Green Impact Report 2021

MuniFin

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MuniFin Green bond

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Green and social finance enable sustainable investments in municipalities and the state-subsidised housing sector

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 from the international capital markets by issuing green and social bonds. For investors, these products offer a way to finance positive impacts. Green and social finance are a vital part of our funding strategy, and they both have their own framework, project portfolio and impact report.

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 entity, 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.

The projects funded with our green and social finance also promote the strategic themes of the Finnish Government Programme[2] that builds on sustainable development. One of these themes strives for a carbon neutral Finland that protects biodiversity. This includes the objective of Finland achieving carbon neutrality by 2035. Another important strategic theme is to reach a fair, equal and inclusive Finland. The investments of the Finnish municipal and state-subsidised housing sector – our customers – play a key role in advancing solutions designed to promote the achievement of the SDGs and the strategic themes of the Finnish Government Programme. Municipalities are highly committed to the SDGs: 45% of Finns live in municipalities that aim to achieve carbon neutrality by 2030, which is an even more ambitious climate goal than that of the Finnish Government[1].

The aim of our green and social finance is to create positive effects for the environment and society. 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*

Only environmentally sustainable solutions can be financially sustainable

Rami Erkkilä
Senior specialist, sustainable finance
Rami Erkkilä is responsible for green and social finance products at MuniFin

MuniFin's green finance has turned six years old. Our green finance portfolio kept growing in 2021, and at the end of the year, we had committed EUR 2.8 billion to financing our customers' green projects.

The majority of the green projects of our customers – municipal sector entities and state-subsidised housing production companies – fall in the sustainable buildings category, with housing construction in particular continuing to grow rapidly. It is a pleasure to see how developers, constructors, financiers and other stakeholders are working together towards a common goal and creating solutions that were only recently thought impossible, giving rise to innovations that offer the participants competitive strength and advantage. These new solutions bring about investments that help our customers mitigate climate change and adapt to its effects, while also considering the broader theme of biodiversity.

In 2021, the debate on the EU Taxonomy for Sustainable Activities picked up the pace. The taxonomy is a classification system that seeks to harmonise our understanding of what constitute environmentally sustainable economic activities. Through the taxonomy, the EU Commission seeks to steer investments towards genuinely sustainable activities and to accelerate emission reductions to mitigate climate change. By doing so, it also seeks to connect the price of financing to climate risks in an even more targeted way. It is likely and desirable that through such steps, sustainable finance will become the rule rather than the exception.

At the moment, MuniFin and other financiers have their own frameworks that set the criteria for sustainable projects. We have not yet decided if and how the EU Taxonomy will affect the assessment criteria for our green finance projects. We will continue to increase our understanding of the matter by engaging in active dialogue with our Finnish and international stakeholders.

In my opinion, the taxonomy debate has slightly over-shadowed the overall development in the sector. In the future, financiers and thereby also their customers will be required to provide even more extensive and detailed information of the environmental effects of their projects. I therefore encourage our customers to increase their readiness to report the environmental impact of their investments in more detail, even if they fall outside the scope of the taxonomy reporting requirements. Only solutions that are sustainable for the environment and climate can be financially sustainable. Establishing and proving this link between environmental and financial sustainability is a vital step that the financial market should take soon.

Our green finance will continue to showcase innovative projects with high standards after which others can model their own investments. Our customers play a crucial role as a catalyst for development and as a driving force for creating best practices across different sectors. I wish to thank you for your trust in us and for offering us the opportunity to provide added value through our role in the process. Change can only take place through concrete projects.

Green finance continues to gain popularity

When we issued our first green bond in 2016, we were the first-ever Finnish issuer of green bonds. The popularity of green bonds has grown rapidly in the market as investors are increasingly looking for sustainable investments. When making investments, more and more investors now consider ESG factors and the positive impact of their investments.

Our green bonds have been highly sought after. In 2021, we broke new ground by issuing our first green bond in the Sterling market. The GBP 250 million bond was quickly oversubscribed with nearly 40% participation from ESG investors.

Projects eligible for our green finance include projects that have verifiable positive impacts on the environment and are in line with our Green Bonds Framework. The final assessment of a project's suitability for the green finance portfolio is made by an independent expert group. We give a margin discount of 0–10 basis points to approved green finance projects, which is exceptional in the green finance market.

Our Green Bonds Framework has been drafted in accordance with the Green Bond Principles of the International Capital Markets Association (*ICMA*). The framework has been evaluated by CICERO in cooperation with the Stockholm Environment Institute (*SEI*), and it has received CICERO Shades of Green's second-best rating of Medium Green. The framework has seven different project categories. The waste management and environmental management categories did not yet have any projects at the time of the review.

We are 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.

Our green finance has numerous positive environmental impacts and economic and social benefits. This report primarily focuses on the estimated direct environmental impact, but other broader benefits are also discussed.

The MuniFin Green Bonds Framework has seven project categories:

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.

We responded to the European Commission's consultation on the EU Green Bond Standard in September 2021. At present, we are analysing the effects of the EU Green Bonds Standard and the EU Taxonomy on our own green bonds programme.

Market practices regarding the EU Taxonomy are evolving constantly, but at the time of the writing, the availability of information poses a market-wide challenge, making the verification of taxonomy alignment more difficult. Especially practices regarding the assessment of the Do No Signficant Harm (*DNSH*) principle and the Minimum Social Safeguards (*MSS*) must be developed further.

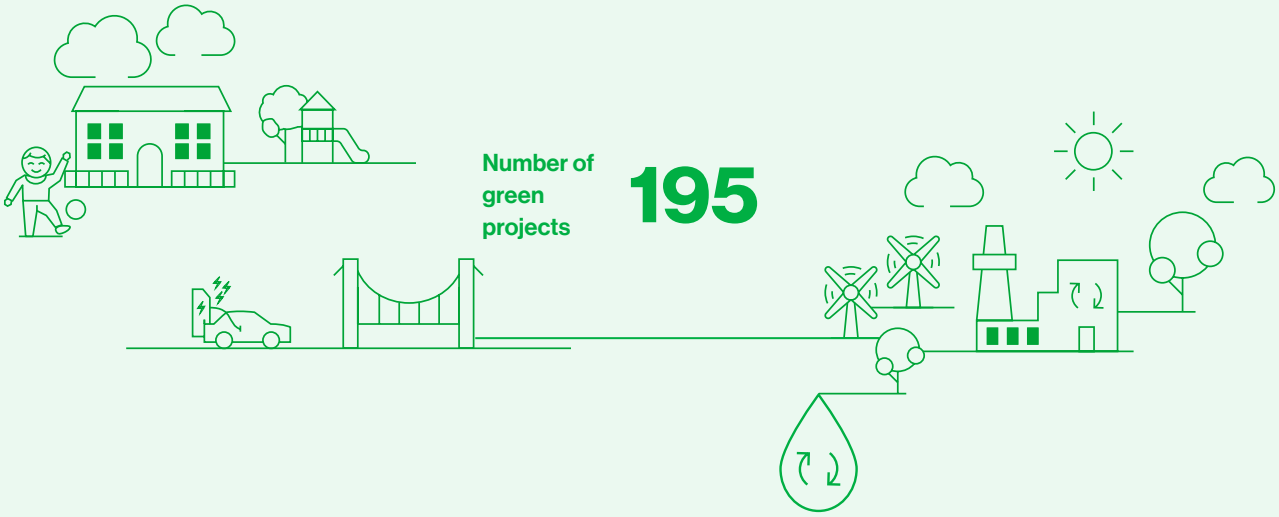
We have assessed the taxonomy eligibility of the projects in our green finance portfolio in terms of climate change mitigation. Economic activities can be considered taxonomy-eligible when they fall under the EU Taxonomy for Sustainable Activities. However, taxonomy-eligible activities are not yet required to meet all of the Taxonomy's technical screening criteria or DNSH and MSS requirements. Activities that meet all these requirements are called taxonomy-aligned activities. At the time of review, there were no projects yet in the waste management or environmental management categories, so we have not assessed their taxonomy eligibility. More information about the taxonomy eligibility of the green projects is available by project category in the section *The impacts of green finance*.

In our view, our green project categories are taxonomy-eligible in the following categories of the EU Taxonomy for Sustainable Activities in terms of climate change mitigation (EU environmental objective 1):

Project category	Economic activity of the EU Taxonomy
Sustainable buildings	7.1 Construction of new buildings
	7.7 Acquisition and ownership of buildings
	7.2 Renovation of existing buildings
Energy efficiency	7.3 Installation, maintenance and repair of energy efficiency equipment
Sustainable public transportation	6.5 Transport by motorbikes, passenger cars and light commercial vehicles
	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
	6.3 Urban and suburban transport, road passenger transport
Water and wastewater management	5.3 Construction, extension and operation of waste water collection and treatment
	5.4 Renewal of waste water collection and treatment
Renewable energy	4.1 Electricity generation using solar photovoltaic technology
	4.24 Production of heat/cool from bioenergy
	7.6 Installation, maintenance and repair of renewable energy technologies

More information about the taxonomy eligibility of the projects that we finance is available in the section *The impacts of green finance*.

Green finance in figures



Number of green projects **195**

Outstanding amount of green finance
2,328 EUR million

Total committed green finance
€ **2,785** EUR million

Average remaining maturity of green projects: **24 years**

Annual energy savings (avoided/reduced)
31,351[1] MWh

Annual production of renewable energy
103,622 MWh

Annual amount of treated wastewater in existing plants immediately after project completion
30,791,821 m³

Annual CO_2 emissions avoided/reduced
85,557[2] tCO_2

Renewable energy production capacity
58 MW

Annual amount of treated wastewater with increased capacity in the future
29,994,624 m³

Figures based on the outstanding amount of green finance on 31 December 2021

[1] 31,351 MWh: Equals the annual consumption of about 1,800 electrically heated single-family houses *(Source: Motiva)*
[2] 85,557 tCO_2: Equals the average annual carbon footprint of about 8,300 Finns *(Source: Sitra)*

New projects

100%

Outstanding amount of green bonds, EUR million

1,830

Outstanding amount of green finance, EUR million

2,328

Our green finance portfolio is composed entirely of new projects. In accordance with our Green Bonds Framework, new projects are ones that have been completed less than 12 months before the Green Evaluation 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.*

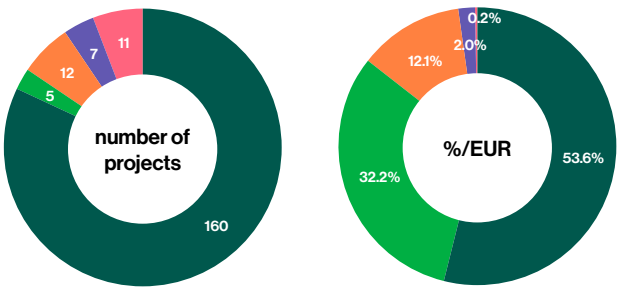
At the time of reporting, MuniFin's outstanding amount of green finance stood at EUR 2,328 million, exceeding the outstanding amount of green bonds, which was EUR 1,830 million.

**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.*

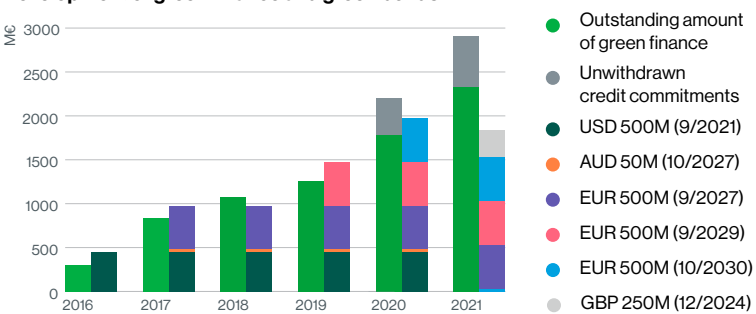
Figures as at 31 December 2021

Executive summary

Green finance project breakdown



Development of green finance and green bonds



Project category	Outstanding amount, EUR million	Annual CO_2 emissions avoided/reduced, tCO_2	Impact, tCO_2 per EUR million
Sustainable buildings	1,248	5,662	5
Sustainable public transportation	748	7,866	11
Water and wastewater management	281	-	-
Renewable energy	46	70,607	1,531
Energy efficiency	5	1,422	295
Total	**2 328**	**85,557**	**N/A**

Other impact indicators	
Annual energy savings (avoided / reduced MWh)	31,351
Annual production of renewable energy (MWh)	103,622
Renewable energy production capacity (MW)	58
Annual amount of treated wastewater in existing plants immediately after project completion (m^3)	30,791,821
Annual amount of treated wastewater with increased capacity in the future (m^3)	29,994,624

Impact attributable to green bond investors **78.6%**

Outstanding amount of green bonds divided by outstanding amount of green finance (in EUR) as of 31 Dec 2021. Capped at 100%.

Amount	ISIN	Issue date	Maturity date	
500m EUR	XS2242924491	14 Oct 2020	14 Oct 2030	21.5%
500m EUR	XS2023679843	10 July 2019	6 Sept 2029	21.5%
50m AUD	XS1706174015	25 Oct 2017	25 Oct 2027	1.4%
500m EUR	XS1692485912	3 Oct 2017	7 Sept 2027	21.5%
250m GBP	XS2404205119	2 Nov 2021	16 Dec 2024	12.7%

Basic information	
Green bonds frameworks applied to the green finance portfolio	MuniFin Green Bonds Framework May 2019, November 2018, August 2017 and February 2016
Reporting period	The reporting is based on the green finance portfolio as at 31 Dec 2021
Report publication date	3 March 2022
Reporting frequency	Annual
Next report planned for	March/April 2023
Reporting approach	Portfolio-based and project-by-project reporting
Reporting framework	Nordic Public Sector Issuers: Position Paper on Green Bonds Impact Reporting (February 2020)

MuniFin issued its inaugural GBP-denominated green bond

At the end of 2021, MuniFin had five outstanding green bonds. We have issued a total of six green bonds, the first of which matured in September 2021. When we issued our inaugural green bond in 2016, we were the first Finnish green bond issuer.

In October 2021, we made our green bond premiere in the Sterling market by issuing a 3-year GBP 250 million green bond. This bond was immediately oversubscribed, with nearly 40% participation from ESG investors. At the time of reporting, the total amount of our outstanding green bonds stood at EUR 1.8 billion.

Our inaugural green bond matured in 2021. As a result, the total amount of our outstanding green bonds decreased from EUR 1,978 million to EUR 1,830 million.

Total amount of outstanding green bonds, €m

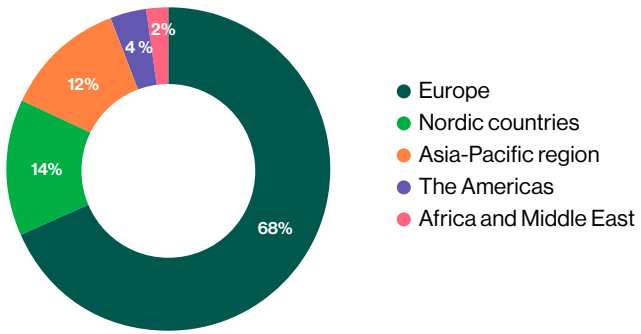
1,830

Foreign currencies in euros

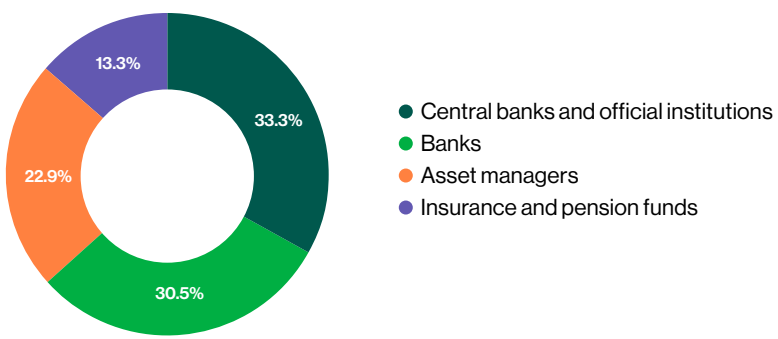
Outstanding green bonds

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

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 2021

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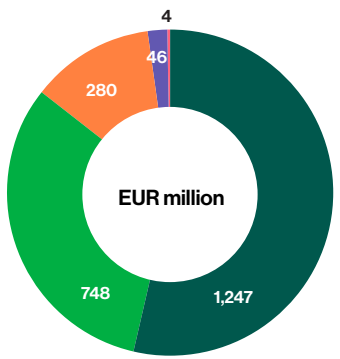
Green finance portfolio

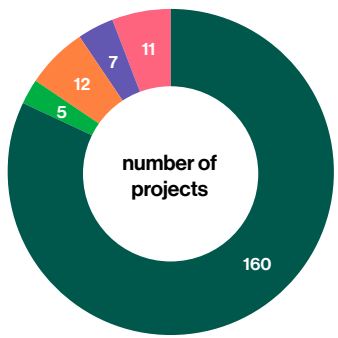
At the end of 2021, the number of approved projects in our green finance portfolio was 195, of which 180 projects had begun to withdraw finance. The outstanding amount of green finance, which means the amount of finance disbursed minus repayments, totalled EUR 2,328 million at year-end (EUR 1,786 million in 2020). At the time of review, total committed finance was EUR 2,785 million, which is the sum of the outstanding amount and the amount of unwithdrawn credit commitments. The green finance projects are situated in 71 different locations across Finland. A summary of the impacts of these projects can be found on page 24 and a detailed list of our green finance projects can be found on pages 38–47.

In 2021, we accepted a total of 47 new projects into our green finance portfolio, of which 33 had begun to withdraw finance at the time of review. For projects approved in 2021, the outstanding amount of green finance totalled EUR 150 million and the credit commitments totalled EUR 446 million at the end of the year.

The largest category of projects approved in 2021 was sustainable buildings with 43 approved projects. In addition, we granted green finance to two renewable energy projects, one energy efficiency project and one water and wastewater management project.

Green finance project breakdown

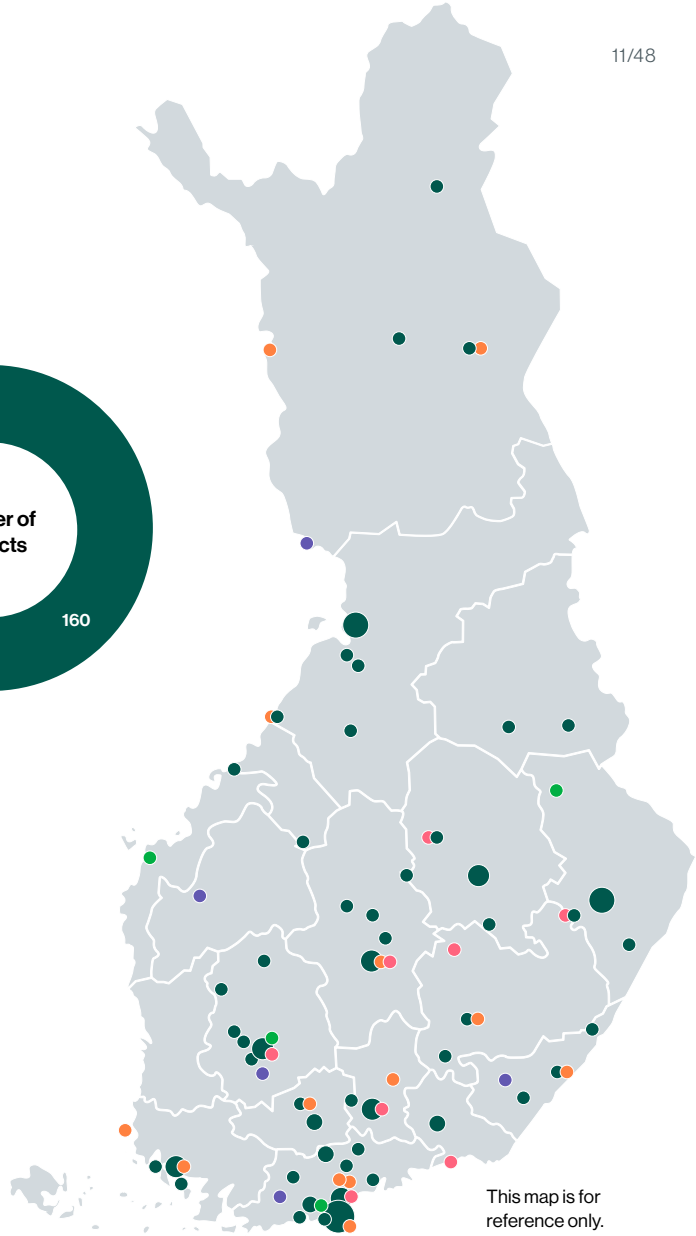




- Sustainable buildings
- Sustainable public transportation
- Water and wastewater management
- Renewable energy
- Energy efficiency

Outstanding amount of green finance EUR million

€ **2,328**



This map is for reference only.

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Fossil fuels in projects

At the end of 2021, our green finance portfolio had 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 by Lempäälän Energia Oy in the Renewable energy category. Both projects aim at substituting natural gas with biogas once the availability of biogas capacity is sufficient. Project documentation suggests that the environmental impact of the projects will be significantly improved compared to prior technology, even using natural gas. This positive effect will grow even more pronounced when the availability of biogas capacity becomes technically and economically more reasonable.

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%.

The fossil fuel component cannot be entirely avoided in some biomass heating plant projects, because small amounts may be required during the start-up of the plant and to ensure security of energy in the event that renewable fuel is unavailable. Our green finance portfolio included four biomass heating plant projects at the end of 2021: Kangasalan Lämpö Oy, Kemin Energia ja Vesi Oy, Seinäjoen Energia Oy and Taipalsaaren Lämpö Oy.

Experimental project

In the sustainable buildings category, the construction of apartment building for Kiinteistö Oy Oulun Tarve at Pohjantikankuja 4 by TA-Yhtymä Oy has been accepted into the green finance portfolio due to its value as an interesting pilot project, even though its energy efficiency (energy class C, 2018) does not fulfil the criteria of the MuniFin Green Bonds Framework. 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 successfully reaches its goals, it will fulfil the energy efficiency criteria of MuniFin's Green Bonds 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 will continue to monitor the project in 2022.

We commit 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 MuniFin's Green Bonds Framework. We will give out further information on the projects if requested.

The Green Evaluation Team approves projects

Projects eligible for MuniFin's green finance must comply with our Green Bonds Framework at the time of their approval. MuniFin's Customer Solutions division conducts a preliminary assessment on the projects and submits potential loan and lease applications for review to the MuniFin Green Evaluation Team. The team consists of independent experts and makes the final decision on approving the potential projects. Each project is reviewed independently and only approved if its long-term environmental effect is positive.

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, which are assessed and scored on a scale of 0 to 10 points by the Green Evaluation Team. Dark green projects are typically granted 7–10 points, medium green 4–6 points, and light green 1–3 points.

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Members of the Green Evaluation Team

"Energy efficiency in new construction has improved at a delightfully rapid rate, and we've also seen amazing progress in renovation work. The organisations applying for green finance do important pioneering work, and their expertise should be shared all around Finland. It's nice to see so many new green companies and organisations appearing."

Päivi Sieppi, Environmental Advisory Manager, City of Lahti

"Recent work on EU directives has suggested that the European Commission does not have strong faith in voluntary green energy and climate work. However, the leaps made in energy efficiency in green finance projects demonstrate that progress is already driven by the markets, with no need for overregulation. Emissions and energy consumption will start decreasing as soon as customers learn to demand better quality. There are many ways to achieve this."

Vesa Peltola, Energy Adviser, Association of Finnish Local and Regional Authorities

"Green finance is a key way to reward municipalities for the essential work they do for the climate and the environment. They not only create new future opportunities for themselves, but also enable others to follow their example. This increases know-how and domestic demand and turns the sustainability transition into a success factor for Finland."

Jyri Seppälä, Professor, Director of the Centre for Sustainable Consumption and Production, Finnish Environment Institute (SYKE)

Reporting principles

Our Green Bonds Framework defines the contents of this annual Green Bonds 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 2021, 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 2021 but only began to withdraw finance in 2021 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 2021, we applied updated emission factors for electricity and district heating to the entire portfolio for the first time.
- 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.
- We engage in active discussion with investors and other market participants. We also constantly develop our reporting and welcome development proposals.

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

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, but such impacts fall outside the scope of this report. 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 Bonds 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. The developments in our reporting are driven by the harmonisation of the calculation principles that have taken place after our first evaluation.

This report shows the status of our green finance portfolio at the end of 2021. We have updated the impact of our portfolio to reflect our estimated share of the projects' total finance at the end of 2021. This figure represents our share of the estimated impact of the entire project, explained in more detail on page 14.

Changes to indicators in the water and wastewater category

Our 2020 impact assessment introduced two new indicators that replaced the previous indicator amount of treated wastewater in the water and wastewater management category. The projects implemented at existing wastewater treatment plants improve treatment efficiency and add to the capacity of the plants for the future, thus influencing both new indicators. In both indicators, the amount of treated wastewater refers to the average flow of incoming water.

The indicators introduced in 2020 are:

- Annual amount of treated wastewater in existing plants immediately after project completion (m^3)
- Annual amount of treated wastewater with increased capacity in the future (m^3)

The first indicator represents existing wastewater treatment plants. It indicates the amount of wastewater that will be treated more efficiently immediately after the project's implementation. The indicator also covers expansions which result in an immediate increase in the amount of treated wastewater; for example, directing new sources of wastewater to the plant.

The second indicator represents an estimate of how much wastewater can be treated in the future as a result of the construction of new plants and expansion of old plants. The time span on which the amount of treated wastewater in the future is estimated varies from project to project, but it most commonly falls on the year 2030 or 2040. It is worth noting that new wastewater treatment plant projects typically utilise new technology, and their treatment efficiency clearly surpasses the minimum requirements.

Changes to impact calculations

The key changes we have made to our impact calculations compared to calculations done in previous years have to do with the electricity and district heating emission factors and the 2018 decree on the energy efficiency of new buildings used in the calculations.

Updated electricity and district heating emission factors and their impact to the 2021 report:

1. In the Nordic Position Paper on Green Bonds Impact Reporting (2020), the recommendation for the electricity emission factor to be applied was updated in early 2020. The emission factor was reduced from the previously applied 380 g CO_2/kWh to 315 g CO_2/kWh. 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. The 2021 report is the first in which we have recalculated the impact of all the projects included in our portfolio using the updated electricity and district heating emission factors. The application of the most recent emission factors has a decreasing effect on the CO_2 emissions avoided and reduced. The updated emission factors and the recalculation of impacts do not affect the annual energy savings (avoided/reduced).

Tightening of E-value limits for new buildings and their impact on the 2019–2021 reports:

2. The impact calculations for 2019–2021 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 sustainable 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 a 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.

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.

In 2021, we carried out the environmental impact calculations of our green finance ourselves. We also recalculated the impact of the 2016–2020 projects in the sustainable buildings and energy efficiency categories, i.e. the projects whose impact calculations apply the emission factors for electricity and district heating. 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 2021. A more detailed explanation of our estimated share of a project's total finance is available on page 14.

The calculations present the status of the outstanding portfolio as of 31 December 2021. The calculations for the years 2016–2020 have been updated with our estimated share of finance and to correct any errors.

In 2021 we have also updated the emission factors used for electricity and district heating. Read more in 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	Source
Consumption electricity	315 g CO_2 / kWh	Nordic Public Sector Issuers: Position Paper on Green Bonds Impact Reporting, 2020
Finland's average CO_2 emission factor for district heating	148 g CO_2 / kWh	Motiva.fi; Nordic Public Sector Issuers have not published an emission factor for district heating, so the national emission factor is used instead. District heating production is a regional/local operation.
Separate generation of district heating*	5–500 g CO_2 / kWh depending on the project location	Motiva.fi; Nordic Public Sector Issuers have not published an emission factor for district heating, so the national emission factor is used instead. District heating production is a regional/local operation.
Gasoil used for heating	255 g CO_2 / kWh	Stat.fi; Statistics Finland's fuel classification 2021

**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
Sustainable buildings	Annual energy savings (avoided/ reduced), MWh	Avoided (new buildings) or reduced (renovation)	New buildings Difference in energy consumption between reference scenario and situation after project implementation (see a more detailed description below the table) Renovation projects Difference in energy consumption between reference scenario and situation after project implementation	New buildings Consumption of electricity, district heating or fuel 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 Estimated new consumption of electricity, heating and fuel after the renovation, 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 Consumption of electricity, heating and fuel prior to the project, based on the building's energy certificate
	Annual CO_2 emissions (avoided/ reduced), tCO_2	Avoided (new buildings) or reduced (renovation)	Difference in CO_2 emissions between reference scenario and situation after project implementation	CO_2 emissions equivalent to energy consumption after project implementation calculated using emission factors for electricity and district heating	CO_2 emissions equivalent to energy consumption in reference scenario calculated using emission factors for electricity and district heating

Sustainable 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 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.

The E-value represents a building's calculated annual consumption of purchased energy per the heated net area ($kWh/m^2/a$) 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.

Many of the sustainable buildings projects that we finance use geothermal heat, which is classified as a zero-emission heating source in our calculations. Because the projects that rely on geothermal heat are self-sufficient in heating, the energy consumption and emissions of these buildings consist entirely of purchased consumption electricity.

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 Proavera's 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 unconventional 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 CO_2 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 unconventional energy efficient technology.

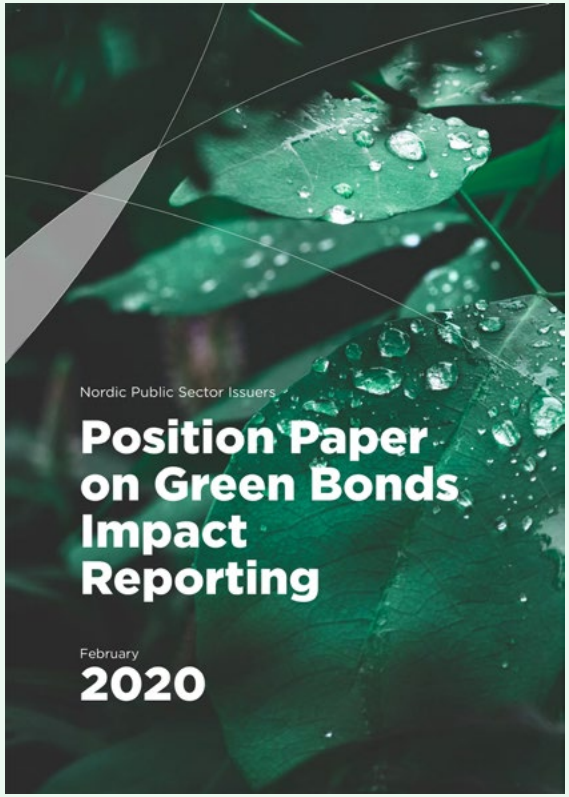
Project category	Indicator	Energy or CO_2 emissions avoided/ reduced compared to reference situation	Methodology	Situation after project implementation	Reference scenario
Sustainable public transportation	Annual CO_2 emissions avoided/ reduced, tCO_2	Avoided or reduced depending on the project	Public 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 CO_2 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	Standardised CO_2 emissions of comparable car with internal combustion engine
Water and wastewater management	Annual amount of treated wastewater in existing plants immediately after project completion, m^3	N/A	Current average inflow of wastewater 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 wastewater with increased capacity in the future, m^3	N/A	New purification plant The rated value of the average inflow of wastewater 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 NA Expansion of existing purification plant Future rated value of the average flow of wastewater after expansion measures (review year depends on the project plan and may vary between projects)	New purification plant NA Expansion of existing purification plant Average flow of wastewater 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

Project category	Indicator	Energy or CO_2 emissions avoided/ reduced compared to reference situation	Methodology	Situation after project implementation	Reference scenario
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	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
Energy efficiency	Annual energy savings (avoided/ reduced), MWh	Avoided or reduced depending on the project	Renovation projects Difference in energy consumption between reference scenario and situation after project implementation Other measures for improving energy efficiency Reports written in project planning, and/ or information requested directly from the project owner	New consumption of electricity and/ or heating after renovation project or other measures for improving energy efficiency, according to the project plan	Consumption of electricity and heating prior to the project, based on the building's energy certificate or the project plan
	Annual CO_2 emissions avoided/ reduced, tCO_2	Avoided or reduced depending on the project	CO_2 emissions equivalent to the avoided or reduced energy production, with emission factors for electricity and district heating accounted for	CO_2 emissions equivalent to energy consumption after project implementation calculated using emission factors for electricity and district heating	CO_2 emissions equivalent to energy consumption in reference scenario calculated using emission factors for electricity and district heating

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.



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 17.

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 17. More information about the qualitative impact of the projects is available in the section *Other impacts of our projects* on page 32.

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

6 **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.

7 **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 14.

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 wastewater 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 9.

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 14.

10 **Provide both allocation and impact reporting**
Our impact report includes both allocation and impact reporting. The reporting guidelines recommend that such allocation reporting is verified by an independent external verifier, but we have not followed this practice in our 2016–2021 reports.

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 8.

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**
Our report does not yet cover physical risks related to the environment and climate.

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* starting on page 23.

16 **Consider reporting contributions to the EU Environmental Objectives**
Our green finance projects contribute to the EU Environmental Objectives. For each green finance project category, we present the environmental objectives to which these projects contribute in the section *The impacts of green finance* starting on page 23 and in the section *Green finance continues to gain popularity* on page 5.

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

SUSTAINABLE BUILDINGS

SUSTAINABLE PUBLIC TRANSPORTATION

WATER AND WASTEWATER MANAGEMENT

RENEWABLE ENERGY

ENERGY EFFICIENCY

MuniFin

Project category	Number of projects	Outstanding amount 31 Dec 2021 EUR	Annual energy savings (avoided/ reduced MWh)	Annual CO_2 emissions (avoided/reduced tCO_2)	Annual amount of treated wastewater in existing plants immediately after project completion (m^3)	Annual amount of treated wastewater with increased capacity in the future (m^3)	Annual production of renewable energy (MWh)	Renewable energy production capacity (MW)
Sustainable buildings	160	1,247,741,548	24,201	5,662	-	-	-	-
Sustainable public transportation	5	748,474,054	-	7,866	-	-	-	-
Water and wastewater management	12	280,543,437	-	-	30,791,821	29,994,624	518	-
Renewable energy	7	46,115,610	-	70,607	-	-	103,105	58
Energy efficiency	11	4,812,130	7,150	1,422	-	-	-	-
Entire portfolio	195	2,327,686,779	31,351	85,557	30,791,821	29,994,624	103,622	58

Sustainable buildings

Buildings have a significant impact on Finland's emissions and the carbon footprint per resident, mainly through their use of energy. Sustainable construction takes environmental impacts into account already in the design stage, for example by leveraging new energy solutions and environmentally friendly, low-carbon building materials, such as wood. Our green project buildings employ local renewable energy production, life cycle thinking, smart control systems and other environmentally sound technologies.

Sustainable building projects include both housing and public construction as well as the renovation of existing buildings. Additions to our portfolio in 2021 included for example the Sodankylä community centre and Sipoo rescue station.

As per our current Green Bonds Framework, projects eligible for green finance must primarily meet the requirements for class A (2018) in the Finnish energy efficiency classification for buildings. We may also accept the most energy-efficient buildings in class B (2018) if the project employs a combination of environmentally sustainable solutions. Moreover, we may grant finance to projects that improve an existing building's energy efficiency by at least 30%. We have also approved one experimental project, which is described in more detail on page 12.

These projects promote the following UN Sustainable Development Goals:

Goal 7
7.3 By 2030, double the global rate of improvement in energy efficiency.

Goal 9
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.

Goal 11
11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.

Goal 12
12.2 By 2030, achieve the sustainable management and efficient use of natural resources.

Entire portfolio		Projects approved in 2021	
Number of projects	160	Number of projects	43
Total committed finance	EUR 1,701,949,696	Annual energy savings (avoided / reduced)	3 MWh
Outstanding amount	EUR 1,247,741,548	Annual CO_2 emissions (avoided / reduced)	761 tCO_2
Annual energy savings (avoided/reduced)	24,201 MWh		
Annual CO_2 emissions avoided/reduced	5,662 tCO_2		

Sustainable buildings

We have assessed the taxonomy eligibility of the projects in the sustainable buildings category in terms of climate change mitigation (EU environmental objective 1). Based on our analysis, the projects in the sustainable buildings category can be classified as EU taxonomy-eligible activities in the following economic activity categories defined by the EU Taxonomy for Sustainable Activities: 7.1 Construction of new buildings, 7.2 Renovation of existing buildings and 7.7 Acquisition and ownership of buildings. Our interpretation is that the new buildings that we finance fall under category 7.7 if constructed before 31 December 2020 and under category 7.1 if constructed after that.

According to our analysis, the new buildings in our green finance portfolio constructed before 31 December 2020 seem to meet the EU Taxonomy criteria for substantial contribution to climate change mitigation in terms of their energy efficiency. The new construction projects included in our portfolio are in the top 15%* of their building type in energy efficiency, excluding the experimental project described on page 12. At the time of review, we do not have all the necessary information to ascertain that large non-residential buildings constructed before 31 December 2020 meet the criteria for substantial contribution to climate change mitigation.

We assess that the new buildings constructed after 31 December 2020 seem to meet the EU Taxonomy criteria for substantial contribution to climate change mitigation in terms of their energy efficiency. At the time of review, we do not have all the necessary information to ascertain that new buildings larger than 5,000 m2 in net area meet all the criteria for substantial contribution to climate change mitigation.

Also the renovation projects that we finance seem to align with the technical specification criteria for substantial contribution to climate change mitigation, because the energy efficiency improvement that we require (at least a 30% improvement to energy efficiency) is in line with the Taxonomy criteria.

At the moment, we do not have sufficiently comprehensive or reliable project data to determine whether the do no significant harm (*DNSH*) and minimum social safeguards (*MSS*) criteria are met in the sustainable buildings projects.

Taxonomy eligibility of our projects in terms of climate change mitigation (EU environmental objective 1)

Project Category	Economic activity of the EU Taxonomy	Outstanding amount EUR	Number of projects
Sustainable buildings	7.1 Construction of new buildings	1,184,682,132	142
	7.7 Acquisition and ownership of buildings		
	7.2 Renovation of existing buildings	63,059,415	18

**At the time of the analysis, Finland had no generally accepted methodology or statistics for determining the most energy efficient 15% of the building stock. We conducted our analysis by building type using the energy certification register administered by the Housing Finance and Development Centre of Finland (ARA) and data provided by Statistics Finland, which provided the best available information for our analysis.*

Seinäjoen Energia on the fast track to carbon neutrality

Seinäjoen Energia, the energy company of the City of Seinäjoki, is aiming to reach carbon neutrality in heat and electricity production by 2030. For a long time, the energy production in Seinäjoki was dependent on a single power plant and peat as fuel.

In the future, Seinäjoki will get its heating from biofuels and recovered waste heat, saying farewell to peat for good. In autumn 2022, a biofuel plant that will produce heat for half the city will begin its trial runs. The plant is funded with MuniFin's green finance and will be fuelled by sawmill and forest felling by-products and other sources of biofuel.

In addition to the new biofuel plant and the recently completed auxiliary plant that uses pellets, heat pumps and electricity will play a key role in achieving carbon neutrality. It is estimated that these major investments in energy production will reduce the city's carbon dioxide emissions from district heating by almost 98%, cutting them from 660,000 tonnes to less than 14,000 tonnes by 2023. This estimate includes reduced emissions from heating plants as well as the power plant that produces both heat and electricity.

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Photo: Seinäjoen Energia / Tapio Pesu

Sustainable public transportation

Sustainable public transportation projects reduce traffic emissions and the need for private cars. Such projects include the West Metro Extension in the capital region, and the Tampere Tramway, whose estimated total number of users is 222,500 per day. 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 addition to public transportation projects, we have also financed the acquisition of one electric van. We did not accept any new public transportation projects into our portfolio in 2021.

These projects promote the following UN Sustainable Development Goals:

Goal 9

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.

Goal 11

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.

11.6 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.

Entire portfolio		Projects approved in 2021
Number of projects	5	No new projects approved in 2021
Total committed finance	EUR 748,474,054	
Outstanding amount	EUR 748,474,054	
Annual CO_2 emissions (avoided/reduced tCO_2)	7,866 tCO_2	

Sustainable public transportation

We have assessed the taxonomy eligibility of the projects in the sustainable public transportation category in terms of climate change mitigation (EU environmental objective 1). Based on our analysis, the projects in the sustainable public transportation category can be classified as EU taxonomy-eligible activities in the following economic activity categories defined by the EU Taxonomy for Sustainable Activities: 6.5 Transport by motorbikes, passenger cars and light commercial vehicles, 6.10 Sea and coastal freight water transport, vessels for port operations and auxiliary activities, 6.11 Sea and coastal passenger water transport and 6.14 Infrastructure for rail transport.

Of our sustainable public transportation projects, we assess that the West Metro Extension, the Tampere Tramway and the City of Nurmes electric van meet the EU Taxonomy criteria for substantial contribution to climate change mitigation, because they are all powered by electricity and thus have zero tailpipe emissions. We do not currently have enough reliable data about the fuel consumption of the Kvarken Archipelago hybrid ferry to assess whether it meets the criteria for a substantial contribution to climate change mitigation. At the moment, we do not have sufficiently comprehensive or reliable project data to determine whether the do no significant harm (*DNSH*) and minimum social safeguards (*MSS*) criteria are met in the sustainable public transportation projects.

Taxonomy eligibility of our projects in terms of climate change mitigation (EU environmental objective 1)

Project Category	Economic activity of the EU Taxonomy	Outstanding amount EUR	Number of projects
Sustainable public transportation	6.5 Transport by motorbikes, passenger cars and light commercial vehicles	7,696	1
	6.10 Sea and coastal freight water transport, vessels for port operations and auxiliary activities	25,000,000	1
	6.11 Sea and coastal passenger water transport		
	6.14 Infrastructure for rail transport	723,466,358	2

Water and wastewater management

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

Since 2016, we have financed ten projects in the water and wastewater management category, all of which were part of our portfolio on 31 December 2021. 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.

These projects promote the following UN Sustainable Development Goals:

Goal 6

6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all.

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.

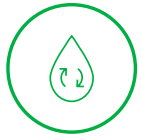
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

Goal 14

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.

Entire portfolio	
Number of projects	12
Total committed finance	EUR 280,543,437
Outstanding amount	EUR 280,543,437
Annual amount of treated wastewater in existing plants immediately after project completion (m^3)	30,791,821
Annual amount of treated wastewater with increased capacity in the future (m^3)	29,994,624
Annual production of renewable energy (MWh)	518

Projects approved in 2021	
Number of projects	1
Annual amount of treated wastewater in existing plants immediately after project completion	7,915,286 m^3
Annual amount of treated wastewater with increased capacity in the future	0 MWh
Annual production of renewable energy	0 MWh



Water and wastewater management

We have assessed the taxonomy eligibility of the projects in the water and wastewater management category in terms of climate change mitigation (EU environmental objective 1). Based on our analysis, the projects in the water and wastewater management category can be classified as EU taxonomy-eligible activities in the following economic activity categories defined by the EU Taxonomy for Sustainable Activities: 5.3 Construction, extension and operation of wastewater collection and treatment and 5.4 Renewal of wastewater collection and treatment.

We do not currently have the necessary data about the water and wastewater management projects to assess whether they meet the criteria for substantial contribution to climate change mitigation. We are waiting for the publication of the Taxonomy's goals and criteria for the sustainable use and protection of water and marine resources (EU environmental objective 3). At the moment, we do not have sufficiently comprehensive or reliable project data to determine whether the do no significant harm (*DNSH*) and minimum social safeguards (*MSS*) criteria are met in the water and wastewater management projects.

Taxonomy eligibility of our projects in terms of climate change mitigation (EU environmental objective 1)

Project Category	Economic activities of the EU Taxonomy	Outstanding amount (EUR)	Number of projects
Water and wastewater management	5.3 Construction, extension and operation of waste water collection and treatment	280,543,436	12
	5.4 Renewal of waste water collection and treatment		

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 Oy 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 2021, we also granted green finance to two renewable energy projects, the new bioenergy heating plants in Seinäjoki and Taipalsaari.

These projects promote the following UN Sustainable Development Goals:

Goal 7

7.2 By 2030, increase substantially the share of renewable energy in the global energy mix.

Entire portfolio	
Number of projects	7
Total committed finance	EUR 46,115,610
Outstanding amount	EUR 46,115,610
Annual CO_2 emissions (avoided/reduced)	70,607 tCO_2
Annual production of renewable energy	103,105 MWh
Renewable energy production capacity	58 MW

Projects approved in 2021	
Number of projects	2
Annual CO_2 emissions (avoided/reduced)	25,012 tCO_2
Annual production of renewable energy	86,857 MWh
Renewable energy production capacity	22 MW

Renewable energy

We have assessed the taxonomy eligibility of the projects in the renewable energy category in terms of climate change mitigation (EU environmental objective 1). Based on our analysis, the projects in the renewable energy category can be classified as EU taxonomy-eligible activities in the following economic activity categories defined by the EU Taxonomy for Sustainable Activities: 4.1 Electricity generation using solar photovoltaic technology, 4.24 Production of heat/cool from bioenergy and 7.6 Installation, maintenance and repair of renewable energy technologies. According to our assessment, our solar energy projects seem to meet the EU Taxonomy criteria for substantial contribution to climate change mitigation. We do not currently have all the necessary data to assess whether our bioenergy projects meet all these criteria. At the moment, we do not have sufficiently comprehensive or reliable project data to determine whether the do no significant harm (*DNSH*) and minimum social safeguards (*MSS*) criteria are met in the renewable energy projects.

Taxonomy eligibility of our projects in terms of climate change mitigation (EU environmental objective 1)

Project Category	Economic activities of the EU Taxonomy	Outstanding amount (EUR)	Number of projects
Renewable energy	4.1 Electricity generation using solar photovoltaic technology	8,622,224	1
	4.24 Production of heat/cool from bioenergy	37,341,235	5
	7.6 Installation, maintenance and repair of renewable energy technologies	152,150	1

Modern community centre inspires hope in Kouvola's vitality

The City of Kouvola, a merger of six municipalities, is restructuring its school network. The old village schools are now making way for new multipurpose buildings that will also host day-care services, youth services and hobby clubs. The Valkeala community centre, to be completed in 2024, will be the first of these multipurpose buildings – a modern community centre that will serve residents of all ages.

The project is funded with MuniFin's green finance and it scored the highest ever points from the MuniFin Green Evaluation Team in the sustainable buildings category. The team praised the project's material choices, energy efficiency, renewable energy sources, high utilisation rate of services and the exemplary treatment of stormwater. The City of Kouvola has sought experience of modern learning environments from other municipalities.

The new community centres are expected to breathe new life into the city. The projects are no less important for residents, because they inspire trust in the vitality of their hometown.

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Photo: YIT Suomi Oy ja Sweco Architects Oy

Energy efficiency

The amount of energy used by existing buildings and other infrastructure can be reduced by improving their energy efficiency, for example by upgrading equipment. This is often a cost-effective way of cutting CO_2 emissions: small actions can achieve significant energy savings even in the short term. Energy efficiency projects offer municipalities a good way to save costs, enabling them to use the saved money for other purposes – while improving their financial sustainability.

The projects in this category also seek to improve indoor air quality, which is important for the users of buildings such as schools, sports facilities and libraries. Successful solutions therefore indirectly improve the wellbeing of many people.

Our green finance has been granted to several ESCO (*Energy Service Company*) projects in different municipalities and to other projects, such as the upgrading of street lighting. In 2021, we approved one new energy efficiency project: the replacement of streetlights with more energy efficient ones in the Ruuska district in Liperi.

These projects promote the following UN Sustainable Development Goals:

Goal 7

7.3 By 2030, double the global rate of improvement in energy efficiency.

Goal 9

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.

Entire portfolio		Projects approved in 2021	
Number of projects	11	Number of projects	1
Total committed finance	EUR 7,703,541	Annual energy savings (avoided/reduced)	87
Outstanding amount	EUR 4,812,130	Annual CO_2 emissions (avoided/reduced)	22
Annual energy savings (avoided/reduced)	7,150 MWh		
Annual CO_2 emissions (avoided/reduced)	1,422 tCO_2		

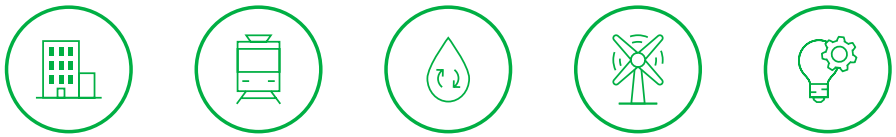
Energy efficiency

We have assessed the taxonomy eligibility of the projects in the energy efficiency category in terms of climate change mitigation (EU environmental objective 1). Based on our analysis, the projects in the energy efficiency category can be classified as EU taxonomy-eligible activities in the following economic activity categories defined by the EU Taxonomy for Sustainable Activities: 7.3 Installation, maintenance and repair of energy efficiency equipment. According to our assessment, our energy efficiency projects seem to meet the EU Taxonomy criteria for substantial contribution to climate change mitigation. At the moment, we do not have sufficiently comprehensive or reliable project data to determine whether the do no significant harm (*DNSH*) and minimum social safeguards (*MSS*) criteria are met in the energy efficiency projects.

Taxonomy eligibility of our projects in terms of climate change mitigation (EU environmental objective 1)

Project Category	Economic activity of the EU Taxonomy	Outstanding amount (EUR)	Number of projects
Energy efficiency	7.3 Installation, maintenance and repair of energy efficiency equipment	4,812,130	11

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

Sustainable 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
- Pilot projects for sustainable buildings

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

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

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

Energy efficiency
- Piloting and reference value of new technologies
- Financial savings for municipalities and the enabling of new investments
- Improved air quality in public buildings

Green finance projects and impacts

Sustainable buildings: new buildings											
Customer	Project	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2021 (€)	Unwithdrawn credit commitment 31 Dec 2021 (€)	Total committed finance 31 Dec 2021 (€)	MuniFin's estimated share of finance 31 Dec 2021	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
A-Kruunu Oy	Apartment building Syvänsalmenkatu 5 b	2020	A	2018	72	1,200,000	7,650,697	8,850,697	14%	8	2
Toivo Group Oy	Apartment building Asunto Oy Nokian Fabriikki	2020	A	2018	75	6,037,280	-	6,037,280	99%	37	12
Mangrove Oy	Apartment building Lipunkantajankatu 3	2019	A	2018	74	5,471,737	-	5,471,737	99%	41	13
As Oy Turun Viridi	Apartment building As Oy Turun Viridi	2020	A	2018	73	3,152,100	2,101,400	5,253,500	60%	25	8
Asunto Oy Järvenpään Kultapiisku	Apartment building As Oy Järvenpään Kultapiisku	2021	A	2018	75	4,107,059	8,951,358	13,058,417	31%	8	2
Asunto Oy Kuopion Kuikkalampi	Apartment building As Oy Kuopion Kuikkalampi	2021	A	2018	75	1,822,100	3,383,900	5,206,000	35%	14	4
Asunto Oy Oulun Sisu	Apartment building Siirtolantie 6	2021	A	2018	74	2,409,264	4,891,536	7,300,800	33%	15	3
Asunto Oy Tampereen Hervantajärven Hilpi	Apartment building Asunto Oy Tampereen Hervantajärven Hilpi	2021	A	2018	74	5,655,936	771,264	6,427,200	88%	38	12
Asunto Oy Vantaan Ajoportti 2	Apartment building As Oy Vantaan Ajoportti	2021	A	2018	73	6,903,700	14,029,202	20,932,902	33%	52	16
Premico Group Oy	Apartment building Asunto Oy Vantaan Metsäkissa	2020	B	2018	86	13,609,700	-	13,609,700	100%	21	4
Asuntosäätiön Asumisoikeus Oy	Apartment building Karakalliontie 1	2020	A	2018	75	5,800,000	1,532,950	7,332,950	79%	36	11
Elämäni Kodit 40 Oy	Apartment building As Oy Kirkkonummen Atlas	2021	A	2018	72	1,034,000	4,243,789	5,277,789	20%	6	2
City of Forssa	Community centre Monikylä	2019	A	2018	87	23,000,000	-	23,000,000	100%	125	27
City of Haapavesi	Haapavesi secondary school and high school	2020	A	2018	89	15,344,000	-	15,344,000	99%	77	16
Heinävesi Municipality	Heinävesi middle school	2020	A	2018	72	8,238,025	761,975	9,000,000	92%	52	9
Helsingin Asumisoikeus Oy	Fannynkallio apartment building and townhouse	2017	B	2013	98-108	16,123,373	-	16,123,373	98%	255	53
Helsingin Asumisoikeus Oy	Apartment building HASO Atlantinkaari	2020	A	2018	74	13,500,000	28,864,850	42,364,850	32%	76	16
Helsingin Asumisoikeus Oy	Apartment building Haso Kettutie 10	2021	A	2018	73	2,100,000	8,741,977	10,841,977	19%	14	3
Helsingin Asumisoikeus Oy	Apartment building HASO Koskelantie, Koskelantie 66b	2020	B	2018	76-79	15,055,625	15,055,625	30,111,250	50%	71	15

[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 (kWh/m²/a) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

Sustainable buildings: new buildings											
Customer	Project	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2021 (€)	Unwithdrawn credit commitment 31 Dec 2021 (€)	Total committed finance 31 Dec 2021 (€)	MuniFin's estimated share of finance 31 Dec 2021	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
Helsingin Asumisoikeus Oy	Apartment building Postiljooni	2019	A	2018	75	14,547,155	6,234,495	20,781,650	70%	89	21
Helsingin Asumisoikeus Oy	Apartment building HASO Veturi, Lavakatu 12/ Veturitie 58	2020	A	2018	72	11,500,000	7,047,000	18,547,000	62%	94	22
Helsingin Asumisoikeus Oy	Apartment building Jamaika	2019	B	2018	79	12,000,000	3,204,970	15,204,970	79%	25	5
Helsingin Asumisoikeus Oy	Apartment building Postimies	2019	A	2018	75	13,868,800	3,467,185	17,335,985	80%	82	19
Helsingin kaupungin asunnot Oy	Apartment building Haakoninlahdenkatu 5-7	2019	B	2018	80	25,457,150	-	25,457,150	100%	97	20
Helsingin kaupungin asunnot Oy	Apartment building Isonnevankuja 1	2019	B	2018	85	8,107,587	-	8,107,587	99%	16	3
Helsinki City Housing Company (Heka)	Apartment building Kanariankatu 3	2019	B	2018	79	16,344,750	-	16,344,750	100%	59	12
City of Helsinki	Apartment building HEKA Kaarela Maununnevantie	2021	A	2018	70-74	-	28,766,000	28,766,000	-	-	-
Helsinki City Housing Company (Heka)	Apartment building HEKA Koskela, Koskelantie 66	2020	B	2018	76-78	14,715,480	14,715,479	29,430,959	50%	68	14
Helsinki City Housing Company (Heka)	Apartment building Kyösti Kallion tie 1a	2019	A	2018	75-77	9,159,798	-	9,159,798	99%	46	10
City of Helsinki	Apartment building HEKA Kuninkaantammi Asetelmankatu 1	2021	A	2018	73-75	-	12,280,000	12,280,000	-	-	-
Helsinki City Housing Company (Heka)	Apartment building Sienakuja 4	2017	B	2013	95-103	9,476,679	-	9,476,679	98%	142	30
Helsinki City Housing Company (Heka)	Apartment building Taidemaalarinkatu 2	2017	B	2013	71-101	14,016,585	-	14,016,585	99%	219	45
Helsingin kaupungin asunnot Oy	Apartment building Kaupinmäenpolku 15	2019	B	2018	80	6,023,574	-	6,023,574	99%	23	5
Helsinki City Housing Company (Heka)	Apartment building Pyhätunturintie 2	2019	B	2018	77-88	22,797,150	-	22,797,150	100%	92	19
Helsingin kaupungin asunnot Oy	Apartment building Kustinpolku 7	2019	A	2018	75	16,429,700	7,041,000	23,470,700	70%	96	23
City of Helsinki	Apartment building HEKA Tapanila Smoltinkaari 6	2021	A	2018	67	-	13,014,613	13,014,613	-	-	-
Helsinki City Housing Company (Heka)	Apartment building HEKA, Lavakatu 10	2020	A	2018	72-75	13,306,830	13,306,825	26,613,655	50%	86	20
Helsinki City Housing Company (Heka)	Apartment buildings Kettutie 8 a-c	2021	A	2018	73-75	3,440,000	13,766,957	17,206,957	20%	20	4
Helsinki City Housing Company (Heka)	Apartment building Tullivuorentie 22	2019	B	2018	78-82	12,778,042	-	12,778,042	99%	75	16

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Sustainable buildings: new buildings											
Customer	Project	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2021 (€)	Unwithdrawn credit commitment 31 Dec 2021 (€)	Total committed finance 31 Dec 2021 (€)	MuniFin's estimated share of finance 31 Dec 2021	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
Hollola Municipality	Heinsuo school	2016	B	2013	109	15,253,455	-	15,253,455	89%	1603	47
Hollola Municipality	Kalliola school	2016	B	2013	116	14,432,109	-	14,432,109	89%	314	59
Hämeenkyrö Municipality	Environmental school of Mahnala	2017	B	2013	95	4,900,003	-	4,900,003	70%	170	54
City of Hämeenlinna	Nummi service centre	2016	A	2013	88	22,576,102	-	22,576,102	91%	739	161
City of Imatra	School campus of Mansikkala	2018	B	2013	102	43,714,286	-	43,714,286	97%	1030	191
Inari Municipality	Ivalo education centre	2020	A	2018	76	16,799,263	10,200,737	27,000,000	62%	128	24
Janakkala Municipality	Janakkala fire department	2016	B	2013	103-119	5,863,355	-	5,863,355	91%	128	40
Janakkala Municipality	Tervakoski sports hall	2019	A	2018	73	4,547,500	-	4,547,500	85%	63	20
Janakkala Municipality	Turenki school and community centre, 1st phase	2021	A	2018	68	7,631,236	14,568,764	22,200,000	34%	56	16
City of Joensuu	Daycare centre of Hammaslahti	2018	A	2013	80	2,725,721	-	2,725,721	85%	95	40
City of Joensuu	Heinävaara middle school, modular unit	2018	B	2013	107	3,671,611	-	3,671,611	85%	100	32
City of Joensuu	Daycare centre Hukanhauta	2018	A	2013	90	3,709,754	-	3,709,754	89%	130	54
City of Joensuu	Karhumäki school	2016	A	2013	89	8,085,998	-	8,085,998	86%	323	132
City of Joensuu	School of Nepenmäki	2016	B	2013	96	18,654,531	-	18,654,531	92%	733	285
City of Joensuu	Rantakylä school	2018	A	2013	88	12,562,587	-	12,562,587	90%	500	201
City of Jyväskylä	School of Keljonkangas	2018	A	2018	89	22,098,040	-	22,098,040	96%	92	20
City of Jämsä	Comprehensive school of Jämsänkoski	2017	B	2013	111	9,097,263	-	9,097,263	92%	239	51
City of Kaarina	Main library, Kaarinatalo	2017	A	2013	90	7,125,000	-	7,125,000	79%	130	41
City of Kalajoki	Fire station of Kalajoki	2017	B	2013	111	1,800,000	-	1,800,000	60%	34	5
City of Kalajoki	School of Merenoja	2019	A	2018	81	22,826,315	2,173,685	25,000,000	91%	176	34
Central Finland Student Housing Foundation	Multi-generation block Kankaan Ilona, Ailakinkatu 10	2019	B	2018	76	8,684,134	-	8,684,134	99%	135	28
Kiinteistö Oy Kuopion Koulutilat	School of Jynkkä	2016	B	2013	101	11,485,999	-	11,485,999	80%	330	93
Kiinteistö Oy Kuopion Koulutilat	School of Karttula	2016	B	2013	97	10,763,520	-	10,763,520	88%	318	88
Kiinteistö Oy M2-Kodit	Apartment building Postiljooninkatu 1	2020	A	2018	75	10,910,542	-	10,910,542	99%	57	12

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Sustainable buildings: new buildings											
Customer	Project	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2021 (€)	Unwithdrawn credit commitment 31 Dec 2021 (€)	Total committed finance 31 Dec 2021 (€)	MuniFin's estimated share of finance 31 Dec 2021	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
TA-Yhtymä Oy	Apartment building KOY Oulun Tarve, Paraatikatu 10	2017	B	2013	100	5,810,282	-	5,810,282	99%	92	19
TA-Yhtymä Oy	Apartment building KOY Oulun Tarve, Pohjantikankuja 4	2019	C	2018	n/a	7,209,080	-	7,209,080	99%	-	-
Kiinteistö-KYS Oy	Apartment building Kuopio Puijonlaakso	2017	C	2013	107	9,570,481	-	9,570,481	99%	109	21,811
Kirkkonummen Vuokra-asunnot Oy	Apartment building Masalan tinapuisto	2020	A	2018	75	9,674,937	4,532,018	14,206,955	68%	57	17,861
City of Kokkola	School of Chydenius	2018	B	2013	127	11,018,520	-	11,018,520	95%	223	50,253
Koulutuskeskus Salpaus, Regional Provider of Vocational Education and Training	School campus of Vipusenkatu	2016	A	2013	88	2,946,584	-	2,946,584	37%	225	54,164
City of Kouvola	Daycare centre of Lehtomäki	2018	B	2018	68	1,050,000	-	1,050,000	30%	37	11,721
City of Kouvola	Naukio daycare centre	2021	A	2018	90	-	3,500,000	3,500,000	-	-	-
City of Kouvola	Valkeala community centre	2021	A	2018	69	5,027,049	25,972,951	31,000,000	16%	38	7,716
Kiinteistö Oy M2-Kodit	Apartment building KOY Tampereen Jallukka	2020	A	2018	75	6,154,004	-	6,154,004	99%	40	8,480
City of Kuhmo	Green wooden school of Kuhmo	2016	B	2013	120	9,000,000	-	9,000,000	75%	208	47,295
City of Helsinki	Apartment building Minari	2019	A	2018	73	-	3,944,000	3,944,000	-	-	-
Kuopion Opiskelija-asunnot Oy	Student apartment building Taivaanpankko	2019	A	2018	63	7,112,070	-	7,112,070	99%	97	20,369
Kuopion Opiskelija-asunnot Oy	Student apartment building Ahkio	2019	A	2018	75	5,510,736	-	5,510,736	99%	41	8,698
Lahden Asunnot Oy	Apartment building Asunto Oy Lahden lisakki	2017	B	2013	99	3,453,024	-	3,453,024	99%	53	10,855
Lahden Asunnot Oy	Apartment building Asunto Oy lahden valtteri	2017	B	2013	100	5,567,478	-	5,567,478	98%	83	17,341
Lahden Asunnot Oy	Apartment building Kivakatu 2	2020	A	2018	73	8,979,477	-	8,979,477	99%	67	14,368
Lahden Asunnot Oy	Apartment building Laatikkotehtaankatu 5 b and c	2019	A	2018	71	11,497,828	-	11,497,828	98%	103	21,991
Lahden Asunnot Oy	Building for elderly	2017	B	2013	100	8,211,352	-	8,211,352	99%	92	18,716
Lahden Asunnot Oy	Apartment building Vanhatie 53	2017	B	2013	100	3,407,490	-	3,407,490	98%	61	12,646
Lahden Asunnot Oy	Apartment building Vasarantie 2 ja 4	2019	A	2018	68	11,970,857	-	11,970,857	98%	127	26,795
Lahden vanhusten asuntosäätiö	Senior home Saimaankatu 29	2019	A	2018	75	7,606,407	-	7,606,407	100%	52	11,360
Lapinlahti Municipality	Matti & Liisa school	2020	A	2018	87	3,700,000	-	3,700,000	93%	49	7,908

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Sustainable buildings: new buildings											
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Lappeenrannan Asuntopalvelu Oy	Apartment building Kiviharjunkatu 2	2020	A	2018	74	4,538,111	-	4,538,111	99%	32	6,587
Laukaa Municipality	Eco-school of Laukaa	2017	B	2013	115	5,000,000	-	5,000,000	100%	135	23,603
Laukaa Municipality	School of Lievestuore	2017	B	2013	124	11,546,500	-	11,546,500	92%	289	63,850
Leppävirta Municipality	New primary school	2017	B	2013	127	7,957,362	-	7,957,362	93%	158	31,929
Liminka Municipality	School of Linnukka	2017	B	2013	123	3,000,000	-	3,000,000	60%	167	38,772
Liperi Municipality	Ylämylly school	2021	A	2018	90	6,650,000	-	6,650,000	95%	76	9,258
Luksia, Western Uusimaa Municipal Training and Education Consortium	Toivonkatu campus	2020	B	2018	95	12,000,000	-	12,000,000	100%	37	6,218
City of Mikkeli	Daycare centre of Kalevankangas	2019	A	2018	88	4,200,000	-	4,200,000	100%	20	3,846
Mäntsälä Municipality	School of Ehnroos	2019	A	2018	87	13,324,822	7,675,178	21,000,000	63%	60	12,863
Niiralan Kulma Oy	Apartment building Hatsalankatu 37	2020	A	2018	75	7,076,448	-	7,076,448	99%	47	14,705
Niiralan Kulma Oy	Apartment building Raviradantie 8	2020	A	2018	70	6,307,703	-	6,307,703	99%	62	13,426
City of Nokia	Welfare centre	2021	A	2018	78	13,000,000	-	13,000,000	100%	235	57,277
Oulun Sivakka Oy	Apartment building Hiirihaukantie 12 a	2020	A	2018	61	6,749,681	-	6,749,681	100%	105	24,047
Oulun Sivakka Oy	Apartment building Jalohaukantie 5	2020	A	2018	59	5,872,900	-	5,872,900	100%	89	20,448
Oulun Sivakka Oy	Apartment building Kiilankatu 5	2020	A	2018	66-74	8,269,750	-	8,269,750	100%	90	19,678
Oulun Sivakka Oy	Apartment building Menninkäisentie 3a	2021	A	2018	68	1,184,000	2,763,632	3,947,632	30%	12	2,678
Oulun Sivakka Oy	Apartment building Myllytullinkatu 5	2021	A	2018	62	1,467,750	5,871,000	7,338,750	20%	359	10,557
Oulun Sivakka Oy	Apartment building Valmutie 3	2021	A	2018	79-80	526,650	2,984,373	3,511,023	15%	5	0,936
Parikkala Municipality	Kirjola school, 1st phase	2021	A	2018	83	4,500,000	-	4,500,000	90%	71	22,319
City of Parkano	School campus of Parkano	2017	B	2013	102	14,112,233	-	14,112,233	91%	462	175,215
Perho Municipality	Day-care centre	2020	A	2018	89	3,200,000	-	3,200,000	100%	16	4,325
Pielavesi Municipality	Building for elderly and renovation of the central commercial kitchen	2017	B	2013	138	4,982,392	-	4,982,392	98%	316	69,890
Pirkan Opiskelija-asunnot Oy	Apartment building Vaahterakuja 3	2019	A	2018	72	6,312,810	-	6,312,810	99%	46	14,390

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[2]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.

Sustainable buildings: new buildings											
Customer	Project	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2021 (€)	Unwithdrawn credit commitment 31 Dec 2021 (€)	Total committed finance 31 Dec 2021 (€)	MuniFin's estimated share of finance 31 Dec 2021	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
City of Porvoo	Jokilaakso school	2021	A	2018	86	3,170,552	-	3,170,552	96%	18	5,614
City of Saarijärvi	Saarijärvi school and culture centre, phase 1	2019	A	2018	79	12,721,803	-	12,721,803	100%	255	78,437
Savukoski Municipality	Savukoski school	2019	A	2018	83	3,884,116	-	3,884,116	97%	25	7,810
Sodankylä Municipality	Sodankylä community centre	2021	A	2018	72	18,302,464	6,697,536	25,000,000	73%	166	33,871
TA- Asumisoikeus Oy	Apartment building KOY Heikinketo, Kanslerintie 17	2020	A	2018	72	3,600,000	967,050	4,567,050	79%	35	10,986
TA-Asumisoikeus Oy	Apartment building Lohjan Sahapiha, Sahapiha 6	2020	A	2018	73	6,361,400	-	6,361,400	100%	47	8,844
TA-Asumisoikeus Oy	Apartment building Pasilan Porttipuisto, Metsäläntie 6 b	2019	A	2018	71-75	14,894,550	-	14,894,550	100%	99	31,310
TA-Asumisoikeus Oy	Apartment building Pellonreuna 7	2019	B	2018	84	8,244,220	-	8,244,220	99%	12	2,757
TA-Asumisoikeus Oy	Apartment building Tuulensuunkatu 27	2021	A	2018	75	2,625,000	1,625,000	4,250,000	62%	24	4,871
Tampereen Kotilinnasäätiö sr	Apartment building Kourutaltankatu 8	2020	A	2018	75	6,024,815	2,472,497	8,497,312	71%	47	14,473
Tohmajärvi Municipality	Daycare centre of Tikkala	2018	A	2018	84	1,650,000	-	1,650,000	83%	42	13,108
Tyrnävä Municipality	School of Rantarousti	2016	B	2013	101	10,585,370	-	10,585,370	76%	323	81,922
Varttuneiden asumisoikeusyhdistys Jaso	Multi-generation block Kankaan Ilona, Ailakinkatu 10	2019	B	2018	76	10,029,985	-	10,029,985	99%	135	28,098
Vesanto Municipality	School campus	2019	A	2018	85	6,008,032	-	6,008,032	98%	32	5,225
City of Virrat	Comprehensive school	2019	A	2018	73	11,358,975	-	11,358,975	95%	177	26,594
Sipoo Municipality	Rescue centre	2021	A	2018	90	-	-	-	-	-	-
Siuntio Municipality	Education and welfare campus	2021	A	2018	90	-	-	-	-	-	-
Pirkkala Municipality	Pirkkala campus	2021	A	2018	90	-	-	-	-	-	-
City of Helsinki	Apartment building Gibraltarinaukio 4	2021	A	2018	74	-	11,807,450,00	11,807,450	-	-	-
City of Espoo	Apartment building Syvänsalmenkatu 1	2021	A	2018	72	-	5,579,000,00	15,579,000	-	-	-
Kiinteistö Oy Turun Syvälahden koulu	Syvälahti school	2017	B	2013	99-204	20,000,000	-	20,000,000	100%	743	160,510
VAV Asunnot Oy	Apartment building with Nordic Ecolabel, Kaskelantie 1	2018	B	2018	77	18,497,034	-	18,497,034	96%	410	84,661
Proavera Oy	Ice hockey arena	2018	-	-	n/a	4,207,795	-	4,207,795	94%	1,678	444,228
Nemoy Rakennuttaja Oy	Apartment building Asunto Oy Tuusulan Oiva	2020	A	2018	75-80	6,491,825	-	6,491,825	99%	55	17,208

[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 (kWh/m²/a) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

Sustainable buildings: new buildings											
Customer	Project	Year of approval	Energy Performance Certificate class	EPC year[1]	E-value[2] (kWh/m²/year)	Outstanding amount 31 Dec 2021 (€)	Unwithdrawn credit commitment 31 Dec 2021 (€)	Total committed finance 31 Dec 2021 (€)	MuniFin's estimated share of finance 31 Dec 2021	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
EAI Vuokra-asunnot Oy	Apartment building Asunto Oy Helsingin Vetonaula	2020	A	2018	68-75	7,000,000	-	7,000,000	100%	67	21,252
VAV Yhtymä Oy	Apartment building with Nordic Ecolabel, Veturikuja 8	2019	A	2018	74-75	17,244,640	2,131,360	19,376,000	89%	105	22,059
Tuusula Municipality	Martta Wendelin daycare centre and Kirkonkylä school	2020	B	2018	88-94	15,000,000	-	15,000,000	100%	97	21,308
As Oy Pirkkalan Hakatie 1	Apartment building Hakatie 1	2021	A	2018	76-77	2,408,892	9,513,607	11,922,500	20%	26	8,321
Asunto Oy Hyvinkään Yli-Jurvankatu 5	Apartment building As Oy Hyvinkään Yli-jurvankatu 5	2021	A	2018	75	2,396,932	5,592,843	7,989,775	30%	14	4,473
Asunto Oy Keravan Niittäjänkatu 2 and 4	Apartment buildings As Oy Keravan Niittäjänkatu 2 and 4	2021	A	2018	78-79	1,048,945	4,195,782	5,244,727	20%	9	2,685
Sotkamo Municipality	Vuokatti-arena, ice hockey arena	2021	-	-	n/a	7,822,196	-	7,822,196	97%	503	112,001
Elämäni Kodit 10 Oy	Apartment building As Oy Helsingin Blackstone	2021	A	2018	66-78	-	11,499,906	11,499,906	-	-	-
City of Tampere	Apartment building Asumisoikeus Oy Tampereen Ilokkaanrinne 5-6	2021	A	2018	28	2,394,320	6,689,905	9,084,225	26%	59	18,543

Sustainable buildings: renovation projects								
Customer	Project	Year of approval	Outstanding amount 31 Dec 2021 (€)	Unwithdrawn credit commitment 31 Dec 2021 (€)	Total committed finance 31 Dec 2021 (€)	MuniFin's estimated share of finance 3 1 Dec 2021	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
Helsinki City Housing Company (Heka)	Apartment building Heka Kaarela Perhekunnantie 10	2021	-	16,472,223	16,472,223	-	-	-
Helsinki City Housing Company (Heka)	Apartment building Jollaksentie 87	2020	3,581,200	3,581,200	7,162,400	50%	352	39
Helsinki City Housing Company (Heka)	Apartment building Koivikkotie 5	2021	-	12,791,499	12,791,499	-	-	-
Helsinki City Housing Company (Heka)	Apartment building Rusthollarintie 10	2020	9,743,200	9,743,200	19,486,400	50%	279	54
Central Finland Student Housing Foundation	Apartment building Kopparintie 1	2021	3,606,500	-	3,606,500	100%	481	62
Oulun Sivakka Oy	Apartment building Makasiininkatu 6	2020	1,814,400	-	1,814,400	96%	321	12
Student Union of the University of Jyväskylä	Apartment building Taitoniekantie 9 b	2018	7,736,802	-	7,736,802	98%	237	64
Student Union of the University of Jyväskylä	Apartment building Taitoniekantie 9 c	2019	7,715,100	-	7,715,100	100%	445	67
Student Union of the University of Jyväskylä	Apartment building Taitoniekantie 9 d	2020	8,567,466	-	8,567,466	100%	458	67
Student Union of the University of Jyväskylä	Apartment building Taitoniekantie 9 e	2021	2,000,000	5,295,206	7,295,206	27%	117	18

[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 ($kWh/m^2/a$) based on the usage default values and of the building's intended use category and weighted by energy source coefficients.

Sustainable buildings: renovation projects								
Customer	**Project**	**Year of approval**	**Outstanding amount 31 Dec 2021(€)**	**Unwithdrawn credit commitment 31 Dec 2021 (€)**	**Total committed finance 31 Dec 2021 (€)**	**MuniFin's estimated share of finance 31 Dec 2021**	**Annual energy savings (avoided / reduced MWh)**	**Annual CO_2 emissions (avoided / reduced tCO_2)**
Joensuun Kodit Oy	Apartment building Huvimäentie 16	2021	1,652,666	762,558	2,415,224	68%	175	42
Joensuun Kodit Oy	Apartment building Latolankatu 23, 2nd phase	2021	5,423,890	-	5,423,890	100%	544	258
Joensuun Kodit Oy	Apartment building Latolankatu 3	2020	2,588,572	-	2,588,572	99%	324	154
Joensuun Kodit Oy	Apartment building Noljakankaari 10	2021	419,828	2,578,940	2,998,768	14%	41	17
Joensuun Kodit Oy	Apartment building Äkkiväärä 10	2020	2,774,000	-	2,774,000	100%	289	135
Ääneseudun Asunnot Oy	Apartment building Lönnrotinkatu 1	2019	5,435,791	-	5,435,791	98%	264	96
Hyvinkään Vuokra-asunnot Oy	Apartment building Jussilankatu 2	2021	-	8,100,000	8,100,000	-	-	-
Hyvinkään Vuokra-asunnot Oy	Apartment building Jussilankatu 4	2021	-	8,100,000	8,100,000	-	-	-

Sustainable public transportation							
Customer	**Project**	**Year of approval**	**Outstanding amount 31.12.2021 (€)**	**Unwithdrawn credit commitment 31.12.2021 (€)**	**Total committed finance 31.12.2021 (€)**	**MuniFin estimated share of finance 31.12.2021**	**Annual CO_2 emissions (avoided / reduced tCO_2)**
Länsimetro Oy	Western Metro extension, Phase 1 Ruoholahti-Matinkylä	2017	421,447,126	-	421,447,126	50%	3,402
Länsimetro Oy	Western Metro extension, Phase 2 Matinkylä-Kivenlahti	2018	150,000,000	-	150,000,000	20%	300
City of Nurmes	Nissan e-nv200 electric van	2017	7,696	-	7,696	28%	0,1
Tampereen Raitiotie Oy	City of Tampere tramway	2017	152,019,232	-	152,019,232	49%	2,215
City of Vaasa	Kvarken Archipelago car and passenger ferry, M/S Aurora Botnia	2020	25,000,000	-	25,000,000	21%	1,950

Water and wastewater management									
Customer	**Project**	**Year of approval**	**Outstanding amount 31 Dec 2021 (€)**	**Unwithdrawn credit commitment 31 Dec 2021 (€)**	**Total committed finance 31 Dec 2021 (€)**	**MuniFin's estimated share of finance 31 Dec 2021**	**Annual amount of treated wastewater in existing plants immediately after project completion (m^3)**	**Annual amount of treated wastewater with increased capacity in the future (m^3)**	**Annual production of renewable energy (MWh)**
City of Heinola	Sahaniemi wastewater treatment plant	2018	5,600,000	-	5,600,000	70%	1,622,425	-	-
Helsinki Region Environmental Services HSY	Blominmäki wastewater treatment plant	2020	183,500,000	-	183,500,000	47%	-	25,760,577	-

Water and wastewater management									
Customer	Project	Year of approval	Outstanding amount 31 Dec 2021 (€)	Unwithdrawn credit commitment 31 Dec 2021 (€)	Total committed finance 31 Dec 2021 (€)	MuniFin's estimated share of finance 31 Dec 2021	Annual amount of treated wastewater in existing plants immediately after project completion (m^3)	Annual amount of treated wastewater with increased capacity in the future (m^3)	Annual production of renewable energy (MWh)
Hämeenlinnan Seudun Vesi Oy	Paroinen wastewater treatment plant	2021	13,800,000	-	13,800,000	99%	7,915,286	-	-
City of Imatra	Meltola wastewater treatment plant	2020	6,000,000	-	6,000,000	54%	2,765,780	-	-
Jyväskylän Seudun Puhdistamo Oy	Jyväskylä region wastewater treatment plant	2016	9,090,912	-	9,090,912	91%	12,351,936	2,383,119	-
City of Jämsä	Jämsä central wastwater treatment plant	2020	3,400,000	-	3,400,000	85%	1,598,098	-	-
City of Mikkeli	Metsä-sairila water and wastewater treatment plant	2016	19,000,004	-	19,000,004	33%	-	1,850,928	-
Vesikolmio Oy	Kalajokilaakso wastewater treatment plant	2016	8,625,000	-	8,625,000	58%	1,725,000	-	518
Savukoski Municipality	Mukkavaara wastewater treatment plant	2020	1,219,778	-	1,219,778	90%	32,649	-	-
Tunturi-Lapin Vesi Oy	Ylläs central wastewater treatment plant	2018	5,142,223	-	5,142,223	99%	360,944	-	-
Turun Seudun Puhdistamo Oy	Kakolanmäki wastewater treatment plant	2018	23,700,000	-	23,700,000	79%	-	-	-
City of Uusikaupunki	Häpönniemi wastewater treatment plant	2018	1,465,520	-	1,465,520	86%	2,419,703	-	-

Renewable energy									
Customer	Project	Year of approval	Outstanding amount 31 Dec 2021 (€)	Unwithdrawn credit commitment 31 Dec 2021 (€)	Total committed finance 31 Dec 2021 (€)	MuniFin's estimated share of finance 31 Dec 2021	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	2018	8,965,519	-	8,965,519	90%	-	11	10,759
Kemin Energia ja Vesi Oy	Bioenergy heating plant	2019	9,000,000	-	9,000,000	100%	-	18	24,340
Lempäälän Energia Oy	Energy self-sufficiency project of Lempäälä	2017	8,622,224	-	8,622,224	89%	16,057	7	4,010
Lempäälän Energia Oy	Viialantie heating plant, fuel storing and unloading concept	2017	4,085,716	-	4,085,716	79%	-	-	6,460

Renewable energy									
Customer	Project	Year of approval	Outstanding amount 31 Dec 2021 (€)	Unwithdrawn credit commitment 31 Dec 2021 (€)	Total committed finance 31 Dec 2021 (€)	MuniFin's estimated share of finance 31 Dec 2021	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	2021	15,200,000	-	15,200,000	43%	86,857	22	24,754
Taipalsaaren Lämpö Oy	Kuivaketvele bioenergy heating plant	2021	90,000	-	90,000	90%	-	1	257
Vihti Municipality	Solar panels of Vihti	2020	152,151	-	152,151	90%	191	-	26

Energy efficiency								
Customer	Project	Year of approval	Outstanding amount 31 Dec 2021 (€)	Unwithdrawn credit commitment 31 Dec 2021 (€)	Total committed finance 31 Dec 2021 (€)	MuniFin's estimated share of finance 31 Dec 2021	Annual energy savings (avoided / reduced MWh)	Annual CO_2 emissions (avoided / reduced tCO_2)
City of Jyväskylä	ESCO-project*	2018	1,182,245	27,755	1,210,000	98%	3,486	653
Koulutuskeskus Salpaus, Regional Provider of Vocational Education and Training	Education centre Ståhlberginkatu 8-10	2018	1,473,685	-	1,473,685	74%	599	112
Liperi Municipality	Ruuska street lighting	2021	56,000	144,000	200,000	28%	5	2
Pielavesi Municipality	Street lighting	2018	82,537	-	82,537	69%	63	20
Mäntyharju Municipality	Street lighting	2019	330,000	-	330,000	100%	185	58
City of Kotka	Otsola street lighting	2017	174,435	-	174,435	63%	159	50
City of Kotka	Rauhala street lighting	2018	368,483	-	368,483	72%	209	66
City of Kotka	Ristikallio street lighting	2016	175,931	-	175,931	53%	119	38
City of Vantaa	ESCO-project*	2017	90,083	1,459,917	1,550,000	6%	1,069	194
City of Tampere	ESCO-project*	2017	740,261	1,259,739	2,000,000	37%	1,218	218
City of Pieksämäki	Street lighting along Uhomäki fitness track	2019	138,471	-	138,471	76%	38	12

**An energy saving project (ESCO) concerning several buildings. An ESCO (Energy Service Company) is a procedure in 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.*

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