 17% better than the level required by the building permit (90).
TA-Yhtymä Oy	Apartment building, As.oy. Espoon Luoteisrinne	1.1a Buildings	A concrete apartment building. Part of Finnoo's regional development project, which aims to act as a role model for combating climate change. The zoning goal is a carbon-neutral area where energy consumption is minimised and covered by low-emission sources. The building's energy class is A, and its E-value (75 kWhE/m²/year) is 17% better than the level required by the building permit (90).
Avain Vuokra10 Oy	Apartment building, Alhotie 19	1.1a Buildings	Three separate 5–6-storey apartment buildings with geothermal heating. The energy class of these buildings is A, and their E-values (74–75 kWhE/m²/year) are 17–18% better than the level required by the building permit (90).
Avain Asumisoikeus Oy	Apartment building, As.oy. Opistokuja 5	1.1a Buildings	A three-storey apartment building with district heating. The energy class of the building is A, and its E-value (74 kWhE/m²/year) is 18% better than the level required by the building permit (90).
Asuntosäätiön Asumisoikeus Oy	Apartment building, Klaavuntie 13	1.1a Buildings	A block of right-of-occupancy apartments built over a demolished shopping centre. The demolition of the shopping centre is carried out sustainably in accordance with the European Green Deal policies, and the aim is to recycle at least 70% of all non-hazardous waste material. The new building has district heating. Its energy class is A, and its E-value (75 kWhE/m²/year) is 17% better than the level required by the building permit (90).
Asuntosäätiön Asumisoikeus Oy	Apartment building, Kuormakatu 6	1.1a Buildings	A Housing Reform Helsinki 2020 competition entry. Two six-storey wooden apartment buildings in energy class A. Their E-value (75 kWhE/m²/year) is 17% better than the level required by the building permit (90). The roofs have solar panels, and the yard has been designed with the green factor method, which promotes climate change adaptation and mitigation as well as the diversity of urban nature. The project also includes a carbon footprint assessment.
Asuntosäätiön Vuokra-asunnot Oy	Apartment building, Hannuksenkuja 17	1.1a Buildings	A 13-storey apartment building in the immediate vicinity of a metro station. The apartment building's energy class is A, and its E-value (71 kWhE/m²/year) is 21% better than the level required by the building permit (90). The building uses district heating and produces 4,123 kWh of its own solar energy (1 kWh/m²/year).

Projects approved in 2022

Buildings		Number approved: 45	Share of all projects approved in 2022 82%
Customer	**Project**	**Sub-category**	**Description**
Avain Asumisoikeus Oy	Apartment building, As.oy. Tuusulan Freesia	1.1a Buildings	A construction project in energy class A. Its E-value (74 kWhE/m²/year) is 18% better than the level required by the building permit (90).
Avain Asumisoikeus Oy	Apartment building, As.oy .Tuusulan Pioni	1.1a Buildings	A construction project in energy class A. Its E-value (74 kWhE/m²/year) is 18% better than the level required by the building permit (90).
Toivo Group Oyj/ Elämäni Kodit 40 Oy	Apartment building, As.oy. Vantaan Nahkuri	1.1a Buildings	The project provides affordable, environmentally friendly housing that takes social aspects into consideration. The building has geothermal heating. Its energy class is A, and its E-value (71 kWhE/m²/year) is 21% better than the level required by the building permit (90).
Helsingin Asumisoikeus Oy	Apartment building, Gunillanpuisto	1.1a Buildings	Two concrete apartment buildings equipped with geothermal heating and exhaust air heat recovery. The energy efficiency of these buildings is 20% better than the level required by the building permit.
Helsingin kaupungin asunnot Oy	Apartment building, Gunillantie 3	1.1a Buildings	Three concrete apartment buildings with nearly 30% better energy efficiency than required by the building permit. The buildings are equipped with geothermal heating as well as a mechanical intake and exhaust ventilation system with heat recovery.
Helsingin kaupungin asunnot Oy	Apartment building, Jakomäentie 10	1.2 Renovations	The renovation of three separate apartment buildings, which improves their energy efficiency by an average of 38%.
Ingå Municipality	Kyrkfjärdens School of Ingå	1.1a Buildings	A new school for 180–200 pupils. The project aims for a building that is energy-efficient, healthy, safe, functional and of high quality, adapting to changes during its lifecycle and serving the needs of its users as efficiently as possible. The building is equipped with a hybrid solution of geothermal and district heating and also has a solar power system. The building's energy class is A, and its E-value (70 kWhE/m²/year) is 30% better than the level required by the building permit (100).
Jyväskylän Vuokra-asunnot Oy	Apartment building, Kiljaderinkatu 8	1.2 Renovations	An extensive renovation project of all apartments that also improves energy efficiency. Renovations include the replacement of water and sewer pipes, the installation of exhaust air heat recovery system and heat pumps, the installation of apartment-specific water meters, and the improvement of roof insulation. All renovations combined, the building's energy efficiency will improve by an estimated 40%.
City of Kaarina	School of Hoviranta	1.1a Buildings	A new school for approximately 270 pupils. The building was designed to be compact and flexible to use. The building's energy class is A, and its E-value (86 kWhE/m²/year) is 14% better than the level required by the building permit (100).
City of Kangasala	Comprehensive school of Lammin-rahka	1.1a Buildings	A new school building. The structures, building components and technical systems were selected to ensure low energy consumption and operating costs and high adaptability and flexibility throughout the entire lifecycle of the building. The building has district heating. Its energy class is A, and its E-value (67 kWhE/m²/year) is 33% better than the level required by the building permit (100).
City of Kauhava	Education centre of Kortesjärvi	1.1a Buildings	A new school centre for 200 pupils. The building has district heating. Its energy class is A, and its E-value (83 kWhE/m²/year) is 17% better than the level required by the building permit.
Y-Säätiö/Kiinteistö Oy M2-Kodit	Apartment building, Nihtisillankuja 2 H ja I	1.1a Buildings	A large apartment building with geothermal heating. Its energy class is A, and its E-value (74 kWhE/m²/year) is 18% better than the level required by the building permit (90).
Y-Säätiö/Kiinteistö Oy M2-Kodit	Apartment building, Lyyranpyrstö 2	1.1a Buildings	The carbon footprint of this building was reduced by choosing hollow core slabs instead of solid slabs in the frame. The building is connected to the district heating network, and the plans include a capability for roof solar panels. Its energy class is A, and its E-value (74 kWhE/m²/year) is 18% better than the level required by the building permit.
Y-Säätiö/Kiinteistö Oy M2-Kodit	Apartment building, Rullakkokuja 14	1.1a Buildings	Two apartment buildings with district heating. Their E-value (75 kWhE/m²/year) is 17% better than the level required (90) by the building permit. The buildings have green roofs and solar panels generating approximately 6,000 kWh per year (3 kWh/m²/year). The yards have been designed with the green factor method, which promotes climate change adaptation and mitigation as well as the diversity of urban nature.
Kirkkonummi Municipality	School centre of Gesterby (The Building Information Foundation (RTS) certfication)	1.1a Buildings	A new school centre to replace a demolished one. The E-value (63 kWhE/m²/year) is 37% better than the level required by the building permit (100). According to the project's carbon footprint assessment, the building saves 20% of carbon emissions compared to the reference project. The design and implementation phases both utilised the RTS Environmental Classification Tool by the Building Information Group.

Projects approved in 2022

Buildings		Number approved: 45	Share of all projects approved in 2022 82%
Customer	**Project**	**Sub-category**	**Description**
Kouvolan Asunnot Oy	Apartmanet building, Viialankatu 5	1.2 Renovations	The renovation of a building constructed in 1972. The E-value of the building was 162 kWhE/m²/year before the renovation and 95 kWhE/m²/year after, resulting in an improvement of 41%.
Y-Säätiö	Apartment building, Myllytie 14 a	1.1a Buildings	A six-storey concrete apartment building. Its energy class is A, and its E-value (68 kWhE/m²/year) is 24% better than the level required by the building permit (90). The building includes an electrically powered geothermal heat pump and solar panels that will produce approximately 32,000 kWh of energy per year.
Mikalo Oy	Apartment building, Yrjönkatu 19, Mikkeli	1.2 Renovations	A renovation project that substantially improves the building's energy efficiency. Heating is converted from oil to district heating, the roof improved with additional insulation, and doors and windows are replaced. Mechanical exhaust ventilation is replaced with apartment-specific mechanical intake and exhaust ventilation. The E-value of the building will be halved from 316 kWhE/m²/year to 158 kWhE/m²/year.
City of Mikkeli	Southern regional School of Mikkeli	1.1a Buildings	A new regional school for the southern region of Mikkeli. The objective of the project is to build a healthy, modern learning environment that supports the goals of the new curriculum and the community spirit for all pupils of the area, as well as flexible spaces that can also be used for recreational activities. The building has district heating. Its E-value (77,5 kWhE/m²/year) is 23% better than the level required by the building permit (100).
Mäntsälä Municipality	Daycare centre Amanda	1.1a Buildings	A new day-care centre to replace a demolished one. In order to ensure energy efficiency, an E-value target is determined for the project in the turnkey contract competition phase. The building has geothermal heating, and its E-value (53 kWhE/m²/year) is 47% better than the level required by the building permit (100).
City of Nivala	School of Junttila	1.1a Buildings	A new school that replaces three demolished village school buildings. The new school is made for 120 pupils and a preschool group. The project aims to use wood as a building material as much as possible, and the design of the premises aims for a high degree of flexibility. The building has geothermal heating, and its E-value (87 kWhE/m²/year) is 13% better than the level required by the building permit (100).
City of Parainen	Creativity and learning centre of Parainen [3]	1.1a Buildings, 1.2 Renovations	The renovation and expansion of a school with 700 students. The project includes a lifetime carbon footprint assessment. The school uses district heating. The energy class of the building extension is A, and its E-value (82 kWhE/m²/year) is 18% better than the level required by the building permit (100). The renovation will also result in significantly improved energy efficiency of the existing building – 38% for heat energy and 51% for electricity. In addition to the renovations, a 107 kW solar panel system will be installed on the roof.
City of Pori	Community centre of Northern Pori	1.1a Buildings	A new school building to replace demolished schools. A demolition survey is made in accordance with the Ministry of the Environment's guidelines. The construction company is involved in the EU Circwaste project and uses recycled products and materials. The building's energy class is A, and its E-value (76 kWhE/m²/year) is 24% better than the level required by the building permit (100).
Savonlinnan Vuokratalot Oy	Apartment building, Aholahdentie 113 ja Aholahdentie 115	1.2 Renovations	Conversion from oil to geothermal heating in connection with renovations. The project removes the need of fossil fuels in these buildings and improves energy efficiency significantly, by 45–46%.
Savonlinnan Vuokratalot Oy	Apartment building, Hilkanhaka 6 ja 7	1.2 Renovations	Conversion from oil to geothermal heating in connection with renovations. The project removes the need of fossil fuels in these buildings and improves energy efficiency significantly, by 54–55%.
Savonlinnan Vuokratalot Oy	Apartment building, Kirstintupa ja Marintupa	1.2 Renovations	Conversion from oil to geothermal heating in connection with renovations. The project removes the need of fossil fuels in these buildings and improves energy efficiency significantly, by 57–58%.
TA- Asumisoikeus Oy	Apartment building, Metsäläntie 10	1.1a Buildings	The leasing of electric cars.
Tampereen Kotilinnasäätiö sr	Apartment buildings, Uimalankatu 1 buildings 1b and 1c	1.1a Buildings	Two apartment buildings with district heating. Their E-value (75 kWhE/m²/year) is 17% better than the level required by the building permit (90). The project uses the RTS Environmental Classification Tool by the Building Information Group to manage the project in an environmentally responsible manner. The buildings produce their own solar energy for an estimated 13,052 kWh per year.
Tampereen Vuokratalosäätiö sr	Apartment building, Heittoniitynkuja 2	1.1a Buildings	Two apartment buildings in energy class A. Their E-value (75 kWhE/m²/year) is 17% better than the level required by the building permit (90).

Projects approved in 2022

Buildings		Number approved: 45	Share of all projects approved in 2022 82%
Customer	**Project**	**Sub-category**	**Description**
Tohmajärvi Municipality	School centre of Tohmajävi	1.1a Buildings	A new school centre replacing three old school buildings. The new buildings have district heating, and their E-value (66 kWhE/m²/year) is 34% better than the level required by the building permit (100).
City of Turku	Temporary/movable school facilities for school of Mikael	1.1a Buildings	Movable temporary premises in energy class A (75 kWhE/m²/year), which is a relatively rare classification for this type of construction. The premises are connected to the district heating network of the city of Turku.
VAV Asunnot Oy	Apartment building, Perintötie 9	1.1a Buildings	A new apartment building that fulfils the criteria of the Nordic Swan Ecolabel. The building has district heating, and its E-value (75 kWh/m²/year) is 17% better than the level required by the building permit (90). The building produces its own solar energy for approximately 14,440 kWh per year (2 kWh/m²).
City of Ylöjärvi	Comprehensive school Siltatie	1.1a Buildings	A new comprehensive school and sports hall. The building is made of concrete and designed to be as adaptable and flexible as possible by optimising the number and location of load-bearing and stiffening structures. The building has district heating, and its E-value (75 kWh/m²/year) is 25% better than the level required by the building permit (100).
Yrjö ja Hanna Kiinteistöt Oy	Apartment buildings, Kuokkalan Kalon buildings 2, 3 and 4	1.1a Buildings	The winning entry to the Housing Reform 2018 competition. It aims to be a model for eco-friendliness and communality. The project promotes lifecycle thinking and circular economy and reduces the carbon footprint of construction by using solid wood. The buildings have geothermal heating, and their E-values (69–71) are on average 22% better than the level required by the building permit (100).

Case

The wooden apartment building quarter in Kuokkala sparks spontaneous meetings

The Yrjö and Hanna Foundation is developing a quarter with five wooden apartment buildings in the Kuokkala district in Jyväskylä. Its design emphasises environmental consciousness and communality, and its construction commenced in autumn 2022. Four of the five buildings have been financed with MuniFin's green finance.

The quarter is entitled Kalon, and it won the Asuntoreformi architecture competition in 2018. The Kalon buildings are constructed from prefabricated wooden elements, meaning that 70–80% of the buildings are made at the factory before they are transported to the building site. The architecture and materials of the buildings tie them seamlessly to the surrounding buildings, the Kuokkala wooden church and the pioneering Puukuokka wooden apartment buildings. The buildings will have geothermal heating as well as solar panels on the roof to generate some of their electricity. The residents will be able to monitor their energy consumption in real time.

The Yrjö and Hanna Foundation works hard to improve housing. The Kalon apartments are designed to be flexible, and the quarter has extensive common facilities. The common facilities and letter boxes of all five buildings are in one building. This central spot is intended to spark spontaneous meetings.

Photo: Collaboratorio Oy

MuniFin

Projects approved in 2022

Transportation		Number approved: 10	Share of all projects approved in 2022 18%
Customer	**Project**	**Sub-category**	**Description**
City of Helsinki	Crown Bridges Light Rail (CEEQUAL sustainability assesment)	2.2 Supporting infrastructure for public transportation	An important new connection that improves the public transport system of the Capital Region. The bridges significantly shorten travel time, turning Kruunuvuorenranta from a suburb into a part of the inner city. In addition to the light rail, the bridges include pedestrian and bicycle lanes. The light rail connection is estimated to serve around 23,000 passengers every day after the Kruunuvuorenranta and Kalasatama districts are completed. The international CEEQUAL assessment method was used in project planning.
Kymsote-Kiinteistöt Oy (social and healthcare services)	Fully electric cars, VW e-up (22 vehicles)	2.3 Passenger cars and light commercial vehicles	The leasing of electric cars.
City of Orivesi	Fully electric car, Citroen e-Berlingo	2.3 Passenger cars and light commercial vehicles	The leasing of electric cars, replacing transport equipment that generates tailpipe emissions.
Seinäjoki Joint Municipal Authority for Education	Fully electric car, Skoda Enyaq	2.3 Passenger cars and light commercial vehicles	The leasing of electric cars.
Tampereen Infra Oy	Fully electric cars, Kia s-Soul (2 vehicles)	2.3 Passenger cars and light commercial vehicles	The leasing of electric cars.
Tampereen Raitiotie Oy	City of Tampere tramway, 2nd phase	2.1 Public transportation	The Tampere light rail will reduce greenhouse gas emissions by approximately 14,000 and 35,000 CO_2e tons per year. zThe annual emissions are 1.4% lower compared to an electric bus solution. Achieving the level of service as 25 trams would require 225 buses.
City of Turku	Fully electric car, Mercedes-Benz EGC	2.3 Passenger cars and light commercial vehicles	The leasing of electric cars.
City of Turku, Turku Vocational Institute	Fully electric cars, VW e-up (3 vehicles)	2.3 Passenger cars and light commercial vehicles	The leasing of electric cars.
City of Turku, Procurement Services of the City of Turku	Fully electric cars, Citroen e-Berlingo (2 vehicles)	2.3 Passenger cars and light commercial vehicles	The leasing of electric cars.
City of Turku, Procurement Services of the City of Turku (Social and healthcare services)	Fully electric cars, VW e-up (23 vehicles)	2.3 Passenger cars and light commercial vehicles	The leasing of electric cars.

Case

In Turku, traffic is becoming electric faster than expected

In recent years, street and road traffic has been the single largest source of emissions in the City of Turku in addition to the use and production of energy. Turku aims to halve its traffic emissions from the 2015 level by 2029.

In 2016, Turku electrified an entire public transport line as the first city in Finland. The project received MuniFin's green finance, which the Turku region public transport company used to acquire electric buses. In recent years, the City of Turku has given preference to electric vehicles when inviting tenders for its public transport fleet acquisitions. The supply of electric buses has increased quickly, and their price has decreased so much that electric buses now outdo diesel vehicles in not just emissions but also in cost. In 2022, Turku had 70 electric buses.

Consumer preferences and tightening environmental regulation are turning traffic electric faster than expected. An EU directive has required municipalities and cities to increase the share of electric vehicles in their vehicle purchases since 2021. In Turku, this requirement has posed no problems. Recently the city acquired 29 electric vehicles using MuniFin's gren finance. Importers have been able to supply electric vehicles faster and at a lower price than expected.

Photo: City of Turku

Green finance projects and impacts

Buildings: New buildings												
Customer	Project	Sub-category	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
City of Akaa	Comprehensive school of Viiala with Nordic ecolabel	1.1a Buildings	2022	A	2018	87	17,000,000	-	17,000,000	100%	112	7
A-Kruunu Oy	Apartment building, Syvänsalmenkatu 5 b	1.1a Buildings	2020	A	2018	71	7,100,000	1,750,697	8,850,697	80%	50	5
A-Kruunu Oy	Apartment building, Lavakatu 9b, Helsinki	1.1a Buildings	2022	A	2018	75	-	20,673,617	20,673,617	0%	0	0
Asuntosäätiön Asumisoikeus Oy	Apartment building, Klaavuntie 13	1.1a Buildings	2022	A	2018	75	4,200,000	3,493,132	7,693,132	55%	60	8
Asuntosäätiön Asumisoikeus Oy	Apartment building, Kuormakatu 6	1.1a Buildings	2022	A	2018	75	-	19,834,756	19,834,756	0%	0	0
Asuntosäätiön Asumisoikeus Oy	Apartment building with Nordic Ecolabel, Karakalliontie 1	1.1a Buildings	2020	A	2018	75	7,332,950	-	7,332,950	100%	46	3
Asuntosäätiön Vuokra-asunnot Oy	Apartment building, Hannuksenkuja 17	1.1a Buildings	2022	A	2018	71	-	19,721,944	19,721,944	0%	0	0
Avain Asumisoikeus Oy	Apartment building, As.oy. Vantaan Ajoportti	1.1a Buildings	2021	A	2018	73	20,265,699	2,004,301	22,270,000	91%	144	9
Avain Asumisoikeus Oy	Apartment building, As.oy. Opistokuja 5	1.1a Buildings	2022	A	2018	74	5,202,289	5,414,627	10,616,916	49%	38	3
Avain Asumisoikeus Oy	Apartment building, As.oy. Keravan Niittäjänkatu 2 ja 4	1.1a Buildings	2021	A	2018	78-79	4,930,045	314,682	5,244,727	94%	40	2
Avain Asumisoikeus Oy	Apartment building, As.oy. Järvenpään Kultapiisku	1.1a Buildings	2021	A	2018	75	12,708,636	349,781	13,058,417	97%	24	1
Avain Asumisoikeus Oy	Apartment building, As.oy. Hyvinkään Yli-Jurvankatu 5	1.1a Buildings	2021	A	2018	75	7,270,692	719,083	7,989,775	91%	43	3
Avain Asumisoikeus Oy	Apartment building, As.oy .Tuusulan Pioni	1.1a Buildings	2022	A	2018	74	-	5,369,267	5,369,267	0%	0	0

[1] The new law of 2018 concerning energy performance certificates reduced the coefficients of certain energy types used in the calculation of E-values and made the legal threshold of energy efficiency for new buildings stricter. Using new coefficients, the E-values of the buildings built under the old law of 2013 would decrease, which could enhance their EPC classes

[2] The E-value represents a building's calculated annual consumption of purchased energy per the heated net area (kWhE/m²/year) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

[3] Impacts calculated only for the new construction part of the project.

[4] Experimental project, please see additional information on p. 19.

Buildings: New buildings												
Customer	Project	Sub-category	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
Avain Asumisoikeus Oy	Apartment building, As.oy. Tuusulan Freesia	1.1a Buildings	2022	A	2018	74	-	7,560,882	7,560,882	0%	0	0
Espoon Asunnot Oy	Apartment building, Syvänsalmenkatu 1	1.1a Buildings	2021	A	2018	72	11,684,250	2,771,550	14,455,800	81%	88	8
City of Forssa	Community centre Akvarelli	1.1a Buildings	2019	A	2018	73	21,809,460	-	21,809,460	95%	118	6
City of Haapavesi	Secondary school and high school of Haapavesi	1.1a Buildings	2020	A	2018	89	14,992,000	-	14,992,000	97%	75	6
Heinävesi Municipality	Middle school of Heinävesi	1.1a Buildings	2020	A	2018	72	8,293,039	-	8,293,039	92%	81	7
Helsingin Asumisoikeus Oy	Apartment building, Kettutie 10	1.1a Buildings	2021	A	2018	73	8,620,000	2,221,977	10,841,977	80%	57	7
Helsingin Asumisoikeus Oy	Apartment building, Koskelantie 66b	1.1a Buildings	2020	B	2018	77–79	21,077,875	9,033,375	30,111,250	70%	100	13
Helsingin Asumisoikeus Oy	Apartment building, Yläkiventie 11	1.1a Buildings	2021	A	2018	75	6,119,786	-	6,119,786	100%	39	5
Helsingin Asumisoikeus Oy	Apartment building, Smoltinkuja 3	1.1a Buildings	2021	A	2018	67	5,600,000	10,663,866	16,263,866	34%	36	2
Helsingin Asumisoikeus Oy	Apartment building, Yläkivenrinne 2	1.1a Buildings	2021	A	2018	74	4,520,000	3,058,631	7,578,631	60%	30	4
Helsingin Asumisoikeus Oy	Apartment buildings, Fannynkallio and Kuninkaankierto 4	1.1a Buildings	2017	B	2013	98–108	16,000,169	-	16,000,169	97%	253	33
Helsingin Asumisoikeus Oy	Apartment buildings Atlantinkaari and Länsisatamankatu 37	1.1a Buildings	2020	A	2018	74	28,500,000	13,864,850	42,364,850	67%	161	20
Helsingin Asumisoikeus Oy	Apartment building Lavakatu 12/Veturitie 58	1.1a Buildings	2020	A	2018	72	13,849,000	4,698,000	18,547,000	75%	113	13
Helsingin Asumisoikeus Oy	Apartment buildings Jamaika Haitinkuja 3, Jamaikankatu 1 and Kanariankatu 7	1.1a Buildings	2019	B	2018	79	15,204,970	-	15,204,970	100%	31	4
Helsingin Asumisoikeus Oy	Apartment building, Postiljooni Lavakatu 3	1.1a Buildings	2019	A	2018	75	20,781,650	-	20,781,650	100%	127	15
Helsingin Asumisoikeus Oy	Apartment building, Postimies Lavakatu 3	1.1a Buildings	2019	A	2018	75	17,187,391	-	17,187,391	99%	102	12
Helsingin Asumisoikeus Oy	Apartment building, Asetelmanpolku 3	1.1a Buildings	2021	A	2018	72	-	10,412,500	10,412,500	0%	0	0

[1] The new law of 2018 concerning energy performance certificates reduced the coefficients of certain energy types used in the calculation of E-values and made the legal threshold of energy efficiency for new buildings stricter. Using new coefficients, the E-values of the buildings built under the old law of 2013 would decrease, which could enhance their EPC classes

[2] The E-value represents a building's calculated annual consumption of purchased energy per the heated net area (kWhE/m²/year) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

[3] Impacts calculated only for the new construction part of the project.

[4] Experimental project, please see additional information on p. 19.

Buildings: New buildings												
Customer	Project	Sub-category	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
Helsingin Asumisoikeus Oy	Apartment building, Gunillanpuisto	1.1a Buildings	2022	A	2018	70–71	-	17,812,031	17,812,031	0%	0	0
Helsingin kaupungin asunnot Oy	Apartment building, Haakoninlahdenkatu 5–7	1.1a Buildings	2019	B	2018	80	25,075,294	-	25,075,294	99%	96	12
Helsingin kaupungin asunnot Oy	Apartment building, Kalasatama Kaljaasi, Fortunankatu 6	1.1a Buildings	2021	A	2018	67	8,889,542	8,950,000	17,839,542	50%	894	7
Helsingin kaupungin asunnot Oy	Apartment building, Kanariankatu 3	1.1a Buildings	2019	B	2018	79	16,204,653	-	16,204,653	99%	58	8
Helsingin kaupungin asunnot Oy	Apartment building, Koskelantie 66	1.1a Buildings	2020	B	2018	76–78	17,658,576	11,772,383	29,430,959	60%	82	10
Helsingin kaupungin asunnot Oy	Apartment building, Kyösti Kallion tie 1a	1.1a Buildings	2019	A	2018	75–77	9,048,546	-	9,048,546	98%	46	6
Helsingin kaupungin asunnot Oy	Apartment building, Lavakatu 10	1.1a Buildings	2020	A	2018	72–75	23,952,290	2,661,365	26,613,655	90%	155	18
Helsingin kaupungin asunnot Oy	Apartment building, Pyhätunturin-tie 2	1.1a Buildings	2019	B	2018	77–88	22,455,194	-	22,455,194	99%	91	12
Helsingin kaupungin asunnot Oy	Apartment building, Sienakuja 4	1.1a Buildings	2017	B	2013	95–103	9,423,665	-	9,423,665	98%	142	18
Helsingin kaupungin asunnot Oy	Apartment building, Taidemaalarinkatu 2	1.1a Buildings	2017	B	2013	71–105	13,938,419	-	13,938,419	98%	218	29
Helsingin kaupungin asunnot Oy	Apartment building, Tullivuorentie 22	1.1a Buildings	2019	B	2018	78–82	12,606,526	-	12,606,526	98%	74	9
Helsingin kaupungin asunnot Oy	Apartment building, Isonnevankuja 1	1.1a Buildings	2019	B	2018	85	7,998,761	-	7,998,761	98%	15	2
Helsingin kaupungin asunnot Oy	Apartment building, Kaupinmäenpolku 15	1.1a Buildings	2019	B	2018	80	5,942,722	-	5,942,722	98%	23	3
Helsingin kaupungin asunnot Oy	Apartment building, Maununnevantie 3	1.1a Buildings	2021	A	2018	70–74	14,366,000	14,400,000	28,766,000	50%	91	5
Helsingin kaupungin asunnot Oy	Apartment buildings, Kettutie 8 a-c	1.1a Buildings	2021	A	2018	73–75	12,045,000	5,161,957	17,206,957	70%	70	9
Helsingin kaupungin asunnot Oy	Apartment building, Asetelmankatu 1	1.1a Buildings	2021	A	2018	73–75	2,456,000	9,824,000	12,280,000	20%	15	2
Helsingin kaupungin asunnot Oy	Apartment building, Salavakuja 2	1.1a Buildings	2021	A	2018	69–70	5,086,138	11,867,656	16,953,794	30%	25	1
Helsingin kaupungin asunnot Oy	Apartment building, Yläkiventie 14	1.1a Buildings	2021	A	2018	75	5,450,200	1,362,550	6,812,750	80%	31	4
Helsingin kaupungin asunnot Oy	Apartment building, Postiljoon-inkatu 2	1.1a Buildings	2021	A	2018	73	23,576,714	15,717,812	39,294,526	60%	141	16

[1] The new law of 2018 concerning energy performance certificates reduced the coefficients of certain energy types used in the calculation of E-values and made the legal threshold of energy efficiency for new buildings stricter. Using new coefficients, the E-values of the buildings built under the old law of 2013 would decrease, which could enhance their EPC classes

[2] The E-value represents a building's calculated annual consumption of purchased energy per the heated net area (kWhE/m²/year) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

[3] Impacts calculated only for the new construction part of the project.

[4] Experimental project, please see additional information on p. 19.

Buildings: New buildings												
Customer	Project	Sub-category	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
Helsingin kaupungin asunnot Oy	Apartment building, Kustinpolku 7	1.1a Buildings	2019	A	2018	75	23,470,700	-	23,470,700	100%	1,795	15
Helsingin kaupungin asunnot Oy	Apartment building, Smoltinkaari 6	1.1a Buildings	2021	A	2018	67	9,084,613	3,930,000	13,014,613	70%	67	4
Helsingin kaupungin asunnot Oy	Apartment building, Gunillantie 3	1.1a Buildings	2022	A	2018	65–66	2,094,886	18,927,000	21,021,886	10%	16	1
Hollola Municipality	School of Heinsuo	1.1a Buildings	2016	B	2013	109	14,873,716	-	14,873,716	87%	439	25
Hollola Municipality	School of Kalliola	1.1a Buildings	2016	B	2013	116	14,072,817	-	14,072,817	87%	306	18
City of Hyvinkää	Community centre Hangonsiltatalo	1.1a Buildings	2019	B	2018	93	22,500,000	-	22,500,000	90%	68	10
Hämeenkyrö Municipality	Environmental school of Mahnala	1.1a Buildings	2017	B	2013	95	4,433,337	-	4,433,337	63%	154	9
City of Hämeenlinna	Service centre of Nummi	1.1a Buildings	2016	A	2013	88	21,980,420	-	21,980,420	88%	719	28
Ii Municipality	Daycare centre of Hamina	1.1a Buildings	2021	A	2018	86	3,800,000	-	3,800,000	95%	18	2
City of Imatra	School campus of Mansikkala (LEED certification)	1.1a Buildings	2018	B	2013	102	41,142,858	-	41,142,858	91%	969	36
Inari Municipality	Ivalo education centre (The Building Information Foundation (RTS) certfication)	1.1a Buildings	2020	A	2018	73	25,001,410	1,998,590	27,000,000	93%	215	19
Ingå Municipality	Kyrkfjärdens School of Ingå	1.1a Buildings	2022	A	2018	70	10,000,000	-	10,000,000	100%	86	5
Janakkala Municipality	Janakkala fire department	1.1a Buildings	2016	B	2013	103–109	5,665,092	-	5,665,092	87%	124	7
Janakkala Municipality	Tervakoski sports hall	1.1a Buildings	2019	A	2018	73	4,012,500	-	4,012,500	75%	55	3
Janakkala Municipality	School and community centre of Turenki, 1st phase	1.1a Buildings	2021	A	2018	68	15,778,522	6,421,478	22,200,000	71%	169	9
City of Joensuu	Daycare centre of Hukanhauta	1.1a Buildings	2018	A	2013	90	3,562,612	-	3,562,612	86%	125	2
City of Joensuu	Mehtimäki sportshall and school of Karsikko	1.1a Buildings	2020	A	2018	80–87	9,400,000	-	9,400,000	100%	228	7
City of Joensuu	Daycare centre of Hammaslahti	1.1a Buildings	2018	A	2013	80	2,572,502	-	2,572,502	81%	89	1
City of Joensuu	Middle school og Heinävaara, modular unit	1.1a Buildings	2018	B	2013	107	3,475,965	-	3,475,965	81%	95	6
City of Joensuu	School of Karhumäki	1.1a Buildings	2016	A	2013	89	7,805,815	-	7,805,815	83%	312	7

[1] The new law of 2018 concerning energy performance certificates reduced the coefficients of certain energy types used in the calculation of E-values and made the legal threshold of energy efficiency for new buildings stricter. Using new coefficients, the E-values of the buildings built under the old law of 2013 would decrease, which could enhance their EPC classes

[2] The E-value represents a building's calculated annual consumption of purchased energy per the heated net area (kWhE/m²/year) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

[3] Impacts calculated only for the new construction part of the project.

[4] Experimental project, please see additional information on p. 19.

Buildings: New buildings												
Customer	Project	Sub-category	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
City of Joensuu	School of Nepenmäki	1.1a Buildings	2016	B	2013	96	18,075,211	-	18,075,211	89%	711	22
City of Joensuu	School of Rantakylä	1.1a Buildings	2018	A	2013	88	12,081,290	-	12,081,290	87%	481	12
City of Jämsä	Comprehensive school of Jämsänkoski	1.1a Buildings	2017	B	2013	111	8,784,942	-	8,784,942	89%	231	8
City of Kaarina	The main library, Kaarinatalo	1.1a Buildings	2017	A	2013	90	6,375,000	-	6,375,000	71%	116	7
City of Kaarina	School of Hoviranta	1.1a Buildings	2022	A	2018	86	15,000,000	-	15,000,000	100%	90	5
City of Kalajoki	Fire station of Kalajoki	1.1a Buildings	2017	B	2013	111	1,500,000	-	1,500,000	50%	28	1
City of Kalajoki	School of Merenoja	1.1a Buildings	2019	A	2018	81	22,616,073	-	22,616,073	90%	175	8
City of Kangasala	Comprehensive school of Lamminrahka	1.1a Buildings	2022	A	2018	67	19,000,000	-	19,000,000	95%	326	21
City of Kauhava	Education centre of Kortesjärvi	1.1a Buildings	2022	A	2018	83	6,000,000	-	6,000,000	100%	58	2
Keski-Suomen opiskelija-asuntosäätiö sr	Multi-generation block, Kankaan Ilona, Ailakinkatu 10	1.1a Buildings	2019	B	2018	76	8,579,296	-	8,579,296	98%	134	12
Kiinteistö Oy Kuopion Koulutilat	School of Karttula	1.1a Buildings	2016	B	2013	97	10,244,800	-	10,244,800	84%	302	20
Kiinteistö Oy Kuopion Koulutilat	School of Jynkkä	1.1a Buildings	2016	B	2013	101	10,862,667	-	10,862,667	75%	312	21
Kiinteistö Oy Turun Syvälahden koulu	School of Syvälahti	1.1a Buildings	2017	B	2013	99–204	20,000,000	-	20,000,000	100%	743	45
Kirkkonummi Municipality	School centre of Gesterby (The Building Information Foundation (RTS) certfication)	1.1a Buildings	2022	A	2018	63	3,162,745	61,837,255	65,000,000	5%	23	2
Kirkkonummen Vuokra-asunnot Oy	Apartment building, Masalan tinapuisto	1.1a Buildings	2020	A	2018	75	14,206,955	-	14,206,955	100%	83	5
City of Kokkola	School of Chydenius (Leed certification)	1.1a Buildings	2018	B	2013	127	10,661,696	-	10,661,696	92%	216	15
Koulutuskeskus Salpaus -kuntayhtymä	School campus Vipusenkatu	1.1a Buildings	2016	A	2013	88	2,104,480	-	2,104,480	26%	160	9
City of Kouvola	Valkeala community centre	1.1a Buildings	2021	A	2018	69	19,149,496	11,850,504	31,000,000	62%	143	24

[1] The new law of 2018 concerning energy performance certificates reduced the coefficients of certain energy types used in the calculation of E-values and made the legal threshold of energy efficiency for new buildings stricter. Using new coefficients, the E-values of the buildings built under the old law of 2013 would decrease, which could enhance their EPC classes

[2] The E-value represents a building's calculated annual consumption of purchased energy per the heated net area (kWhE/m²/year) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

[3] Impacts calculated only for the new construction part of the project.

[4] Experimental project, please see additional information on p. 19.

Buildings: New buildings												
Customer	Project	Sub-category	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
City of Kouvola	Daycare centre of Lehtomäki	1.1a Buildings	2018	B	2018	68	350,000	-	350,000	10%	12	1
City of Kouvola	Daycare centre of Naukio	1.1a Buildings	2021	A	2018	90	2,198,074	1,301,926	3,500,000	63%	8	1
City of Kuhmo	Wooden comprehensive school of Tuupala	1.1a Buildings	2016	B	2013	120	8,400,000	-	8,400,000	70%	194	16
Kuopion Opiskelija-asunnot Oy	Construction of apartment building for students, Ahkio	1.1a Buildings	2019	A	2018	75	5,444,208	-	5,444,208	98%	40	3
Kuopion Opiskelija-asunnot Oy	Apartment building, Minari	1.1a Buildings	2019	A	2018	73	3,944,000	-	3,944,000	100%	35	3
Kuopion Opiskelija-asunnot Oy	Construction of apartment building for students, Taivaanpankko	1.1a Buildings	2019	A	2018	63	7,026,210	-	7,026,210	98%	96	8
Lahden vanhusten asuntosäätiö	Senior home, Saimaankatu 29	1.1a Buildings	2019	A	2018	75	7,413,125	-	7,413,125	97%	51	3
Lapinlahti Municipality	Matti and Liisa's school in Lapinlahti	1.1a Buildings	2020	A	2018	87	3,500,000	-	3,500,000	88%	46	3
Lappeenrannan Asuntopalvelu Oy	Apartment building, Kiviharjunkatu 2	1.1a Buildings	2020	A	2018	74	4,488,333	-	4,488,333	98%	31	2
Laukaa Municipality	School of Lievestuore	1.1a Buildings	2017	B	2013	124	11,121,123	-	11,121,123	88%	278	11
Leppävirta Municipality	New primary school of Leppävirta	1.1a Buildings	2017	B	2013	127	7,701,728	-	7,701,728	90%	153	17
Liminka Municipality	School of Linnukka	1.1a Buildings	2017	B	2013	123	2,500,000	-	2,500,000	50%	140	20
Liperi Municipality	School of Ylämylly	1.1a Buildings	2021	A	2018	90	5,950,000	-	5,950,000	85%	68	2
Liperi Municipality	School of Kirkonkylä[3]	1.1a Buildings 1.2 Renovations	2021	A	2018	99	2,700,000	-	2,700,000	90%	2	0
Luksia, Länsi-Uudenmaan koulutuskuntayhtymä	Construction and renovation of Toivonkatu campus	1.1a Buildings	2020	B	2018	95	11,489,362	-	11,489,362	96%	36	2
City of Tampere	Apartment building, Asumisoikeus Oy Tampereen Ilokkaanrinne 5–6	1.1a Buildings	2021	A	2018	28	9,084,225	-	9,084,225	100%	223	13
Mangrove Asumisoikeus Oy	Apartment building, Kuurankatu 2 ja 4	1.1a Buildings	2022	A	2018	74	3,444,000	6,729,729	10,173,729	34%	27	2
City of Mikkeli	Southern regional School of Mikkeli	1.1a Buildings	2022	A	2018	77,5	29,000,000	-	29,000,000	100%	254	17
City of Mikkeli	Daycare centre of Kalevankangas	1.1a Buildings	2019	A	2018	88	4,200,000	-	4,200,000	100%	20	1

[1] The new law of 2018 concerning energy performance certificates reduced the coefficients of certain energy types used in the calculation of E-values and made the legal threshold of energy efficiency for new buildings stricter. Using new coefficients, the E-values of the buildings built under the old law of 2013 would decrease, which could enhance their EPC classes

[2] The E-value represents a building's calculated annual consumption of purchased energy per the heated net area (kWhE/m²/year) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

[3] Impacts calculated only for the new construction part of the project.

[4] Experimental project, please see additional information on p. 19.

Buildings: New buildings												
Customer	Project	Sub-category	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
Mäntsälä Municipality	Daycare centre Amanda	1.1a Buildings	2022	A	2018	53	6,900,000	-	6,900,000	100%	87	5
Mäntsälä Municipality	School of Ehnroos	1.1a Buildings	2019	A	2018	87	16,788,349	4,211,651	21,000,000	80%	75	5
NAL Asunnot Oy	Apartment building, Gibraltarinaukio 4	1.1a Buildings	2021	A	2018	74	8,756,985	1,308,515	10,065,500	87%	71	9
Niiralan Kulma Oy	Apartment building, Hatsalankatu 37	1.1a Buildings	2020	A	2018	75	6, 990,500	-	6,990,500	98%	46	3
Niiralan Kulma Oy	Apartment building, Keskikaari 48	1.1a Buildings	2020	A	2018	71	4,647,845	-	4,647,845	99%	42	3
Niiralan Kulma Oy	Apartment building, Raviradantie 8	1.1a Buildings	2020	A	2018	70	6,231,093	-	6,231,093	98%	61	5
Kiinteistö-KYS Oy	Apartment building Kuopio Puijonlaakso	1.1a Buildings	2017	C	2013	107	9,531,657	-	9,531,657	98%	109	9
City of Nivala	School of Junttila	1.1a Buildings	2022	A	2018	87	4,868,421	-	4,868,421	97%	28	2
City of Nokia	Welfare centre of Nokia	1.1a Buildings	2021	A	2018	78	22,700,000	-	22,700,000	95%	222	16
Oulun Sivakka Oy	Apartment building, Hiirihaukantie 12 a	1.1a Buildings	2020	A	2018	60	6,668,685	-	6,668,685	99%	107	7
Oulun Sivakka Oy	Apartment building, Jalohaukantie 5	1.1a Buildings	2020	A	2018	59	5,723,107	-	5,723,107	97%	87	6
Oulun Sivakka Oy	Apartment building, Kiilankatu 5	1.1a Buildings	2020	A	2018	66–74	8,097,080	-	8,097,080	98%	88	6
Oulun Sivakka Oy	Apartment building, Menninkäisentie 3a	1.1a Buildings	2021	A	2018	68	3,947,632	-	3,947,632	100%	42	3
Oulun Sivakka Oy	Apartment building, Myllytullinkatu 5	1.1a Buildings	2021	A	2018	62	4,403,250	2,935,500	7,338,750	60%	58	4
Oulun Sivakka Oy	Apartment building, Valmutie 3	1.1a Buildings	2021	A	2018	79–80	3,511,023	-	3,511,023	100%	33	2
City of Parainen	Creativity and learning centre of Parainen[3]	1.1a Buildings 1.2 Renovations	2022	A	2018	82	9,750,000	-	9,750,000	98%	66	14
Parikkala Municipality	Kirjola school, 1st phase	1.1a Buildings	2021	A	2018	83	10,150,000	-	10,150,000	85%	67	4
City of Parkano	School campus of Parkano	1.1a Buildings	2017	B	2013	102	13,621,235	-	13,621,235	88%	446	78
Perho Municipality	Day-care centre Perhonkoti	1.1a Buildings	2020	A	2018	89	2,823,530	-	2,823,530	88%	14	1

[1] The new law of 2018 concerning energy performance certificates reduced the coefficients of certain energy types used in the calculation of E-values and made the legal threshold of energy efficiency for new buildings stricter. Using new coefficients, the E-values of the buildings built under the old law of 2013 would decrease, which could enhance their EPC classes

[2] The E-value represents a building's calculated annual consumption of purchased energy per the heated net area (kWhE/m²/year) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

[3] Impacts calculated only for the new construction part of the project.

[4] Experimental project, please see additional information on p. 19.

Buildings: New buildings												
Customer	Project	Sub-category	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
Pielavesi Municipality	Pielakoti (building for elderly and renovation of the central commercial kitchen)[3]	1.1a Buildings 1.2 Renovations	2017	B	2013	138	4,962,140	-	4,962,140	98%	315	20
Pirkan Opiskelija-asunnot Oy	Apartment building, Vaahterakuja 3	1.1a Buildings	2019	A	2018	72	6,228,076	-	6,228,076	98%	45	3
Pirkkala Municipality	Pirkkala campus	1.1a Buildings	2021	A	2018	48	31,290,437	18,709,563	50,000,000	63%	616	47
City of Pori	Community centre of Northern Pori	1.1a Buildings	2022	A	2018	76	23,750,000	-	23,750,000	95%	178	9
City of Porvoo	Jokilaakso school, Porvoo	1.1a Buildings	2021	A	2018	86	2,910,860	-	2,910,860	88%	16	1
City of Saarijärvi	School and culture centre of Saarijärvi, 1st phase	1.1a Buildings	2019	A	2018	78	26,606,968	-	26,606,968	98%	264	43
Savuskoski Municipality	School of Savukoski	1.1a Buildings	2019	A	2018	83	3,756,800	-	3,756,800	94%	24	1
Sodankylä Municipality	Community centre of Sodankylä	1.1a Buildings	2021	A	2018	72	22,240,301	2,759,699	25,000,000	89%	202	18
Sotkamo Municipality	Vuokatti-arena, ice hockey arena	1.1b Other buildings	2021	N/A	N/A	N/A	7,562,442	-	7,562,442	94%	487	57
TA- Asumisoikeus Oy	Apartment building, Metsäläntie 10	1.1a Buildings	2022	A	2018	75	2,000,000	17,049,580	19,049,580	10%	6	1
TA-Asumisoikeus Oy	Apartment building Nordic Ecolabel, Rapukuja 2	1.1a Buildings	2022	A	2018	75	2,050,000	4,054,836	6,104,836	34%	13	1
TA-Asumisoikeus Oy	Apartment building, Tuulensuunkatu 27	1.1a Buildings	2021	A	2018	75	4,250,000	-	4,250,000	100%	38	2
TA- Asumisoikeus Oy	Apartment buildings, Espoon Peijinkatu 1b-1c buildings A2 and B2	1.1a Buildings	2021	A	2018	70–72	6,655,545	9,577,494	16,233,039	41%	54	3
TA- Asumisoikeus Oy	Apartment building, Koy Heikinketo/Kanslerintie 17	1.1a Buildings	2020	A	2018	72	4,567,050	-	4,567,050	100%	44	3
TA-Asumisoikeus Oy	Apartment building, Metsäläntie 6 b in Pasilan Portipuisto	1.1a Buildings	2019	A	2018	71–75	14,695,956	-	14,695,956	99%	98	6
TA-Asumisoikeus Oy	Apartment building, Pellonreuna 7	1.1a Buildings	2019	B	2018	84	8,133,560	-	8,133,560	98%	12	1
TA-Asumisoikeus Oy	Apartment building, Lohjan Sahapiha/Sahapiha 6	1.1a Buildings	2020	A	2018	73	6,313,690	-	6,313,690	99%	47	3

[1] The new law of 2018 concerning energy performance certificates reduced the coefficients of certain energy types used in the calculation of E-values and made the legal threshold of energy efficiency for new buildings stricter. Using new coefficients, the E-values of the buildings built under the old law of 2013 would decrease, which could enhance their EPC classes

[2] The E-value represents a building's calculated annual consumption of purchased energy per the heated net area (kWhE/m²/year) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

[3] Impacts calculated only for the new construction part of the project.

[4] Experimental project, please see additional information on p. 19.

Buildings: New buildings												
Customer	Project	Sub-category	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
Tampereen Kotilinnasäätiö sr	Apartment building, Kourutaltankatu 8	1.1a Buildings	2020	A	2018	75	8,404,106	-	8,404,106	98%	65	4
Tampereen Kotilinnasäätiö sr	Apartment buildings, Uimalankatu 1 buildings 1b and 1c	1.1a Buildings	2022	A	2018	75	2,400,000	15,386,000	17,786,000	13%	13	1
Tampereen Vuokratalosäätiö sr	Apartment building, Heittoniityn-kuja 2	1.1a Buildings	2022	A	2018	75	-	12,129,000	12,129,000	0%	0	0
Tohmajärvi Municipality	School centre of Tohmajävi	1.1a Buildings	2022	A	2018	66	12,393,835	-	12,393,835	98%	177	46
Tohmajärvi Municipality	Daycare centre of Tikkala, Tohma-järvi	1.1a Buildings	2018	A	2018	84	1,550,000	-	1,550,000	78%	7	0
City of Turku	Temporary/movable school facilities for school of Mikael	1.1a Buildings	2022	A	2018	87	2,475,084	149,453	2,624,537	94%	12	1
City of Turku	School of Pääskyvuori and Sirkkala, community centre of Runosmäki, school and daycare centre of Suikkila ja and daycare centre Tommilankatu[3]	1.1a Buildings 1.2 Renovations	2016	A	2018	75–90	40,000,000	-	40,000,000	100%	293	18
Tuusula Municipality	Martta Wendelin daycare centre and Kirkonkylä school with Nordic Ecolabel	1.1a Buildings	2020	B	2018	88–94	25,000,000	-	25,000,000	100%	97	7
Tyrnävä Municipality	School of Rantarousti	1.1a Buildings	2016	B	2013	101	9,902,444	-	9,902,444	71%	302	31
Varttuneiden asumisoikeusyhdistys Jaso	Multi-generation block, Kankaan Ilona, Ailakinkatu 10	1.1a Buildings	2019	B	2018	76	9,895,355	-	9,895,355	98%	134	12
VAV Asunnot Oy	Apartment building, Perintötie 9	1.1a Buildings	2022	A	2018	75	22,578,480	-	22,578,480	100%	147	16
VAV Asunnot Oy	Apartment building with Nordic Ecolabel, Kaskelantie 1	1.1a Buildings	2018	B	2018	77	18,266,782	-	18,266,782	95%	405	44
VAV Yhtymä Oy	Apartment building with Nordic Ecolabel, Veturikuja 8	1.1a Buildings	2019	A	2018	74–75	18,696,142	-	18,696,142	96%	114	12
Vesanto Municipality	School campus of Vesanto	1.1a Buildings	2019	A	2018	85	5,830,174	-	5,830,174	95%	31	3

[1] The new law of 2018 concerning energy performance certificates reduced the coefficients of certain energy types used in the calculation of E-values and made the legal threshold of energy efficiency for new buildings stricter. Using new coefficients, the E-values of the buildings built under the old law of 2013 would decrease, which could enhance their EPC classes

[2] The E-value represents a building's calculated annual consumption of purchased energy per the heated net area (kWhE/m²/year) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

[3] Impacts calculated only for the new construction part of the project.

[4] Experimental project, please see additional information on p. 19.

Buildings: New buildings												
Customer	Project	Sub-category	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
Vihti Municipality	School and daycare centre of Etelä-Nummela (The Building Information Foundation (RTS) certfication)	1.1a Buildings	2021	A	2018	66	30,000,000	-	30,000,000	100%	280	17
City of Virrat	Comperehensive school of Virrat	1.1a Buildings	2019	A	2018	73	9,372,471	-	9,372,471	78%	146	7
City of Ylöjärvi	Comprehensive school Siltatie	1.1a Buildings	2022	A	2018	75	10,000,000	-	10,000,000	100%	181	14
Yrjö ja Hanna Kiinteistöt Oy	Apartment buildings, Kuokkalan Kalon buildings 2, 3 and 4	1.1a Buildings	2022	A	2018	70–71	1,500,000	14,443,874	15 943 874	9%	13	1
Sipoo Municipality	Fire station of Sipoo (office building)	1.1a Buildings	2021	A	2018	80	4,761,702	5,038,298	9,800,000	49%	12	1
City of Äänekoski	Äänekoski Ice hockey arena	1.1b Other buildings	2018	N/A	N/A	N/A	3,974,031	-	3,974,031	88%	1,585	420
Lahden Asunnot Oy	Apartment building, As.oy lahden iisakki	1.1a Buildings	2017	B	2013	99	3,440,176	-	3,440,176	98%	52	3
Lahden Asunnot Oy	Apartment building, As.oy lahden valtteri	1.1a Buildings	2017	B	2013	100	5,542,544	-	5,542,544	98%	83	4
Lahden Asunnot Oy	Apartment building, Kivakatu 2	1.1a Buildings	2020	A	2018	73	8,880,439	-	8,880,439	98%	67	4
Lahden Asunnot Oy	Building for elderly, Uudenpel-lonkatu 1	1.1a Buildings	2017	B	2013	98	8,178,042	-	8,178,042	98%	97	5
Lahden Asunnot Oy	Construction of apartment building Vanhatie 53	1.1a Buildings	2017	B	2013	100	3,394,764	-	3,394,764	98%	61	3
Lahden Asunnot Oy	Construction of apartment building, Vasarantie 2 ja 4	1.1a Buildings	2019	A	2018	68	11,838,095	-	11,838,095	97%	125	7
Lahden Asunnot Oy	Apartment building, Laatikkotehtaankatu 5 b and c	1.1a Buildings	2019	A	2018	71	11,380,504	-	11,380,504	97%	102	6
Kiinteistö Oy M2-Kodit	Construction of apartment building KOY Tampereen Jallukka	1.1a Buildings	2020	A	2018	75	6,079,712	-	6,079,712	98%	40	4
TA-Yhtymä Oy	Apartment building, KOY Oulun Tarve, Paraatikatu 10	1.1a Buildings	2017	B	2013	100	5,784,376	-	5,784,376	98%	91	7

[1] The new law of 2018 concerning energy performance certificates reduced the coefficients of certain energy types used in the calculation of E-values and made the legal threshold of energy efficiency for new buildings stricter. Using new coefficients, the E-values of the buildings built under the old law of 2013 would decrease, which could enhance their EPC classes

[2] The E-value represents a building's calculated annual consumption of purchased energy per the heated net area (kWhE/m²/year) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

[3] Impacts calculated only for the new construction part of the project.

[4] Experimental project, please see additional information on p. 19.

Buildings: New buildings												
Customer	Project	Sub-category	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
TA-Yhtymä Oy	Apartment building, As.oy. Espoon Luoteisrinne	1.1a Buildings	2022	A	2018	75	5,600,000	23,749,036	29,349,036	19%	22	2
TA-Yhtymä Oy	Apartment building, KOY Oulun Tarve, Pohjantikankuja 4[4]	1.1a Buildings	2019	C	2018	N/A	7,220,264	-	7,220,264	97%	0	0
Y-Säätiö/Kiinteistö Oy M2-Kodit	Apartment building, Lyyranpyrstö 2	1.1a Buildings	2022	A	2018	74	10,060,472	3,782,298	13,842,770	73%	76	8
Y-Säätiö/Kiinteistö Oy M2-Kodit	Apartment building, Postiljoon-inkatu 1	1.1a Buildings	2020	A	2018	75	10,778,826	-	10,778,826	98%	57	7
Y-Säätiö/Kiinteistö Oy M2-Kodit	Apartment building, Rullakkokuja 14	1.1a Buildings	2022	A	2018	75	2,217,054	16,901,320	19,118,374	12%	12	2
Y-Säätiö/Kiinteistö Oy M2-Kodit	Apartment building, Nihtisillankuja 2 H ja I	1.1a Buildings	2022	A	2018	74	-	17,229,766	17,229,766	0%	0	0
Toivo Group Oyj/ Elämäni Kodit 40 Oy	Apartment building, As. oy kirkkonummen atlas	1.1a Buildings	2021	A	2018	72	5,277,789	-	5,277,789	100%	31	2
Toivo Group Oyj/ Elämäni Kodit 40 Oy	Apartment building, As.oy. Vantaan Nahkuri	1.1a Buildings	2022	A	2018	71	4,463,114	12,606,064	17,069,178	26%	25	1
Premico Vuokra-asunnot II Oy	Apartment building, As. oy. Vantaan Metsäkissa 2	1.1a Buildings	2020	B	2018	86	13,271,367	-	13,271,367	98%	20	2
Nemoy Rakennuttaja Oy	Apartment building, As.oy. Tuusulan Oiva	1.1a Buildings	2020	A	2018	75–80	6,410,167	-	6,410,167	98%	54	3
Taaleri Vuokrakoti ARA III Oy	Apartment building, As. oy. Tampereen Hervantajärven Hilpi	1.1a Buildings	2021	A	2018	74	6,427,200	-	6,427,200	100%	44	3
Oulun Moniasunnot Oy	Apartment building, Siirtolantie 6	1.1a Buildings	2021	A	2018	74	7,300,800	-	7,300,800	100%	45	3
Avain Vuokra10 Oy	Apartment building, Alhotie 19	1.1a Buildings	2022	A	2018	74–75	7,219,121	12,292,017	19,511,138	37%	45	3
Avain Vuokra10 Oy	Apartment building, As.oy. Kuopion Kuikkalampi	1.1a Buildings	2021	A	2018	75	5,206,000	-	5,206,000	100%	39	2
EAI Vuokra-asunnot Oy	Apartment building, As.oy. Helsingin Vetonaula	1.1a Buildings	2020	A	2018	68–75	6,902,778	-	6,902,778	99%	67	4
Yrjö ja Hanna-säätiö/ Asoasunnot Uusimaa Oy	Apartment building, Kuokkalan kalon, building 1	1.1a Buildings	2022	A	2018	69	2,071,342	1,115,338	3,186,680	65%	17	1

[1] The new law of 2018 concerning energy performance certificates reduced the coefficients of certain energy types used in the calculation of E-values and made the legal threshold of energy efficiency for new buildings stricter. Using new coefficients, the E-values of the buildings built under the old law of 2013 would decrease, which could enhance their EPC classes

[2] The E-value represents a building's calculated annual consumption of purchased energy per the heated net area (kWhE/m²/year) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

[3] Impacts calculated only for the new construction part of the project.

[4] Experimental project, please see additional information on p. 19.

Buildings: New buildings												
Customer	Project	Sub-category	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
Etelä-Suomen Kodit Oy	Apartment building, As.oy. Turun Viridi	1.1a Buildings	2020	A	2018	73	5,217,018	-	5,217,018	99%	42	2
Etelä-Suomen Kodit Oy	Apartment building, As.oy. Turun Löytöretkeilijä	1.1a Buildings	2019	A	2018	74	5,395,211	-	5,395,211	98%	40	2
Suomen Kaupunkikodit ARA Oy	Apartment building, Hakatie 1	1.1a Buildings	2021	A	2018	76–77	11,454,116	468,384	11,922,500	96%	126	8
Toivo Group Oyj/ Elämäni Kodit 10 Oy	Apartment building, As.oy. Nokian Fabriikki	1.1a Buildings	2020	A	2018	75	5,961,340	-	5,961,340	98%	37	2
Toivo Group Oyj/ Elämäni Kodit 10 Oy	Apartment building, As.oy. Helsingin Blackstone	1.1a Buildings	2021	A	2018	66–78	11,428,032	-	11,428,032	99%	107	6
Vilusen Rinne Vuokra-asunnot Oy, Tampere	Apartment buildings, Hikivuorenkatu 20 a ja b	1.1a Buildings	2021	A	2018	72	-	11,165,000	11,165,000	0%	0	0
Y-Säätiö	Apartment building, Myllytie 14 a	1.1a Buildings	2022	A	2018	68	-	9,347,100	9,347,100	0%	0	0

Buildings: Renovation projects									
Customer	Project	Sub-category	Year of approval	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
Helsingin kaupungin asunnot Oy	Apartment building, Jakomäentie 10	1.2 Renovations	2022	-	23,955,760	23,955,760	0%	-	-
Helsingin kaupungin asunnot Oy	Apartment building, Jollaksentie 87	1.2 Renovations	2020	7,120,077	-	7,120,077	99%	699	135
Helsingin kaupungin asunnot Oy	Apartment building, Koivikkotie 5	1.2 Renovations	2021	10,233,199	2,558,300	12,791,499	80%	347	21
Helsingin kaupungin asunnot Oy	Apartment building, Rusthollarintie 10	1.2 Renovations	2020	17,411,099	1,948,640	19,359,739	89%	499	69
Helsingin kaupungin asunnot Oy	Apartment building, Perhekunnantie 10	1.2 Renovations	2021	-	16,297,237	16,297,237	0%	-	-
Hyvinkään Vuokra-asunnot Oy	Apartment building, Jussilankatu 2	1.2 Renovations	2021	5,674,510	2,382,440	8,056,950	70%	812	119
Hyvinkään Vuokra-asunnot Oy	Apartment building, Jussilankatu 4	1.2 Renovations	2021	495,000	7,561,950	8,056,950	6%	72	11

[1] The new law of 2018 concerning energy performance certificates reduced the coefficients of certain energy types used in the calculation of E-values and made the legal threshold of energy efficiency for new buildings stricter. Using new coefficients, the E-values of the buildings built under the old law of 2013 would decrease, which could enhance their EPC classes

[2] The E-value represents a building's calculated annual consumption of purchased energy per the heated net area (kWhE/m²/year) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

[3] Impacts calculated only for the new construction part of the project.

[4] Experimental project, please see additional information on p. 19.

5 Project has a fossile fuel element, please see additional detail on p. 19.

6 Avoided emissions (CO_2) reported as zero. The project saves net energy, but due to the recent strong decarbonization of district heating in the region, the increase in electricity consumption and the emission coefficients used would cause an increase in the calculated emissions.

Buildings: Renovation projects									
Customer	Project	Sub-category	Year of approval	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
Joensuun Kodit Oy	Apartment building, Noljakankaari 10	1.2 Renovations	2021	2,998,768	-	2,998,768	100%	290	5
Joensuun Kodit Oy	Apartment building, Äkkiväärä 10 [6]	1.2 Renovations	2020	2,737,938	-	2,737,938	99%	285	-
Joensuun Kodit Oy	Apartment building, Huvimäentie 16 [5]	1.2 Renovations	2021	2,401,218	-	2,401,218	99%	254	76
Joensuun Kodit Oy	Apartment building, Latolankatu 23, 2nd phase [6]		2021	5,388,635	-	5,388,635	99%	540	-
Joensuun Kodit Oy	Apartment building, Latolankatu 3 [6]	1.2 Renovations	2020	2,557,614	-	2,557,614	98%	320	-
Jyväskylän Vuokra-asunnot Oy	Apartment building, Kiljaderinkatu 8	1.2 Renovations	2022	4,861,112	-	4,861,112	97%	169	17
Jyväskylän Yliopiston Ylioppilaskunta	Apartment building, Taitoniekantie 9 b	1.2 Renovations	2018	7,609,004	-	7,609,004	97%	233	17
Jyväskylän Yliopiston Ylioppilaskunta	Apartment building, Taitoniekantie 9 c	1.2 Renovations	2019	7,589,730	-	7,589,730	98%	438	45
Jyväskylän Yliopiston Ylioppilaskunta	Apartment building, Taitoniekantie 9 d	1.2 Renovations	2020	8,567,466	-	8,567,466	100%	458	47
Jyväskylän Yliopiston Ylioppilaskunta	Apartment building Taitoniekantie 9 e	1.2 Renovations	2021	7,252,098	-	7,252,098	99%	426	43
Keski-Suomen opiskelija-asuntosäätiö sr	Apartment building, Kopparintie 1	1.2 Renovations	2021	3,563,878	-	3,563,878	99%	475	51
Kouvolan Asunnot Oy	Apartmanet building, Viialankatu 5	1.2 Renovations	2022	6,500,000	-	6,500,000	100%	713	158
Mikalo Oy	Apartment building, Yrjönkatu 19, Mikkeli	1.2 Renovations	2022	-	1,995,000	1,995,000	0%	-	-
Oulun Sivakka Oy	Apartment building, Makasiininkatu 6	1.2 Renovations	2020	1,738,800	-	1,738,800	92%	308	28
Savonlinnan Vuokratalot Oy	Apartment building, Aholahdentie 113 ja Aholahdentie 115	1.2 Renovations	2022	-	175,585	175,585	0%	-	-
Savonlinnan Vuokratalot Oy	Apartment building, Hilkanhaka 6 ja 7	1.2 Renovations	2022	-	276,684	276,684	0%	-	-
Savonlinnan Vuokratalot Oy	Apartment building, Kirstintupa ja Marintupa	1.2 Renovations	2022	-	230,959	230,959	0%	-	-
Ääneseudun Asunnot Oy	Apartment building, Lönnrotinkatu 1	1.2 Renovations	2019	5,345,615	-	5,345,615	96%	260	158

[5] *Project has a fossile fuel element, please see additional detail on p. 19.*

[6] *Avoided emissions (CO_2) reported as zero. The project saves net energy, but due to the recent strong decarbonization of district heating in the region, the increase in electricity consumption and the emission coefficients used would cause an increase in the calculated emissions.*

Green finance projects and impacts

Buildings: Renewable energy in buildings										
Customer	Project	Sub-category	Year of approval	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual production of renewable energy (MWh)	Renewable energy production capacity (MW)	Annual CO_2 emissions avoided / reduced (tCO_2)
Vihti Municipality	Solar panels in Vihti	1.4 Renewable energy in buildings	2020	135,732	-	135,732	81%	170	0,2	-

Buildings: Individual energy efficiency measures									
Customer	Project	Sub-category	Year of approval	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions avoided / reduced (tCO_2)
Jyväskylän Tilapalvelu (facility services)	Jyväskylä Esco projects[7]	1.5 Energy saving project (ESCO)	2018	1,011,341	-	1,011,341	92%	3,294	306
City of Kotka	Renewal of street lightning in the area of Otsola	1.5 Energy saving project (ESCO)	2017	148,556	-	148,556	53%	135	8
City of Kotka	Renewal of street lightning in the area of Rauhala	1.5 Energy saving project (ESCO)	2018	320,806	-	320,806	63%	182	11
City of Kotka	Renewal of street lightning in the area of Ristikallio	1.5 Energy saving project (ESCO)	2016	144,888	-	144,888	44%	98	6
Koulutuskeskus Salpaus -kuntayhtymä	Education centre, Ståhlberginkatu 8-10	1.3 Individual energy efficiency measures	2018	1,263,159	-	1,263,159	63%	513	27
Liperi Municipality	Renewal of street lightning in the area of Ruuska	1.5 Energy saving project (ESCO)	2021	99,152	-	99,152	87%	15	1
Mäntyharju Municipality	Renewal of street lighting in Mäntyharju	1.5 Energy saving project (ESCO)	2019	330,000	-	330,000	100%	185	11
City of Pieksämäki	Renewal of lighting along Uhomäki fitness track	1.5 Energy saving project (ESCO)	2019	116,245	-	116,245	64%	32	2
Pielavesi Municipality	Renewal of street lightning in Pielavesi	1.5 Energy saving project (ESCO)	2018	238,653	761,347	1,000,000	24%	22	1
City of Tampere	Tampere Esco-projects[7]	1.5 Energy saving project (ESCO)	2017	581,040	1,418,960	2,000,000	29%	956	112

Transportation								
Customer	Project	Sub-category	Year of approval	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual CO_2 emissions avoided / reduced (tCO_2)
City of Helsinki	Crown Bridges Light Rail (CEEQUAL sustainability assesment)	2.2 Supporting infrastructure for public transportation	2022	115,000,000	-	115,000,000	35%	1,446
Kymsote-Kiinteistöt Oy (social and healthcare services)	Fully electric cars, VW e-up (22 vehicles)	2.3 Passenger cars and light commercial vehicles	2022	422,151	-	422,151	90%	15
Länsimetro Oy	Western Metro extension, 1st phase Ruoholahti-Matinkylä	2.1 Public transportation	2017	403,633,602	-	403,633,602	34%	2,315

MuniFin

[7] An energy saving project (ESCO) concerning several buildings. An ESCO (Energy Service Company) is a procedurein which an ESCO assumes operational responsibility for an investment to be made to an end customer so that the investment can be financed in whole or in part by the savings it generates.

Transportation									
Customer	Project	Sub-category	Year of approval	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual CO_2 emissions avoided / reduced (tCO_2)	
Länsimetro Oy	Western Metro extension, 2nd phase Matinkylä-Kivenlahti	2.1 Public transportation	2018	160,000,000	-	160,000,000	14%	207	
City of Nurmes	Fully electric van, Nissan e-nv200	2.3 Passenger cars and light commercial vehicles	2017	4,905	-	4,905	18%	0	
City of Orivesi	Fully electric car, Citroen e-Berlingo	2.3 Passenger cars and light commercial vehicles	2022	25,372	-	25,372	82%	1	
Seinäjoki Joint Municipal Authority for Education	Fully electric car, Skoda Enyaq	2.3 Passenger cars and light commercial vehicles	2022	27,915	-	27,915	80%	1	
Tampereen Infra Oy	Fully electric cars, Kia s-Soul (2 vehicles)	2.3 Passenger cars and light commercial vehicles	2022	46,013	-	46,013	80%	1	
Tampereen Raitiotie Oy	City of Tampere tramway	2.1 Public transportation	2017	146,057,696	-	146,057,696	47%	2,128	
Tampereen Raitiotie Oy	City of Tampere tramway, 2nd phase	2.1 Public transportation	2022	50,000,000	-	50,000,000	16%	729	
City of Turku	Fully electric car, Mercedes-Benz EGC	2.3 Passenger cars and light commercial vehicles	2022	30,725	-	30,725	64%	1	
City of Turku, Turku Vocational Institute	Fully electric cars, VW e-up (3 vehicles)	2.3 Passenger cars and light commercial vehicles	2022	49,477	-	49,477	83%	2	
City of Turku, Procurement Services of the City of Turku	Fully electric cars, Citroen e-Berlingo (2 vehicles)	2.3 Passenger cars and light commercial vehicles	2022	50,945	-	50,945	87%	1	
City of Turku, Procurement Services of the City of Turku (Social and healthcare services)	Fully electric cars, VW e-up (23 vehicles)	2.3 Passenger cars and light commercial vehicles	2022	388,695	-	388,695	91%	16	
City of Vaasa	Kvarken Archipelago car and passenger ferry, M/S Aurora Botnia [8]	2.1 Public transportation	2020	25,000,000	-	25,000,000	21%	1,950	

Renewable energy										
Customer	Project	Sub-category	Year of approval	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual production of renewable energy (MWh)	Renewable energy production capacity (MW)	Annual CO_2 emissions avoided / reduced (tCO_2)
Kangasalan Lämpö Oy	Bioenergy heating plant	3.3 Bioenergia	2018	8,275,865	-	8,275,865	83%	-	10	9,931
Kemin Energia ja Vesi Oy	Cental bioheating plant	3.3 Bioenergia	2019	8,280,000	-	8,280,000	92%	-	17	22,393
Lempäälän Energia Oy	Viialantie heating plant, fuel storing and unloading concept	3.3 Bioenergia	2017	3,714,288	-	3,714,288	71%	-	-	5,873
Lempäälän Energia Oy	Energy self-sufficiency project of Lempäälä [8]		2017	8,083,336	-	8,083,336	83%	15,053	7	3,760

[8] Project has a fossile fuel element, please see additional detail on p. 19.

Green finance projects and impacts

Renewable energy										
Customer	Project	Sub-category	Year of approval	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual production of renewable energy (MWh)	Renewable energy production capacity (MW)	Annual CO_2 emissions avoided / reduced (tCO_2)
Seinäjoen Energia Oy	Kapernaum 50 mw bioenergy heating plant	3.3 Bioenergia	2021	22,885,715	-	22,885,715	88%	176,044	44	50,173
Taipalsaaren Lämpö Oy	Kuivaketvele bioenergy heating plant	3.3 Bioenergia	2021	70,000	-	70,000	70%	-	0	200

Water and waste water management										
Customer	Project	Sub-category	Year of approval	Outstanding amount 31 Dec 2022 (€)	Unwithdrawn credit commitment 31 Dec 2022 (€)	Total committed finance 31 Dec 2022 (€)	MuniFin's estimated share of finance 31 Dec 2022	Annual amount of treated waste water in existing plants immediately after project completion (m3)	Annual amount of treated waste water with increased capacity in the future (m3)	Annual production of renewable energy (MWh)
City of Heinola	Plant of Sahaniemis Sahanniemen 1 Heinola 2	4.2 Existing waste water facilities	2018	4,800,000	-	4,800,000	60%	1,390,650	-	-
Helsinki Region Environmental Services HSY	Waste water treatment plant of Blominmäki	4.1 New waste water facilities	2020	187,750,000	-	187,750,000	48%	-	26,357,212	-
Hämeenlinnan Seudun Vesi Oy	Waste water treatment plant of Paroinen	4.2 Existing waste water facilities	2021	13,100,000	-	13,100,000	68%	5,464,571	-	-
City of Imatra	Waste water treatment plant of Meltola	4.2 Existing waste water facilities	2020	16,000,000	-	16,000,000	76%	3,869,519	-	-
Jyväskylän Seudun Puhdistamo Oy	Purification plant centre of Jyväskylä region	4.2 Existing waste water facilities	2016	8,636,368	-	8,636,368	86%	11,734,341	2,263,963	-
City of Jämsä	Central purification plant of Jämsä	4.2 Existing waste water facilities	2020	3,000,000	-	3,000,000	75%	1,410,086	-	-
City of Mikkeli	Water and waste water treatment plant of Metsä-sairila	4.1 New waste water facilities	2016	18,333,340	-	18,333,340	32%	-	1,785,983	-
Savukoski Municipality	Waste water treatment plant of Mukkavaara	4.1 New waste water facilities	2020	1,176,696	-	1,176,696	87%	31,496	-	-
Tunturi-Lapin Vesi Oy	Central purification plant of Ylläs	4.1 New waste water facilities	2018	4,911,115	-	4,911,115	94%	344,722	-	-
Turun Seudun Puhdistamo Oy	Waste water purification plant of Kakolanmäki	4.2 Existing waste water facilities	2018	23,400,000	-	23,400,000	78%	-	-	-
City of Uusikaupunki	Waste water purification plant of Häpönniemi	4.2 Existing waste water facilities	2018	1,348,280	-	1,348,280	79%	2,226,129	-	-
Vesikolmio Oy	Central purification plant of Kalajokilaakso	4.1 New waste water facilities	2016	7,125,000	-	7,125,000	48%	1,425,000	-	428

MuniFin

Independent practitioner's limited assurance report

To the Management of Municipality Finance Plc

We have been engaged by the Management of Municipality Finance Plc (hereinafter also the "Company") to perform a limited assurance engagement on selected information for the reporting period ended 31 December 2022, disclosed in Municipality Finance Plc Green Impact report 2022 (hereinafter the Selected information).

Selected information

The Selected information within the scope of assurance covers:

- The disclosures of the allocation of the Green Bond proceeds for the reporting period ended 31 December 2022 as disclosed in the Municipality Finance Plc Green Impact Report 2022 on page 18 in table under section "Project compatibility under the updated Green Bond Framework".

Management's responsibility

The Management of the Company is responsible for preparing the Selected information in accordance with the reporting criteria as set out in the Company's reporting instructions (described in Company's Green Impact Report 2022), Eligibility Criteria set out in the Municipality Finance Plc Green Bond Framework (August 2022). The Management of the Company is also responsible for such internal control as the management determines is necessary to enable the preparation of the Selected information that is free from material misstatement, whether due to fraud or error.

Practitioner's independence, other ethical requirements and quality controly

We have complied with the independence and other ethical requirements of the International Code of Ethics for Professional Accountants (including International Independence Standards) issued by the International Ethics Standards Board for Accountants (IESBA code), which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.

PricewaterhouseCoopers Oy applies International Standard on Quality Management (ISQM) 1, which requires the firm to design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Practitioner's responsibility

Our responsibility is to express a limited assurance conclusion on the Selected information based on the procedures we have performed and the evidence we have obtained. We conducted our limited assurance engagement in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (revised) "Assurance Engagements Other than Audits or Reviews of Historical Financial Information". This

standard requires that we plan and perform the engagement to obtain limited assurance about whether the Selected information is free from material misstatement.

In a limited assurance engagement, the evidence-gathering procedures are more limited than for a reasonable assurance engagement, and therefore less assurance is obtained than in a reasonable assurance engagement. An assurance engagement involves performing procedures to obtain evidence about the amounts and other information in the Selected information. The procedures selected depend on the practitioner's judgment, including an assessment of the risks of material misstatement of the Selected information.

Our work consisted of, amongst others, the following procedures:

- Interviewing employees responsible for collecting and reporting the Selected information.
- Assessing how employees apply the reporting instructions and procedures of the Company with regards to whether the disclosures have been prepared in accordance with the Municipality Finance Plc Green Bond Framework (August 2022).
- Inspecting the documentation of the Green Finance Team to confirm that the allocation of Green Bond proceeds to eligible green projects had been considered and approved according to the process described in the Municipality Finance Plc Green Bond Framework (August 2022).
- Performing substantive testing to verify the existence of eligible green projects and accurate allocation of green bond proceeds per eligible green projects in accordance with the Municipality Finance Plc Green Bond Framework (August 2022).
- Testing the consolidation of information and performing recalculations on a sample basis.
- Considering the disclosure and presentation of the Selected information.

Limited assurance conclusion

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that Municipality Finance Plc's Selected information for the reporting period ended 31 January 2022 is not properly prepared, in all material respects, in accordance with the Reporting criteria.

When reading our limited assurance report, the inherent limitations to the accuracy and completeness of the Selected information should be taken into consideration.

Our assurance report has been prepared in accordance with the terms of our engagement. We do not accept, or assume responsibility to anyone else, except to Municipality Finance Plc.

Helsinki 6th March 2023

PricewaterhouseCoopers Oy

Tiina Puukkoniemi

Partner, Authorised Public Accountant (KHT)
ESG Reporting & Assurance

Municipality Finance plc
Jaakonkatu 3 A, P.O. Box 744
00101 Helsinki, Finland
Tel. +358 9 6803 5666
www.munifin.fi
info@munifin.fi

MuniFin