

Ilmarinen Climate Roadmap

Approved by Ilmarinen's Responsible Investment Executive Committee on 14 November 2022



ILMARINEN

Contents

Ilmarinen Climate Roadmap for Pension Asset Investments	4
Foreword: Towards net zero portfolio.....	4
Overview: Identifying climate change risks and opportunities essential to investment activities	5
Assumptions and principles.....	7
Investment environment and profitable and secure investments	7
Decarbonization and transition.....	7
Data	8
Scopes.....	8
Role of offsetting and carbon handprint.....	9
Key action	9
Risk management and scenario modelling	9
Portfolio construction	10
Engagement and active ownership	11
Advocacy and collaboration.....	12
Monitoring, reporting and continuous improvement.....	12
Governance	13
Direct listed equities and corporate bonds roadmap	14
Foreword: Considering climate aspect supports investor value protection	14
Introduction: We invest in transition	14
Prior climate action on direct listed equities and corporate bonds corporate	16
Key direct listed equities and corporate bonds climate action.....	16
Defining our investable universe and portfolio construction policies.....	16
We integrate climate and ESG considerations into investment decision making.....	18
Monitoring and reporting.....	19
Engagement and active ownership	19
Advocacy and partnerships	21
Special features of corporate bonds investments.....	21
Fixed income markets and decarbonisation.....	21
Implications of corporate bonds portfolio composition	21
Benchmarks	21
Green bonds	22
Data coverage	22
Governance	23



Domestic Real Estate Climate Roadmap	24
Foreword: Industry collaboration is important.....	24
Introduction: Sustainability and climate aspects guide our real estate investments.....	24
2021–2022 achievements and key action points.....	27
Backed by a long track record of sustainable and responsible real estate investment	27
Key goals	29
Actions and targets by phase.....	31
City planning and land use.....	32
Design	32
Construction	35
Use phase	37
Demolition.....	41
Enablers and dependencies	41
Data sources	42
Glossary.....	43
Foreign Real Estate Climate Roadmap.....	44
Foreword: The real estate sector plays important role in solving the climate crisis.....	44
Introduction: Manager selection important to reach our goals.....	44
More direct approach implemented to international real estate	45
Portfolio level key targets for direct international real estate.....	45
Timeline of main past climate actions	47
Key targets	47
Active ownership and engagement	49
Main analytical tool to monitor, report and engage with managers	49
Governance	50



Ilmarinen Climate Roadmap

Foreword: Towards net zero portfolio

Climate change-related risks are changing the risk-return profile of individual companies and entire industries in all markets, leading to new and increasing risks in investors' portfolios. We expect that climate change already has and will have a material impact on our investments both in terms of global transition to low-carbon economy and physical risks affecting investments in our portfolio.



The Paris Climate Agreement aims to limit the global temperature rise to well below 2 degrees Celsius and pursue efforts to limit warming to 1.5 degrees¹. Average global temperatures have already increased by 1.2 degrees on pre-industrial levels, and according to the UN reports we are on a pathway closer to 3 degrees of atmospheric warming, with potentially severe impacts². Thus, it is an urgent and global challenge to meet the goals of the Agreement.

All stakeholders in the global economy are needed, and they need to act now so our economic and productive systems can be transformed to enable a sustainable future. We are a member of various international collaborative climate efforts aimed at advocacy on climate action by all market stakeholders. In addition to portfolio decarbonization and investing in low carbon solutions, we consider low carbon transition of global value chains crucial to enable real emission reductions. Goal-oriented engagement is an essential part of our approach, and we are currently further developing targets and monitoring indicators for climate engagement.

Ilmarinen has been committed to the Goals of Paris Agreement since 2016 and had a climate roadmap spanning from 2016 to 2020. In December 2019 the Board of Directors of Ilmarinen set an ambitious target of a net zero portfolio by end of 2035. 2021 we published our new 2035 neutrality roadmap and now we develop it further.

Mikko Mursula, Deputy CEO, Investments

1 [Paris Agreement text English \(unfccc.int\)](https://unfccc.int/paris-agreement)

2 [Emissions Gap Report 2020 | UNEP - UN Environment Programme \(unep.org\)](https://www.unep.org/emissions-gap-report-2020)



Overview: Identifying climate change risks and opportunities essential to investment activities

Ilmarinen Mutual Pension Insurance Company is a responsible investor with a mandate to manage pension assets profitably and securely. We are a large private earnings-related pension insurance company. As a mutual pension insurance company, we are wholly owned by our customers. Integrating environmental, social and governance considerations (ESG) into investment decision making is aligned with our mandate. In our view risks and opportunities posed by climate change are highly material to our investment activities.

Our pension liabilities span decades, and we are an investor with a long-term view. We consider that robust climate action by our investments is aligned with long-term investor value protection and generation.

This climate roadmap outlines how Ilmarinen is implementing our portfolio net zero target 2035 through interim targets, key actions and tracking of progress. We seek portfolio decarbonization and exposure to low carbon solutions. As a global investor, our portfolio is exposed to the entire economy and interconnected global value chains.

The only way to mitigate systemic risk is to effect change in the real economy. Thus, we want to facilitate real-world emission reductions through investing also into transition of high emitting economic activities. This transition is necessary to enable the global economy to decarbonize.

Ilmarinen is committed to responsible investing and has been PRI (Principles for Responsible Investment) signatory since 2006. We are committed global goals as expressed in the Paris Climate Agreement and the Sustainable Development Goals of the Agenda 2030.

This climate roadmap is part of Ilmarinen Environmental Policy established in the Responsible Investment Policy. Ilmarinen integrates responsible investment practices in all its investment activities. More information on our approaches in our Responsible Investment Guidelines.

[Ilmarinen's Responsible Investment Policy and Responsible Investment Guidelines \(ilmarinen.fi\)](https://ilmarinen.fi)

Net Zero 2035

Ilmarinen has set a net zero target 2035. We aim to both decarbonize our portfolio and to invest in low carbon opportunities.

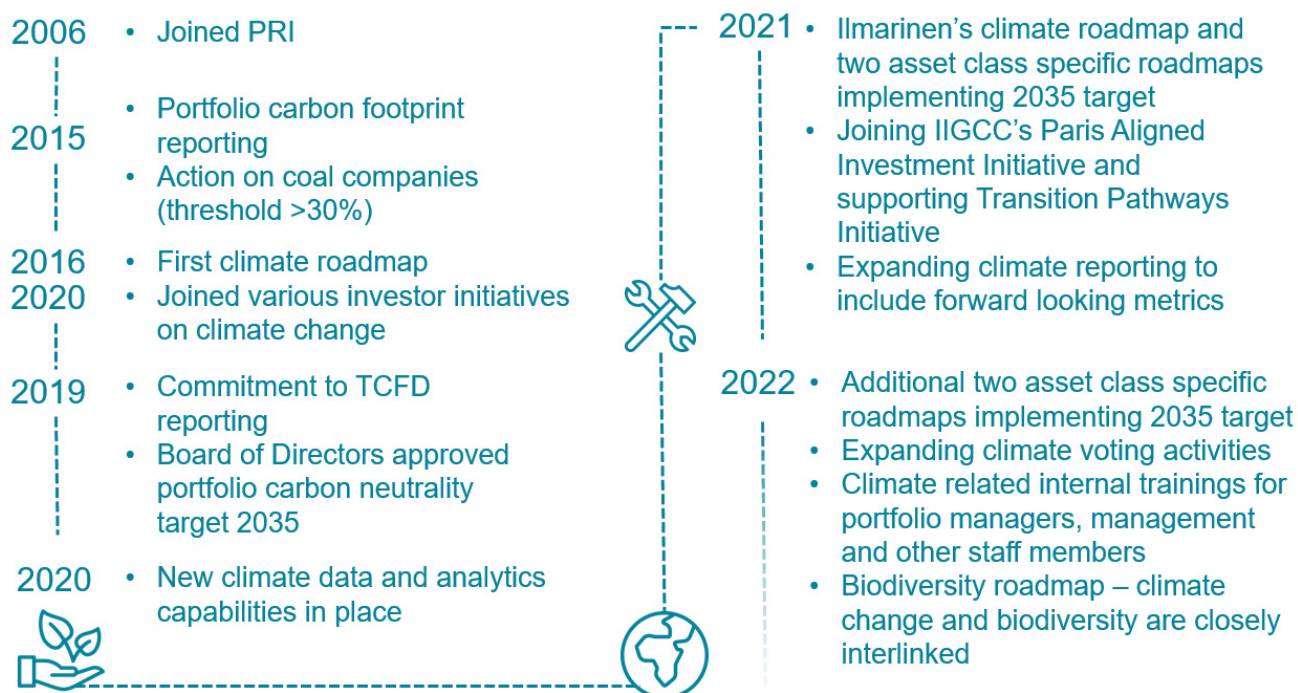
Our approach is built from the following key themes:

- Analysing and mitigating climate risks with the aim of portfolio decarbonization.
- Investing in climate solutions.
- Investing in companies in transition or with transition potential.
- Engaging with high emitting companies to further climate transition.
- Fostering collaboration, advocacy, partnerships, and new climate solutions.
- Targeting net zero portfolio by the end of 2035 with annual reporting on progress

The Board of Directors of Ilmarinen oversees the climate roadmap implementation. We report our progress annually through our Annual and Sustainability Report that includes Task Force on Climate-related Financial Disclosures (TCFD) reporting. Our climate roadmap is a living document that we assess, adjust, and develop on a continual basis as the climate science, international investor best practices and our understanding evolve.

We have taken climate aspects into consideration already for a long time in our investment activities.

Key actions on a timeline:

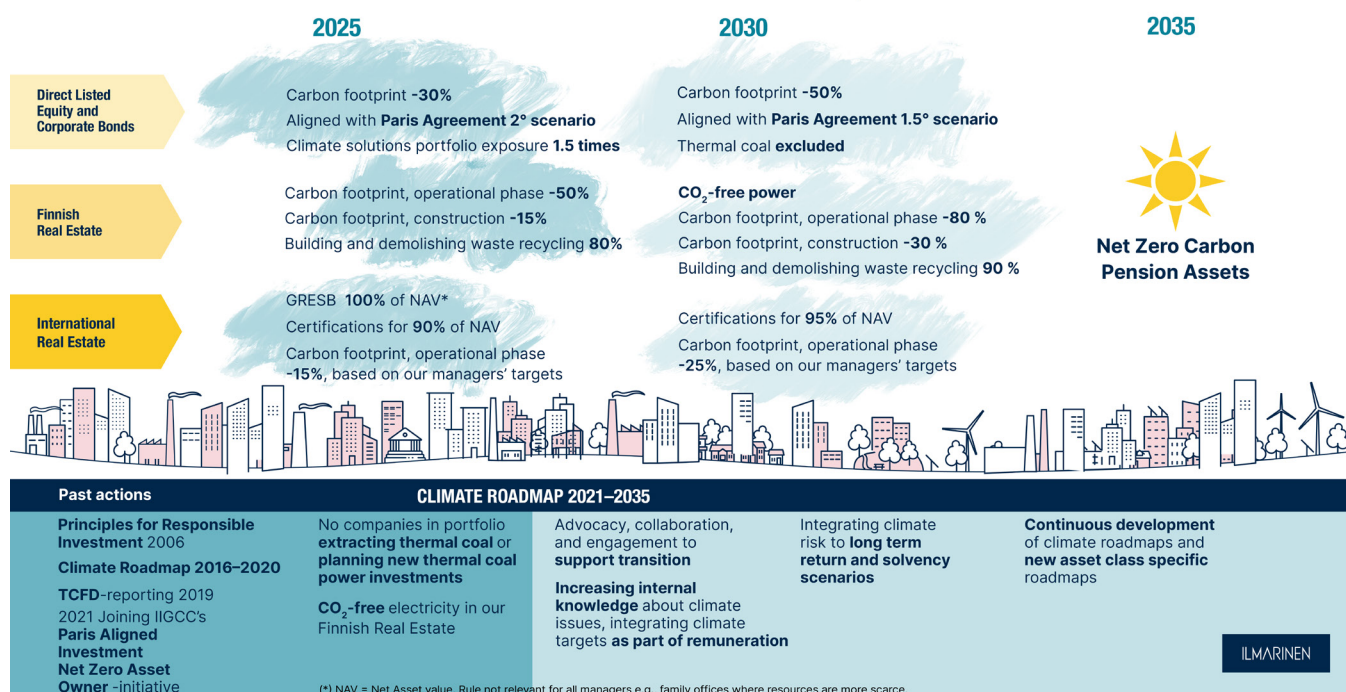


2023–2025

- Establishing additional asset class specific roadmaps including interim targets with base-lines, key action, and performance indicators.
- Revising climate change engagement and voting policies.
- Integrating climate action to remuneration mechanisms at different levels of the organization.
- Assessing possibilities to integrate climate risk into long term return and solvency scenarios.
- Continue and expand climate related internal training.
- Establishing further external asset manager requirements.
- Continuous development of the climate roadmap and its implementation through the asset class specific climate roadmaps.

Key climate actions and milestones on our path to carbon-neutral pension assets 2035 are shown in the accompanying picture. The objectives and monitoring metrics are described in more detail in asset-class specific roadmaps.

We invest in a sustainable future – net zero carbon pension assets 2035



Assumptions and principles

Investment environment and profitable and secure investments

To invest profitable and securely, Ilmarinen needs a diversified portfolio that is exposed to various geographic regions and asset classes. Thus, strong government action in terms of regulation, carbon pricing, creation of enabling environment for transition and private sector innovation and consumer demand for climate solutions is required to enable market transition at scale and at an increasing rate.

Currently Ilmarinen can optimize both portfolio diversification needs and climate goals. An important part of the creation of an enabling environment, is to allow the establishment of investment products that are large and liquid. However, if in the coming years global climate action is weak, our investable universe could contract; thus, affecting our diversification and concentration of investments. Hindrances in the operating environment could include a slowdown in global decarbonization rates, uncertainty in the climate policy landscape and a decrease in the climate solutions for mitigation and adaptation or liquid climate market products we can invest in.

To enable timely adjustment of our policies we monitor the potential climate scenarios and aim to adjust our approaches while meeting our fiduciary duty as a private Finnish pension insurance company. If the global economy decarbonizes and transitions in an orderly fashion, less abrupt policy action on portfolio construction and strategic asset allocation is required.

Decarbonization and transition

While managing climate risk and gaining exposure to climate solutions we invest in companies in transition or with potential to take significant action on transition. In practice, this means companies that are significant emitters today but have a pathway to transform their

business to become compatible with a low carbon economy. In our view we have the potential to achieve more in terms of real emission reductions with engagement than with immediate divestment.

Potential items in investee transition analysis include:

- Climate target setting in short, medium, and long term that are aligned with Paris Climate Agreement and based on Science Based Targets.
- Climate strategy and reporting including investment planning in alignment with the climate strategy.
- Reporting on absolute and relative emissions evidencing the implementation.
- Governance aspects, including management remuneration schemes, and defined role and oversight of management and board of directors.

In management of climate risk divestment is ultimately one tool in our toolbox. This means reducing exposure to coal and fossil dependent companies that do not consider climate risk to their business. The divestment may result from internal policies that deem a company entailing too high and unmitigated climate risk and/or from unsuccessful climate themed engagement.

Data

Data is a key cornerstone of investor climate action. We need better standards in the disclosure of climate information. Therefore, we need our investees to report in a clear and transparent manner, with increasing scopes, and to set robust climate targets. Accurate and reliable data is crucial for robust climate action, and we expect our data and analytics providers to align with best industry practices and latest knowledge emerging from international scientific bodies. However, it should be noted that there is always some, and at times significant, lag in both methodological alignment and asset specific data.

Data and service providers are essential support for us. We collaborate, engage and advocate with several data and service providers to continuously have the best possible tools and solutions.

Scopes

Transparency in measurement and reporting is important. We aim to follow the best industry practice and apply the principles and recommendations by The Institutional Investors Group on Climate Change (IIGCC) and Task Force on Climate-Related Financial Disclosures (TCFD), for example.

In terms of scopes for target setting we follow the IIGCC Paris Aligned Investment Initiative Net Zero Investment Framework recommendations. As recommended by IIGCC PAII we consider scopes 1 and 2 for direct listed equities and corporate bonds. We acknowledge that decarbonization based solely on scope 1 and scope 2 Greenhouse Gas Protocol GHG emissions could lead to inaccurate conclusions of the carbon footprint of investment portfolios. However, the current quality and disclosure of scope 3 GHG emissions does entail limited usability, however we believe that scope 3 data and methods will improve over time. Therefore, as emissions data and methods improve, we aim to integrate scope 3 into the target setting. For domestic real estate our current focus in target setting is scope 2 (operating phase energy) and scope 3 (mainly construction phase emissions available).

In investment analysis and in monitoring and reporting on listed companies we have the capability to include scopes 1+2 and scope 3. We report as per TCFD recommendations and report scopes 1+2 and scope 3 upstream. The figures are reported with and without scope

3 considering the current issues of double accounting and accuracy involving scope 3 data. We also have the capability to report both on Kyoto gases and, on other relevant greenhouse gases³ that have the potential to cause atmospheric warming. Transparency in both target setting scopes and reporting scopes is crucial as several items, including choice of scopes, can affect the results.

Role of offsetting and carbon handprint

Offsetting should not be considered first choice in the toolbox for net zero portfolio. Considering the need to decarbonize, and in line with IIGCC Net Zero Investment Framework, we take precautionary approach to the use of external offsets as a significant long-term strategy for achievement of portfolio decarbonization target. Also, we do not offset emissions in one part of our portfolio through accounting for avoided emissions in another sub portfolio.

We aim to apply the principle of mitigation hierarchy to avoid and reduce emissions where possible and reserve the possibility to use offsets in the future in cases where there is otherwise not technologically or financially viable solution. With today's technology and considering that we do not foresee entire exclusions of hard-to abate sectors, full carbon neutrality of all economic activity across portfolio is not likely. Research into foreseen need and best approaches on offsetting continues and we continue to monitor the development.

However, as part of our commitment to increase our investments in climate solutions we actively monitor the evolving carbon handprint (also known as scope 4 or avoided emissions) methodologies. Carbon handprint refers to reduction of the carbon footprint of users of the product or service. Carbon handprint can also refer to the positive impact that using a product or service has compared to other products or services in the same category. Investing in climate solutions supports the real economy decarbonisation and, also our portfolio emissions reduction targets by lowering the carbon footprint of value chains.

Key action

Risk management and scenario modelling

Climate change affects institutional investor portfolio via

- transition risks (e.g., energy efficiency programs, fuel subsidies, phaseout of coal),
- physical risks (extreme weather impacts e.g., flooding or wildfires and, also chronic risks such as rain stress on real estate properties) and
- market risks (e.g., timing of climate risk pricing in and market reactions to shocks).

Climate change poses a significant and material risk for the global economy. Climate risk is systematic, i.e., it has the potential to affect investment portfolios across asset classes, sectors, and geographical regions. The financial impacts of climate change related risks can vary by timing, magnitude and direction. Ilmarinen has a highly diversified portfolio and a long-term horizon. Thus, understanding the potential impacts of climate change on our investments in especially the medium and long term is crucial. Ilmarinen utilizes both top-down and bottom-up modelling.

3 CCl₄, C₂H₂Cl₂, CBrF₃, CO₂ from biomass

Climate risk analytical approaches

Top down: Assessment of climate impacts at macro-economic level – assets classes, sectors, geographic regions

Bottom-up: Assessment of climate impacts at company and security level

In the top-down approach we estimate how various predefined climate change scenarios impacts the economy and capital markets. Top-down climate scenario analysis is a holistic approach helping to quantifying climate-related risks on Ilmarinen key metrics, such as portfolio returns and solvency ratio over various time horizons. This is crucial for any investor which is looking to ensure portfolio resilience and business continuity by considering climate change in investment decision making.

For listed securities the bottom-up approach allows quantifying historical and forward-looking climate related risks starting from a security level. Analysing historical data such as carbon footprint data of individual companies allows quantification of the greenhouse gas emissions (GHG) embedded within an investment portfolio. Carbon related data such as absolute GHG emissions can be normalized by a financial indicator (for example, revenues or enterprise value). This enables observation of carbon intensity information and comparisons between companies or investment portfolios. A number of other aspects (e.g., exposure to fossil fuels) can be assessed in order to understand exposure to holdings with business activities with stranded asset risk that could be realized in context of transition to low carbon economy. Forward looking assessments at the portfolio level include emissions trajectory assessments aligned to the 2- or 1.5-degree pathway. The bottom-up analytical approaches depend on asset class. For example, in our domestic direct real estate investments we estimate each property life cycle carbon footprint in the development phase.

Portfolio construction

Ilmarinen climate strategy is implemented through asset class specific roadmaps. In 2021 we established two asset class specific roadmaps, namely the Finnish real estate roadmap and the direct listed equity roadmap. In 2022 we increased the roadmap coverage to include our foreign real estate and direct corporate bonds investments. In the coming years, we will establish further roadmaps with interim targets, key actions, and monitoring indicators for other asset classes.

In our work throughout other asset classes, we build on our existing approaches. For example, we already have climate incorporated in our external manager due diligence process and annual surveys. For investor, due diligence means systematic, adequate, and thorough analysis of the investment to mitigate risk from a business or investment decision.

Also, our equity ETFs that cover approximately one tenth of the portfolio already integrate ESG (environmental, social, governance) through underlying index methodology. In 2020 the methodology excluded all companies deriving 5 per cent or more aggregate revenue from thermal coal mining and unconventional oil and gas extraction or thermal coal-based power generation.

In our directly managed portfolio, we aim to:

- Integrate ESG and climate into all investment decision making through phased approach across asset classes with the view to reduce emissions from our investments while meeting our requirements to invest profitable and securely.
- Analyse and mitigate climate risks and invest in climate solutions.

- While managing climate risk and gaining exposure to climate solutions we invest in companies in transition or with potential to take significant action on transition.
- Engage at company level to further climate transition of high emitting companies and their value chains.

In our externally managed portfolio, we aim to:

- Favour asset managers who help us reaching our climate goal and, thus, are committed to climate action including alignment with the goals of the Paris Climate Agreement while meeting our requirements to invest profitable and securely.
- Annually monitor with our asset managers climate and ESG approaches and performance.
- Engage with the asset managers based on annual reports and our climate analytics.
- Expect our asset managers to increasingly report on climate performance and net zero commitments and action. Examples of metrics include carbon foot printing, forward looking climate metrics, and stewardship and advocacy activities.
- Encourage the asset managers to take part to industry collaborative efforts on engagement and advocacy of stakeholders in the financial system to promote net zero alignment.
- In 2023–2025, develop our approaches further across asset classes, including different externally managed assets.

Engagement and active ownership

Engagement is an important part of driving real-world change and transition towards low carbon economy. Our engagement on climate includes various levels of the company from top management to thematic experts. In our view robust climate action comprises of transparent climate strategy including target setting, monitoring, and reporting and overall governance from the top management. In our view the following are part of such strategy, and we expect companies to work towards:

- Public commitment and target setting to greenhouse gas emissions reductions that are aligned with reduction pathways for limiting global temperatures rise to 1.5 degrees or well below 2 degrees on pre-industrial level temperatures. Target setting applying Science Based Target is the recommended standard where possible.
- Measuring all relevant greenhouse gas emissions of the seven different GHGs or classes of GHGs covered by the Kyoto Protocol.
- Communicating and reporting at least annually on climate performance, preferably based on Task Force on Climate Related Financial Disclosures, increasingly including scope 3 emissions.
- Continuous development of company climate approaches considering changes in the operating environment, evolution of climate science and best industry practice.
- Climate change is interconnected with other environmental and social issues. We also consider it important that companies consider other environmental issues such as biodiversity and natural capital and aim for high overall ESG performance and comply with international norms.

We engage directly with companies by ourselves, with other investors such as Nordic Engagement Co-operation, and as part of broader group such as Climate Action 100+. Our engagement approach is holistic, i.e., engagement is carried out by number of Ilmarinen staff including portfolio managers, thematic specialists, and management. We are also re-

vising our active ownership policy on voting and in 2022 we expanded our voting activities in foreign annual general meetings. We use service provider's sustainability policy on voting recommendations. We aim to further develop our engagement strategy going forward with outcome targets and monitoring indicators.

We also engage in dialogue with data and analytics and index providers, rating agencies, consultants, and other stakeholders to continuously improve climate data and analytics. This advocacy is typically carried out via dialogues, consultations, and collaborations.

Advocacy and collaboration

No single stakeholder or industry can achieve the scale of transformation required in the global economy. Advocacy and collaboration are crucial parts of global investor climate action seeking global economy limiting emissions in alignment with the Paris Climate Agreement. Financial industry has an important role in global climate action but no single stakeholder or even an industry can alone create the scale of transformation of the global economy that is necessary. One element of our climate approach is the participation into policy dialogue and campaigns aiming to advocate to climate action and net zero policy and regulation and enabling environment for low carbon solutions with policy makers, investment industry and other stakeholders.

We are members of organizations and initiatives such as IIGCC Paris Aligned Investment Initiative, Transition Pathway Initiative, a not-for-profit charity CDP (Carbon Disclosure Project) and Climate Leadership Coalition. We have joined the IIGCC with the view to together with other institutional investors find most effective portfolio decarbonization methods. We participate in various working groups under the IIGCC and take part in advocacy efforts. We are also member of other climate relevant forums and industry associations such as PRI, Finsif (promoting responsible investing in Finland), Finance Finland and The Finnish Pension Alliance Tela.

Monitoring, reporting and continuous improvement

We use climate data and analytics from several service providers and integrate these into our investment decision making, portfolio monitoring and risk management.

We expect that progress in attaining climate targets will not be linear by nature: at times our progress will exhibit leaps while at other times it is only incremental. Due to this we have set milestones for 2025 and 2030. To monitor our progress, we have established detailed performance indicators. Based on the principle of continuous learning and development we review our climate strategy and performance indicators periodically. We assess the effectiveness of measures we have put in place with the readiness for modifications where necessary.

Climate science, investor applications, including data and analytics, and our understanding continuously evolve. A number of global efforts are on-going, namely e.g. IIGCC, to establish investor best practices on climate. Currently these approaches do not yet cover all asset classes. We establish further asset class specific roadmaps in the period of 2023–2025.

We report annually on our climate performance as part of our annual report including Climate Related Financial Disclosures (TCFD) reporting. We have carried out TCFD reporting since 2019 (for 2018 portfolio) and continue committed to the reporting framework.

[Ilmarinen's Annual reports \(ilmarinen.fi\)](https://ilmarinen.fi)

[Ilmarinen's PRI reports \(ilmarinen.fi\)](https://ilmarinen.fi)

In climate reporting number of choices affect the results. These include for example choice of methodology, scopes, which greenhouse gases are included (Kyoto or also other gases with atmospheric warming potential) or selection of sample, i.e., which assets are chosen for the calculation.

There are various methods of calculating the carbon footprint of an investment portfolio. To increase transparency of reporting, Ilmarinen notes in its annual reporting, the choices made in collecting carbon footprint information. We report asset classes separately, when possible. This means for example reporting separately directly and externally managed listed portfolios' climate performance.

Governance

The underlying asset class specific roadmaps and other actions are implemented by respective teams in the Investment Department. The Responsible Investment Executive Committee and, at the highest level, the Board of Directors of Ilmarinen oversee the climate roadmap implementation in alignment with our 2035 net zero goal.

We report our progress annually. Our climate strategy is a living document that we assess, adjust, and develop on continual basis as climate science, international investor best practice and our learning evolve.

Direct listed equities and corporate bonds roadmap

Foreword: Considering climate aspect supports investor value protection

Environment, social and governance (ESG) aspects are integrated into all our investments in Ilmarinen direct listed equities and corporate bonds portfolios. Climate risk and related opportunities of low carbon economy are an important aspect of our ESG and responsible investment approaches. We as a pension insurance company have long term investment perspective. We believe that long-term investor value protection and generation is aligned with companies accounting for climate risks and grasping related opportunities.

Kari Eerola, Head of Fixed Income

Annika Ekman, Head of Direct Equity Investments



Introduction: We invest in transition

Ilmarinen has board approved commitment of net zero portfolio 2035. To operationalize the climate goal Ilmarinen is establishing asset class specific roadmaps. Ilmarinen direct listed equities and corporate bonds portfolios combined value is almost one quarter of our total pension assets under management and therefore plays an important role in our climate action. This roadmap describes our climate commitments, action we are taking and how we monitor and measure our climate progress through milestones and performance indicators on our direct listed equities and corporate bonds portfolios. We established the roadmap for our direct listed equity investments in 2021 and included direct corporate bonds in 2022.

We aim to realize our climate goal through own action on portfolio construction and through collaboration, engagement, and advocacy. We are members of various global investors alliances and collaborative efforts, e.g., Institutional Investor´s Group for Climate Change which is a collaborative effort to find practical measures for net zero portfolios. Our approaches aim to be aligned with best international investor practice.



Our climate roadmap is a living document that we assess, adjust, and develop on a continuous basis as the climate science, international investor best practices and our learning evolve.

Our approach is built from the following key themes

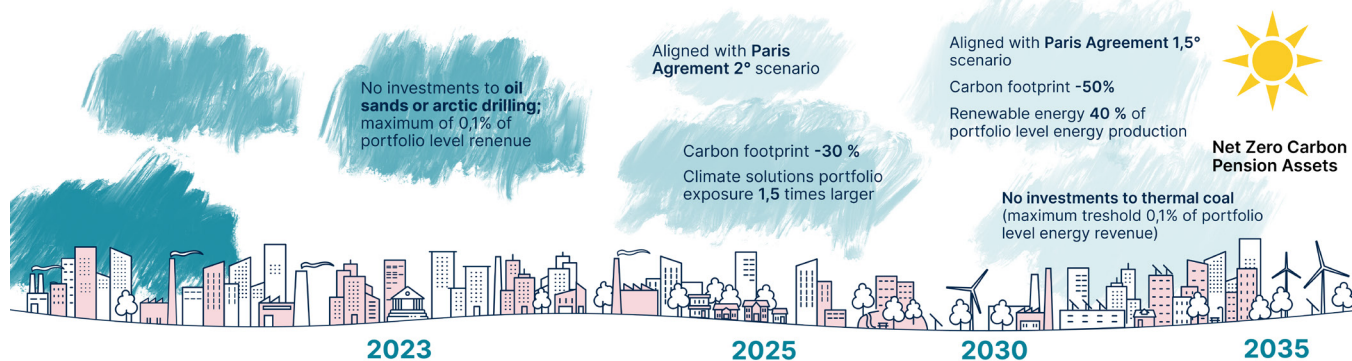
Portfolio construction: analysing and mitigating climate risk and exposure to climate solutions and companies in climate transition.

Engagement and active ownership: engaging through various channels and active ownership integrating climate considerations.

Advocacy and partnerships: memberships in various collective efforts in the financial industry working towards net zero portfolios and advocating climate action by all stakeholders.

Portfolio level key targets for direct listed equities and corporate bonds portfolio:

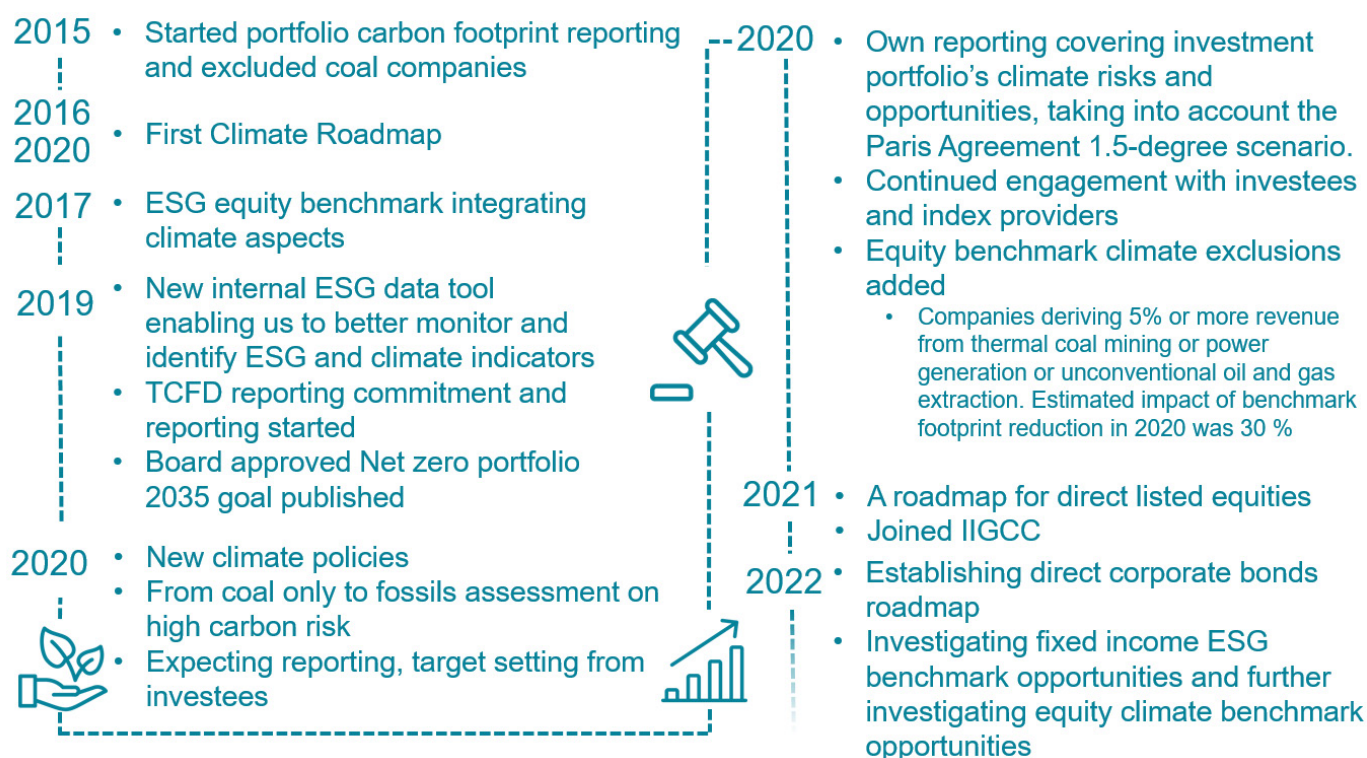
We invest in a sustainable future – net zero carbon direct listed equities and corporate bonds



<p>Past actions</p> <p>First Ilmarinen climate roadmap 2016-2020</p> <p>New roadmap exclusions</p> <p>Direct listed equities 2021</p> <p>Corporate bonds 2022</p> <ul style="list-style-type: none"> No investments in companies planning new thermal coal investments Companies deriving more than 1% of revenue from thermal coal extraction Additional screening and scrutiny for high emitting sectors 	<p>Measures going forward</p> <p>High emitting sectors have the greatest need and potential for transition. Expanding our high carbon risk assessment universe means gradually lowering the threshold of investees' high carbon business segments and tightening our climate criteria for investable companies.</p> <p>New exclusions: thermal coal power and thermal coal value chain, oil sands and arctic drilling</p> <p>Benchmark solutions: use of ESG and climate benchmarks</p> <p>Climate solutions: while decarbonizing our portfolio we continuously seek to invest in low carbon opportunities</p>
<p>Continuous learning development of the roadmap, advocacy, engagement</p>	
<p>Investee climate action expectations: Public commitment and target setting to greenhouse gas emissions reductions that are aligned with Paris Agreement</p>	

Prior climate action on direct listed equities and corporate bonds

The previous climate roadmap was established in 2016 and ended in 2020. The outcome of the roadmap was reported in the 2020 annual report, and we reached most of the goals. The portfolio carbon footprint (WACI) for direct listed equity and corporate bonds portfolios declined⁴ and the United Nation's Sustainable Development Goals (SDG) contribution of equity investments was nearly doubled. The goal on full Paris alignment of selected hard-to-abate sectors (fuel, utilities, road vehicles) was not met as the Paris alignment of the selected sectors varied between 30 and 67 per cent.



Key direct listed equities and corporate bonds climate action

Defining our investable universe and portfolio construction policies

- We apply a combination of climate related data points and frameworks when we assess credible transition efforts by companies.
- For non-listed issuers we utilize data when available, both reported and estimated data from data providers.
- Current exclusions:
 - * Companies planning new thermal coal investment: starting 2021 we divest and exclude in our direct listed equity portfolio and starting 2022 do no new investments in our direct corporate bonds portfolio.

⁴ The footprint reduction (WACI) was approximately 6% noting that our portfolio changed significantly due to a merger in 2018. The merger resulted in significant changes in the portfolio so that the baseline from prior to the merger is no longer comparable⁵

- * Companies generating thermal coal extraction revenue: We divest and exclude starting 2021 in our direct listed equity portfolio and 2022 in our corporate bonds portfolio⁵.
- Climate policies
 - * We aim to align with IIGCC Net Zero Investment Framework (later NZIF)⁶ and identify most material sectors from climate emissions perspective by applying revenue based high carbon risk screening⁷. The high carbon revenue threshold will be gradually lowered between 2022 and 2025 which means expanding the universe of companies falling into our deeper climate assessment. For companies exceeding threshold we screen company climate targets and climate performance against peers and will tighten the criteria by 2025 to identify the best transitioning companies.
 - * We are also developing analytical approach to better assess investees' alignment according to IIGCC NZIF criteria. We aim to set a quantitative target on share of net zero, aligned or aligning assets of portfolio in addition to our current portfolio level alignment target. In 2021 the share of Paris aligned investments in our direct listed equity portfolio was around 40 per cent based on our service provider's methodology. Our current target is to increase the share of the aligned investments to support the portfolio level alignment target.
- We address coal and fossil fuels through specific policies.
 - * Screening for oil sands and arctic drilling-based revenue with portfolio level exit by end of 2023⁸.
 - * Screening for thermal coal power generation revenue with portfolio level exit by 2030⁹.
- We screen for norm violations, including environmental norms. Norm violators can be invested in and held only if engagement process is on-going or can be started and progresses.
- Benchmarks:
 - * We are applying since 2017 ESG equity index benchmarks that in 2020 integrated further climate consideration. In 2021 we continued to monitor equity climate benchmark development observing for example Paris Aligned Benchmark guidance by the EU and other market practice.
 - * Wide range of sectors are needed in global economy, thus, we do not apply sector exclusions or strong sectors tilts that avoid the hard to abate sectors and, thus, create index level carbon footprint reduction through sector-based avoidance. Our approach emphasizes engagement for emission reductions in the hard to abate sectors.
 - * In 2022 we were actively in dialogue with market stakeholders to scope new climate equity index solutions and monitored the fixed income ESG index opportunities.
- Climate solutions and opportunities:
 - * Investing in climate solutions supports the real economy decarbonisation.
 - * We continue to work closely with our investment team, external managers, companies, and other stakeholders on emerging trends such as technologies and business models that increase our understanding of investing in climate solutions.
 - * We assess investees' revenues from climate solutions based on current methodologies

5 Company level revenue threshold 1%

6 [Net zero investment framework implementation guide \(iigcc.org\)](https://www.iigcc.org/implementation-guide)

7 We can only invest in a company exceeding our threshold of high carbon risk operations based on a more detailed assessment where we evaluate, among other things, company's emission reduction targets, intensity evolution and position in its peer group. We use the methodology and categories provided by MSCI. Further information can be found on our responsible investment guidelines [Responsible Investment Guidelines \(ilmarinen.fi\)](https://www.ilmarinen.fi/responsible-investment-guidelines)

8 Portfolio level threshold 0.1%

9 Portfolio level threshold 0.1%

available utilizing data from service providers. Going forward, we are also potentially able to utilize EU Taxonomy data on revenues and capex to identify the best opportunities.

- * Carbon handprint (or scope 4/avoided emissions) refers to reduction of the carbon footprint of users of the product or service. Carbon handprint can also refer to the positive impact that using a product or service has compared to other products or services in the same category. We actively monitor the evolving carbon handprint and portfolio netting related methodologies.
- Continuous development of new targets and key climate action points.
 - * We investigate portfolio level targets based on absolute emissions and physical intensities.

We integrate climate and ESG considerations into investment decision making

- **ESG and climate integration:**

We have data systems that enable ESG and climate data feed directly into the trading platform. We have company level backward and forward-looking data and analytics on carbon footprint, climate assessment performance against peers and temperature pathway in line with the Paris Climate Agreement. In addition, we continue investigating a range of different approaches to ESG data and frameworks, that can continue to support the identification, as an example, the risks of stranded asset or climate opportunities.

- **Management of risk and exposure to opportunities:**

We aim to both manage climate risk and gain exposure to low carbon solutions. Climate risk management includes guiding policies on investment selection at company level, such as intensity metrics, climate performance against peers, credible climate goals and temperature alignment assessment. Climate solutions requires exposure to companies generating revenues from products and services that provide solutions for low carbon economy. However, common definition of climate solutions is still emerging.

- **Climate transition:**

While managing climate risk and gaining exposure to climate solutions we invest in companies in transition or with potential to take significant action on transition. This means in practice companies that are significant emitters today but have a credible pathway to strategically transform their business to become compatible with low carbon economy. In our current approach we analyse companies with high carbon intensity. The high carbon revenue threshold will be gradually lowered between 2022 and 2025 which means expanding the universe of companies falling into our deeper climate assessment. For companies exceeding threshold are analysed based on their climate performance against peers and their climate target setting. Transition analysis will be developed further and potential items in transition analysis include for example climate target setting in short, medium and long term that is aligned with Paris Climate Agreement and is based on Science Based Targets; climate strategy and reporting, including investment planning in alignment with the climate strategy and reporting on absolute and relative emissions evidencing the implementation. Also, governance aspects are relevant in transition analyses, including management remuneration schemes, defined role of management and board of directors.

- **Divestment:**

In management of climate risk divestment is one tool in our toolbox. This means reducing exposure to thermal coal and fossil dependent companies that do not consider climate risk to their business. The divestment may result from internal policies that deem company entailing too high and unmitigated climate risk and/or from unsuccessful climate themed engagement.

Ilmarinen as an institutional investor has highly diversified portfolio and invest in global value chains. For decarbonizing the global economy, high-emission sectors also need capital to enable low carbon transition. In practice, for example, windfarms require inputs from high emitting sectors (e.g. materials such as steel and concrete). Thus, we continue to invest into sectors where decarbonization is crucial yet challenging. Therefore, deeper analysis of technologies and policies help us to identify the best performers within these sectors.

Monitoring and reporting

- We utilize both bottom-up, i.e. company level, and top-down, i.e. portfolio level analysis to monitor our portfolio. We have internal company and portfolio level climate and ESG specific analysis tool that enables different levels of analysis at portfolio level or e.g. at sub-portfolio or sector level. This analytics enables internal monitoring and periodic reviews against our targets.
- We are committed to reporting as per Task Force for Climate Related Financial Disclosure (TCFD) principles. In climate reporting number of choices affect the results. These include for example:
 - * choice of methodology,
 - * scopes, which greenhouse gases are included (Kyoto or also other gases with atmospheric warming potential) or
 - * selection of sample, i.e. which assets are chosen to the calculation.
 - * For carbon intensity there is also various methods to calculate the intensity.
- To increase transparency of reporting Ilmarinen notes in its reporting the choices made. We report assets classes separately, when possible. This means for example reporting separately directly and externally managed listed portfolios' climate performance.

Engagement and active ownership

We engage with companies on various ESG themes, including climate action. With engagement we aim to support companies in transition to low carbon economy by improving company's behavior and performance, increasing its awareness on material climate risks and on best practices to manage those risks. In addition, our aim is to inform companies on our expectations.

We engage both directly, through service providers and through collaborative efforts with other investors such as Nordic Engagement Co-operation, and as part of broader group such as Climate Action 100+. In addition to actual engagement processes, our portfolio managers discuss with portfolio companies on climate matters.

We have identified the highest portfolio emitters in both absolute (so called financed emissions) and relative terms (weighted average carbon intensity). We prioritise engagement efforts with these companies as well as high emitting sectors in general. In 2021 our direct engagements alone covered more than 40 per cent of direct listed equity portfolio's total emissions. Our aim is to increase our climate engagement coverage both in equity and bond portfolios targeting also high emitting companies with no quantified decarbonisation plan in line with IIGCC Net Zero Investment Framework recommendations.

We actively exercise our voting rights, including matters on company climate actions. In 2022 we expanded our voting activities in foreign annual general meetings. We use service provider's sustainability policy on voting recommendations. Our service provider also analyses companies' climate strategies submitted to shareholder votes. Our voting records are publicly available on our website¹⁰.

In Finland we participate in several nomination committees and through the nomination committees work in collaboration with other committee members to ensure sustainability and climate competence at board level.

Whereas engagement and active ownership are already considered key tools in responsible equity investing, engagement in fixed income has only recently started to evolve. Bond investors main window for engagement is before the issuance. In Finland we can discuss with companies on relevant ESG criteria that can then further be implemented in sustainability linked bonds terms.

We aim to further develop our engagement strategy going forward with outcome targets and monitoring indicators.

We consider that company robust climate strategy and action and long-term investor value protection and generation are aligned

Investee climate action expectations

- Public commitment and target setting to greenhouse gas emissions reductions that are aligned with reduction pathways for limiting global temperatures rise to 1.5 degrees or well below 2 degrees compared to pre-industrial level temperatures. Target setting applying Science Based Target is recommended standard where possible.
- Measuring all relevant GHG emissions.
- Communicating and reporting at least annually on climate performance, preferably based on Task Force on Climate Related Financial Disclosures, increasingly including scope 3 emissions.
- Continuous development of company climate approaches, taking into account changes in the operating environment, evolution of climate science and best industry practice.
- Climate change is interconnected with other environmental and social issues. We also consider important that companies consider other environmental issues such as biodiversity and natural capital and aim for high overall ESG performance and comply with international norms.

10 [Ownership policy \(ilmarinen.fi\)](#)

Advocacy and partnerships

We engage in dialogue with various market participants and stakeholders, for example ESG and climate data providers, index providers, asset managers and non-governmental organizations to ensure continuous development of climate approaches of the financial industry.

We participate in a number of important investor alliances on climate to advocate both public and private sector climate action to meet the goals of the Paris Climate Agreement.

Special features of corporate bonds investments

Fixed income markets and decarbonisation

Fixed income markets play an important role in supporting companies' decarbonisation strategies. Green bonds enable direct funding towards climate change mitigation activities (e.g. energy efficiency) whereas sustainability linked bonds are more flexible in terms of use of proceeds and suitable for wider range of issuers. Markets of labelled instruments have grown significantly over the last decade. In Finland for example, more than half of the bonds issued in 2021 were ESG labelled bonds, and green bonds issuance has also been strong.

Implications of corporate bonds portfolio composition

Interest rates affect investing in bonds. Low interest rates environment incentives investing mainly in high yield instruments whereas investment grade bonds in general become a more attractive investment opportunity in a higher interest rate environment. In general, concentrated portfolios' climate indicators for example are more sensitive to portfolio composition or methodological changes due to higher weights in individual constituents.

In addition to direct corporate bonds investments covered in this roadmap, we also monitor our external managers' climate work. Most of our managers already have climate policy and various action points in place. Going forward, we will investigate the robustness of our managers' climate action. In addition, we aim to set further potential expectations and requirements for our external managers to support our climate targets. These requirements may relate for example to net zero commitments, targets, footprint and alignment reporting, and climate relevant active ownership approaches for example. We will be engaging with the laggards.

We are closely monitoring the progress of scope 3 standards and we might consider incorporating scope 3 emissions into our climate targets in relevant sectors in the future. We have a high weight in financials in our corporate bonds portfolio and we are investigating scope 3 emissions related to their investments and financing activities. We also monitor if banks and other financial institutions in our portfolio have an environmental investment and/or credit policy in place.

Benchmarks

Fixed income ESG and climate index market is still developing. There are solutions available but currently mainly in investment grade. High yield ESG solutions are still under development according to index providers. We are continuously investigating the market to find a suitable solution for us.

ESG indices can be constructed by adding an ESG layer on top of the normal index eligibility criteria, such as credit rating. Index constituents' weights can be adjusted based on their ESG rating. Index providers can also use exclusions criteria, controversies screening or green bond criteria when building ESG indices.

There are also climate indices available that adjust constituents' weights based on issuer climate performance. Based on our findings, some ESG index solutions already provide good carbon footprint performance compared to their parent indices.

Wide range of sectors are needed in the global economy. Thus, we do not apply sector exclusions or strong sectors tilts that avoid the hard to abate sectors and, thus, create index level carbon footprint reduction through avoidance.

Green bonds

Widely used climate frameworks today do not recognize separate carbon footprint methodology for green bonds or the projects they are funding. The total emissions of the issuer will be counted as part of the portfolio emissions same way as if it was a conventional bond. In other words, based on current emission accounting methods, green bonds are not a direct solution to reduce portfolio carbon emissions.

However, when proceeds are used to green investments, green bonds issuances support companies' transition plans, and in this manner, companies are better placed in mitigating climate change or adapting towards a low carbon economy and contribute to a reduction of companies' emissions in longer term. We continuously monitor the suitability of green and other labelled bonds in our climate strategy.

There are certain limitations especially concerning green bonds. Studies¹¹ show evidence of a structural pricing premium for green bonds, potentially resulting from rapid increase of the green bond market and the imbalance in supply and demand. Green bonds may present lower yields as conventional bonds and this difference is known as the green premium i.e. so called greenium. From investor's perspective, there is no fundamental difference between a green bond and a conventional bond. Green bond holder carries the same credit risk of the issuer as the holder of a conventional bond.

In comparison to other labelled instruments, green bonds can be issued by fairly limited range of issuers. Green bonds have also typically been fairly small in size. Therefore we also look into the climate impact of other labelled instruments.

We have set total portfolio level target to increase our investments in climate solutions. Green bonds are one sub-category in the framework we currently use to identify these investments. EU taxonomy data will also help us measuring the exposure to climate solutions. Upcoming EU Green Bond Standard is expected to bring taxonomy directly to bond markets.

In addition to EU standard, there are several other green bond standards and guidelines available, such as Climate Bonds Standard CBS by Climate Bonds Initiative and Green Bond Principles (GBP) by International Capital Market Association, providing a framework for green categories in use of proceeds, evaluation, management and reporting, as well as external review, certification and assurance services.

Data coverage

Corporate bonds market cover both listed and private markets. Due to data availability issues, in this roadmap, we first incorporate listed issuers and those non-listed issuers which are covered by our data provider. Coverage on backward looking climate data is high, typically above 90 per cent of portfolio. However, meaningful part of the emissions is modelled by our data provider due to a lack of company reported data. On the other hand, forward looking data coverage remains still low, at below 50 per cent. Going forward, we plan to in-

11 [e.g. Slimane, B et al \(2020\). Facts and Fantasies About the Green Bond Premium \(research-center.amundi.com\)](https://www.iese.edu/research-center/amundi.com)

clude the remaining non-listed issuers at on-going basis into the climate roadmap as data becomes available. Some of these companies are domestic so we also have good capabilities to engage with the issuers and support them to action their reporting on emissions and target setting objectives.

Debt instruments are mapped to the first publicly listed entity in the instrument's parent chain (starting with a bond's issuer, then its immediate parent, and finally its ultimate parent). Bonds with no public parent are mapped to the issuer (for example state owned entities).

Governance

This Climate Roadmap for direct listed equities and corporate bonds is part of Ilmarinen Climate Roadmap and Responsible Investment Policy. Our Responsible Investment Executive Committee, including CEO and CIO, receive reporting and monitor the implementation of the roadmap. At the highest level, the Ilmarinen Board or Directors receives reporting on and monitors of the Climate Roadmap and the underlying asset class specific climate roadmaps with the view to attain the 2035 target.

The Listed Equity Team and Fixed Income Team, in collaboration with the Responsible Investment Team, establishes, implements and monitors the roadmap.

Domestic Real Estate Climate Roadmap

Foreword: Industry collaboration is important

In this roadmap we describe our interim targets, the actions identified to achieve them and the indicators we use to monitor our progress towards our net zero carbon target in the investment of pension assets by the end of 2035.

The climate actions in our roadmap are highly dependent on multiple factors beyond our control.

These include, for example, city planning, and the climate action taken by the construction and energy sectors, as well as by materials suppliers. Taking these factors into consideration has been an important part of drawing up the roadmap.

At this stage, the measures concern the most significant sources of emissions. It is clear, however, that as the work progresses, we will leave no stone unturned. Going forward, we will increase our collaboration with industry actors who share our ambitions and will help us achieve our goal. Collaboration between various sectors and value chains plays an essential role in achieving both the climate goals set out in the Paris Agreement and Finland's national climate goals.

Tommi Aimonen, Head of Domestic Real Estate Investments



Introduction: Sustainability and climate aspects guide our real estate investments.

This asset-class-specific roadmap is part of the climate roadmap that covers the investing of pension assets as a whole. The climate roadmap for domestic real estate was originally published in 2021 and we are now updating it. Our Responsible Investment Policy and related guidelines describe in further detail how sustainability is integrated into each and every investment decision. In addition to climate issues, the policy and guidelines encompass other environmental, human rights and stewardship themes. Further guidelines on real estate investments can be found in our guidelines for combating the grey economy.

[Responsibility in investments - Ilmarinen \(ilmarinen.fi\)](#)

[How we operate: Combating the grey economy \(ilmarinen.fi\)](#)

Sustainability and climate aspects guide our real estate investments. They are taken into consideration throughout the building's life cycle from design to construction and from use to demolition.

The built environment plays a major societal and economic role. The real estate and construction sector is responsible for more than 40 per cent of all greenhouse gas emissions globally. The built environment is responsible for more than a third of the energy consumption in Finland while causing about a third of the climate emissions from Finnish consumption. Currently, the majority of the emissions in the sector come from in-use energy consumption.

Direct domestic real estate investments make up around 8 per cent of the entire investment portfolio. Ilmarinen is one of the largest real estate owners and developers in Finland.

We want to be an inspirer and a leader. Together with our partners and the construction value chain, we want to create future climate solutions in the real estate sector. The transformation of the sector requires us to think outside the box.

Our climate roadmap takes the building's entire life cycle into consideration. We aim to reduce both use and construction phase emissions. We aim to adopt construction solutions that are as low-carbon and sustainable as possible. The optimisation of energy efficiency also plays a major role. Structural energy efficiency and sensible in-use energy consumption go hand in hand with a low-carbon economy.

Increasing both energy and material efficiency and decarbonising the energy and materials used are key, as well as circular economy solutions. The transition to a net zero economy will take place gradually. The first step was to achieve net zero carbon real estate investments for in-use electricity in 2021. For district heat, the net zero carbon target will be reached by the end of 2030 at the latest. It is possible that the life cycle of buildings will not be fully decarbonised by 2035. That is why compensation can be used as a complementary solution to achieve a net zero carbon life cycle for buildings.

The principles and targets set out in the roadmap will be implemented through internal guidelines concerning maintenance, design and property development.

Extensive co-operation throughout the value chain is required to achieve the climate goals. For the roadmap, we interviewed our key partners and stakeholders, such as energy utilities, materials suppliers and other real estate owners, as well as expert organisations in the industry. The roadmap is also backed by a comprehensive written fact-finding study. We take note of the climate roadmaps of other industry players and the future changes in energy emission factors. We have outlined the capabilities and the timeframe we have for reaching the lowest possible emissions and in-use energy consumption together with other market participants. These discussions have opened new doors for co-operation and allowed us to share ideas for a low-carbon built environment.

2021–2022 achievements and key action points

As one of the first steps in implementing our domestic real estate climate roadmap, we have built an internal training program for the whole real estate team. We have organized several sessions with external and internal speakers. We have also informed our tenants and partners about our climate targets and actions.

In 2022 we also engaged with authorities and industry operators on energy efficiency program methodology to better incorporate extracted air heat recovery (PILP) and heat pumps

energy efficiency potential. This change in the methodology encourages deployment of above mentioned technologies.

Already the first year of roadmap implementation, we were able to advance one of our targets: LEED Volume certification target. The original target was to cover 50 per cent of existing commercial properties by 2025 and 100 per cent by 2030. Now we aim to cover all existing commercial properties already in 2025.

We have introduced indoor climate management system which enables us to optimize energy efficiency and ensure healthy, safe and comfortable indoor conditions for our tenants. We continuously improve the system, including for example AI integration.

We are also testing and implementing practical circular economy solutions. At one of our sites, we have worked closely with demolition consultants and will be utilizing some of the existing materials in the renovation of the property. Some of the demolished products will be recycled through recycling platforms to be used in other buildings.

We participate in national "Down a degree" campaign to save energy. Although the campaign is launched to relieve the immediate energy crisis, it also supports our long-term climate targets.

Other examples of introducing the roadmap in practice include participation in CO2 DataHub project and implementing our waste management target also through our service management contracts by integrating reaching our waste management target as one bidding criteria. In addition, we have added construction and demolition waste recycling targets to construction contracts. We cannot achieve our targets without engaging our service providers and tenants.

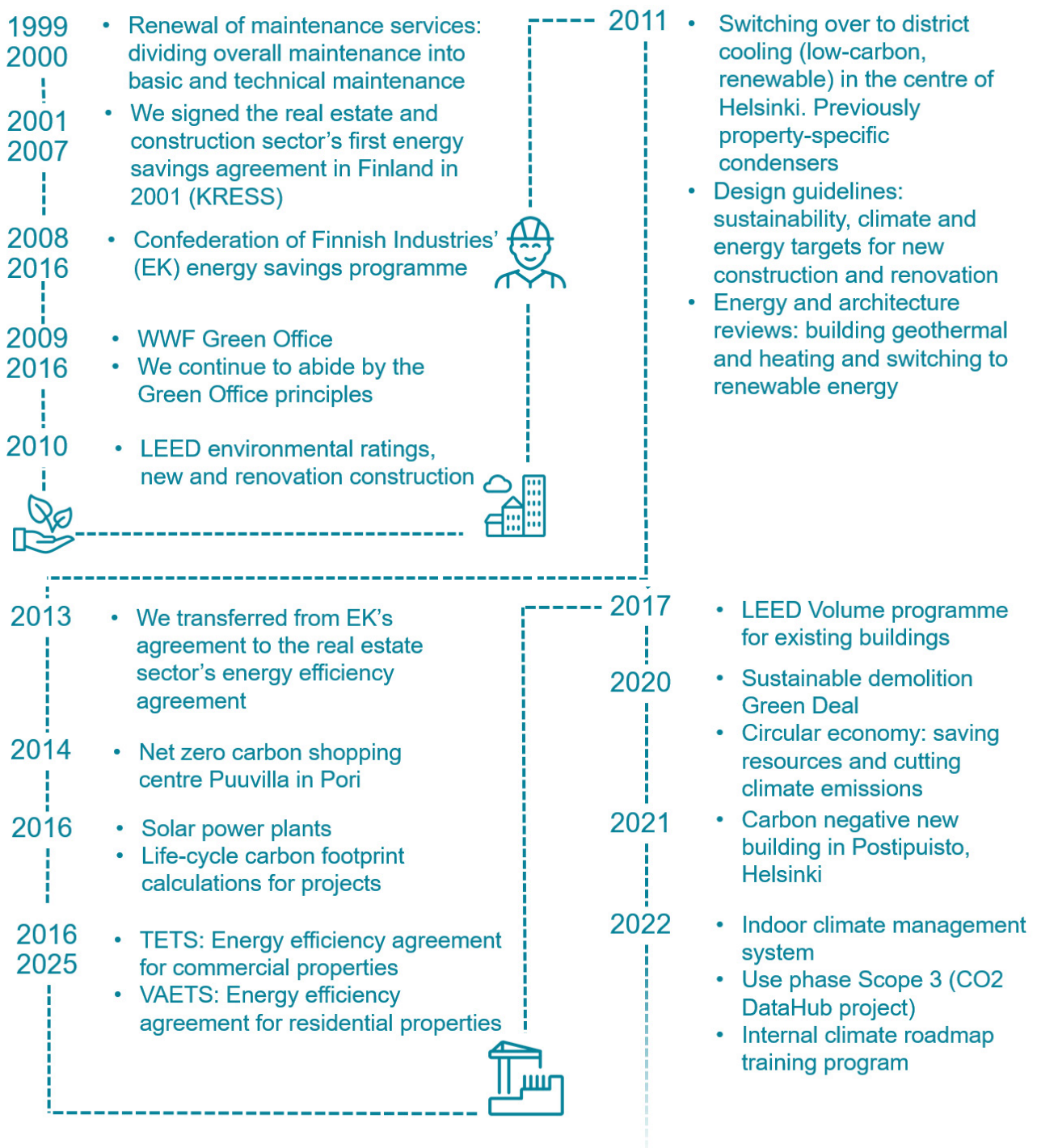
Solutions for measuring CO₂ emissions

In 2022, we participated in the CO2 DataHub research and development project driven by Vastuu Group Oy. The project investigated concrete customer needs and devised solutions for measuring, evaluating and data-based management of the entire supply chain of companies and cities operating in the built environment. The most significant customer challenge was to find ways to determine indirect emissions based on data. The end result of the project was, among other things, a data management model that combined the scope 1–3 emission source data of the property's maintenance operators so that we got an overall picture of the total emissions caused by the property's maintenance. With the help of the information management model and the business applications introduced based on it, we lead our network towards maintenance operations with lower emissions.

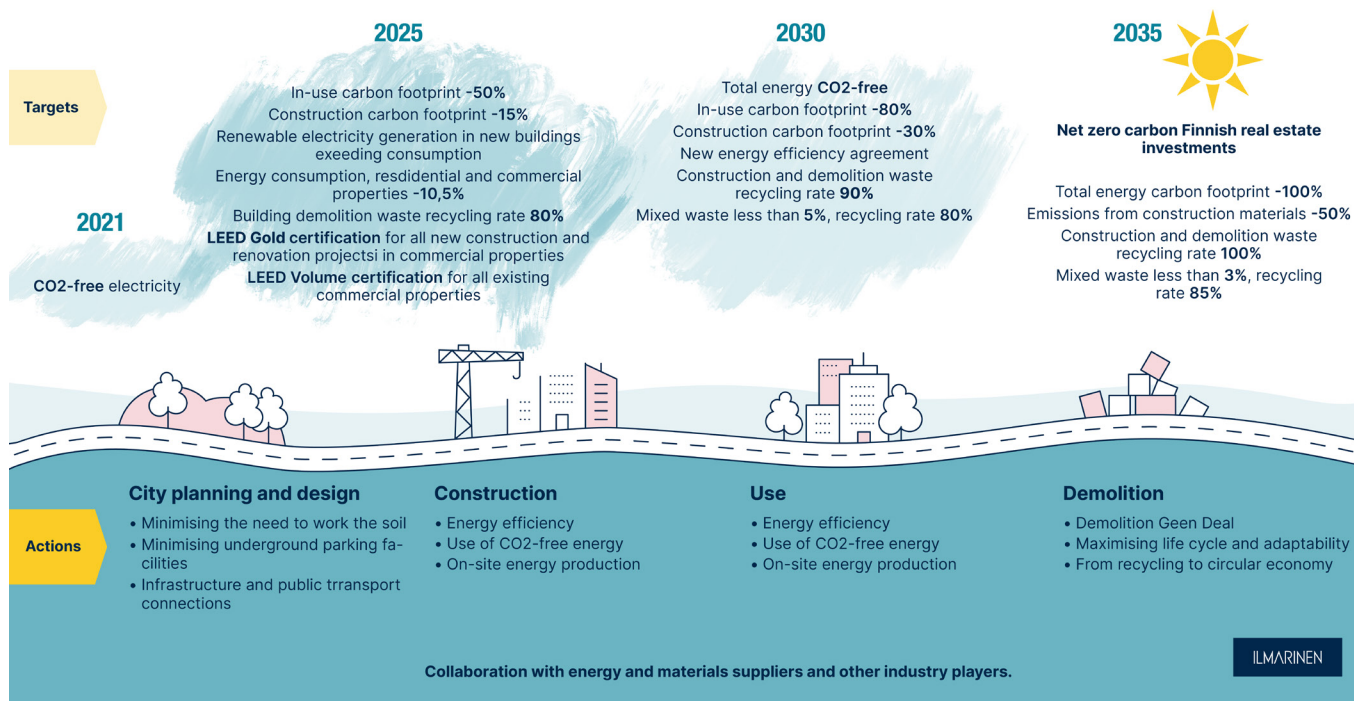
We are also actively ensuring taxonomy alignment. Our new buildings are planned to be compliant with taxonomy criteria. We are also investigating taxonomy alignment of existing buildings.

Backed by a long track record of sustainable and responsible real estate investment

We have engaged in systematic sustainability and climate action for already more than 20 years. Our role and our track record in developing the industry have been recognised by, for example, the Developer of the Year 2019 award granted by RAKLI (Finnish association for professional construction and real estate). This is a solid foundation to work towards even more ambitious goals.



We invest in a sustainable future – net zero carbon domestic real estate investments and construction 2035



Commitments and collaboration

Collaboration between all the societal parties is required in order to reach the goals of the Paris Agreement. We are members in several groups that promote construction sector collaboration and climate solutions.

We are a member of **Green Building Council Finland** and we are considering joining the **Net Zero Carbon Buildings Commitment**, which is a promise to decarbonise the energy use in buildings by 2030.

We have also joined the **Green Deal**, which promotes sustainable demolition.

Furthermore, we are an **ambassador of the FIGBC #BuildingLife project**. The joint project involving ten European Green Building Councils aims to make the reduction of emissions from materials a key climate goal for the EU, its member states and companies.

Ilmarinen is also a member of the **The Institutional Investors Group on Climate Change (IIGCC)**. IIGCC members work together to find ways to achieve a net zero carbon investment portfolio, including real estate investments.

Climate goals must be sound. We will look into the setting of a verified climate goal in line with the **Science Based Targets** together with our partners.

Key goals

2025 Low-carbon materials, low-emitting electricity, waste and resource efficiency

Carbon footprint¹²

- The construction phase carbon footprint decreases 15%¹³.
- The use phase/in-use carbon footprint decreases 50%¹⁴ compared to the average in 2018–2020.

In-use energy

- The specific emissions from the district heat used by our buildings will be reduced by -33% by the district heating utilities compared to 2021.
- Electricity¹⁵: 100% CO₂-free from 2021 on.
- Renewable electricity generation in new residential buildings¹⁶ exceeding their own consumption.
- In other new buildings and in existing buildings, we aim to make use of on-site renewable energy generation opportunities¹⁷.

In 2021, already more than half of new residential buildings generated electricity in excess of their consumption using local renewable energy solutions

Energy efficiency

- In addition to lower-emitting energy, the energy efficiency measures taken in buildings are crucial.
- Commercial properties (TETS): Energy savings of -10.5% by 2025 compared to 2017 (minimum under the programme 7.5%).
- Residential buildings (VAETS): Energy savings of -10.5% by 2025 compared to 2017 (minimum under the programme 7.5%).

Waste

- Construction and demolition waste recycling rate 80% (design guidelines).
- Waste management for existing buildings, mixed waste less than 9% and targeted recycling rate 75%.

In 2021, more than half of settlers produced electricity over their own consumption using local solutions of renewable energy. Our current design guidelines and contracts require a construction and demolition waste recycling rate of 70 per cent. In 2021, the outcome is close to 70 per cent. The target is 80 per cent by 2025.

12 In target setting and reporting, we use specific emissions per net square metres.

13 The benchmark we use is based on the average actual and estimated footprint of the construction of residential buildings completed in 2020–2022.

14 Includes purchased heat and electricity. Weighted average with the real estate type allocation in 2018.

15 All of the targets concern Ilmarinen's own electricity (Scope 2). We take into account the fact that in some buildings, all of the electricity is currently supplied by Ilmarinen and that the electricity consumed by the tenant and Ilmarinen cannot be told apart. In future, the tenant will be able to purchase their own electricity themselves in all the buildings. We encourage and guide our tenants to purchase electricity with the lowest possible emissions.

16 Applies to buildings where own electricity generation is technically feasible and permitted.

17 Applies to buildings where renewable energy generation is technically feasible, permitted and financially sound.

2030 CO₂-free heat and electricity

Carbon footprint

- The construction phase carbon footprint decreases 30%¹⁸.
- The use phase/in-use carbon footprint decreases 80%¹⁹ compared to the average in 2018–2020.

In-use energy

- CO₂-free.
- The specific emissions from the district heat used by our buildings will be reduced by at least 70% by the district heating utilities compared to 2021. Any remaining share of fossil energy will be replaced by purchasing CO₂-free district heat.
- Electricity: CO₂-free from 2021 on.
- Renewable electricity generation in new residential buildings²⁰ exceeding their own consumption.
- In other new buildings and in existing buildings, we aim to make use of on-site renewable energy generation opportunities²¹.

Energy efficiency

In addition to low-emitting energy, it is essential to improve the energy efficiency of buildings. The current energy savings agreements in place in the real estate sector will end in 2025. At that point, we will examine joining the next programme and set more detailed targets for improving energy efficiency.

Waste

- Construction and demolition waste recycling rate 90%.
- Waste management for existing buildings, mixed waste less than 5% and targeted recycling rate 80%.

Simply switching over to renewable energy is not enough. Improving energy efficiency in new construction and renovation is crucial. In addition to increasing energy efficiency, the aim is to make use of all possible renewable energy sources.

Net zero carbon 2035: Energy-efficient and safe buildings that are made from carbon-free or carbon-efficient materials and which use and generate renewable energy

Materials

- Emissions from materials will decrease by 50% from 2017, in line with the industry target.

18 The baseline is based on the average actual and estimated footprint of the construction of residential buildings completed in 2020–2022.

19 Includes purchased heat and electricity. Weighted average with the real estate type allocation in 2018.

20 Applies to buildings where own electricity generation is technically feasible and permitted.

21 Applies to buildings where renewable energy generation is technically feasible, permitted and financially sound.

In-use energy

- We expect the district heating utilities we use to supply CO₂-free energy in 2035.
- Electricity CO₂-free from 2021 on.
- The total energy carbon footprint will decrease by 100% compared to the average in 2018–2020.

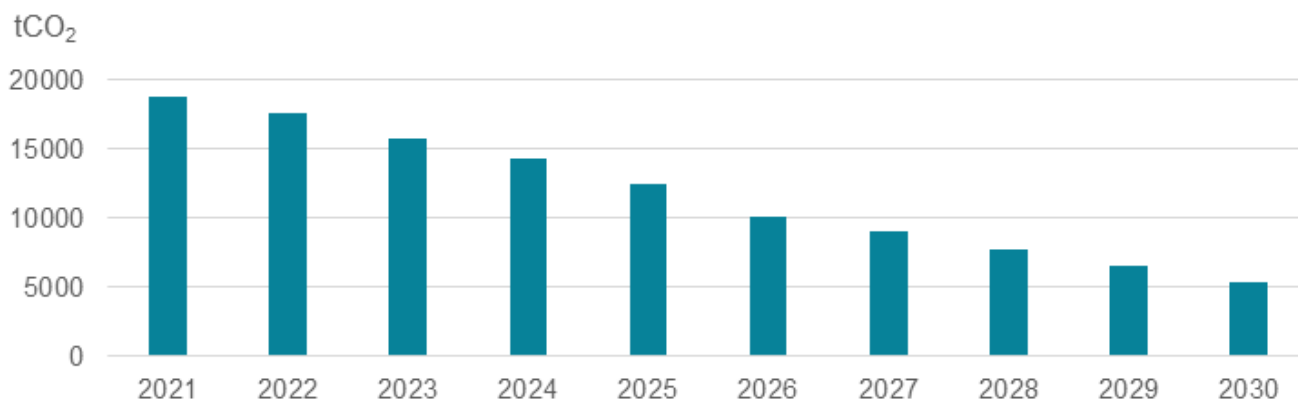
Energy efficiency

- The real estate energy efficiency programmes will continue.

Waste

- Construction and demolition waste recycling rate 100% of recyclable waste.
- Waste management for existing buildings, mixed waste less than 3% and targeted recycling rate 85%.

Figure 1 The cumulative specific emissions from district heating for the Finnish real estate portfolio, estimated based on the energy utilities' emission factors 2021–2030, the real estate portfolio in 2021 and the property-specific energy consumption in 2020.



In our climate action related to energy, we apply the principle of mitigation hierarchy:

1. Energy efficiency measures.
2. Increasing our own renewable energy.
3. In addition, purchased and ear-marked renewable energy through, for example, a wind power PPA (Power Purchase Agreement).
4. Purchased renewable energy with a guarantee of origin.
5. What cannot be avoided or reduced will be compensated for

Actions and targets by phase

City planning and land use

A change in the regulatory environment is required in order to take into account and optimise low-carbon and circular economy solutions and bio-diversity already at the city planning stage and subsequent design steps. A new kind of climate-smart regulatory framework is needed.

Land use is a key determinant of carbon footprint. City planning that affects land use is carried out by towns and cities and various actors together.

We aim to engage with city planners to promote the integration of climate issues. In general, the engagement takes place through discussions with authorities and in particular, through collaborative city planning by identifying the climate impacts of the proposed plan and calculating the carbon footprints already when preparing the city plan. We bring our own strong climate goals and approaches to the table.

In our own city plans, we also aim to integrate other significant sustainability themes in addition to climate issues. These include biodiversity, social aspects, accessibility and green areas. For example, we aim to allocate roof tops either for solar power generation or for use as green surfaces.

In the city planning phase, we look into the low-carbon properties of the materials. We do not commit to a single material in order to be able to choose the best solutions with the lowest carbon emissions for every building.

Practical examples of climate action in the city planning phase

- Minimising the need to work the soil (foundation conditions).
- Preserving unbuilt land on the plot to enable the management of storm water and the growth of trees.
- Taking into account existing and future infrastructure and public transport: the best possible existing or future connections.
- Structures that are already in place on the plot will be preserved where possible or the materials will be utilised on-site in, for example, conversions.
- Increasing the efficiency of land use through infill construction.
- Maximising green areas beyond standard requirements: e.g. green roofs and evergreen yards, taking into consideration the use of pollinator-friendly plant species.
- Parking space solutions: e.g. avoiding underground parking facilities, because they require the use of high-emitting materials.
- Taking into consideration the energy solutions, i.e. heating and electricity: e.g. the opportunities to build and use renewable energy.

Design

Our starting point is to take climate aspects into account in our design guidelines in addition to other key targets. The aim is to achieve long-lasting and material- and energy-efficient solutions. The end product is always healthy, safe and adaptable and retains its value. We invest in properties located in growth centres near good public transport connections and services, and with completed or planned infrastructure. In line with our current design guidelines, we calculate both the construction phase and life-cycle carbon footprint for each project. Going forward, we will implement the targets of our climate roadmap within each project through design guidelines and agreements.

Most of the choices affecting in-use greenhouse gas emissions are made in the design phase. We aim to minimise the carbon footprint through design solutions, especially construction materials and in-use energy. In connection with new construction projects, we simulate energy architecture decisions and assess what renewable energy options are available to us, such as solar energy and geothermal heating and cooling.

The integration of climate, circular economy and biodiversity targets and guidelines was started in 2020. Key aspects in Ilmarinen's design guidelines are reuse and zero waste planning, system-level sustainability, i.e. replaceability of spare parts and the use of renewable energy – a sustainable circular economy is not possible without renewable and clean energy.

We will integrate climate, circular economy and biodiversity targets and guidelines into Ilmarinen's design guidelines.

Designing for the circular economy is continuous learning. In the design phase, it is crucial to unlearn old ways of doing and thinking. A shift in mindset and thinking is required to adopt a climate- and circular-economy-efficient approach in the design phase. Collaboration and dialogue are two further key elements in the design phase. Together with the entire value chain and material manufacturers, we aim to develop the best solutions in terms of the climate emissions of the projects throughout their life cycle.

We take accessibility into account already in the design phase. We have collaborated with the Finnish Association of People with Physical Disabilities FDP's Accessibility Centre ESKE on design since 2016.

Practical examples of climate action in the design phase

- We require a high-level environmental certification of all of our commercial properties for new construction and renovation (LEED Gold).
- We use in our in-use certification of properties the LEED v4 tool kit version, which has the strictest criteria of the versions in use.
 - * With LEED v4 certification, properties' tenants can impact their own premises and develop their sustainability. At the same time, the involvement of the property's users is a requirement for receiving in-use certification: in addition to technical solutions, especially the daily activities of the property and its users are monitored.
- A building's environmental rating, which is in force for five years at a time, is proof of comprehensive sustainability in the maintenance of the building.
- For Ilmarinen, the LEED certification is part of broader sustainability work that also takes into account other aspects related to the functioning of the building, in addition to energy efficiency. These include, for example, recycling and the environmental load caused by cleaning. Accessibility using public transport and good traffic connections are further important considerations.
- The design solutions must always meet the following requirements: maintainability, serviceability, availability and replaceability of spare parts, energy efficiency, renewable energy solutions, carbon-efficient materials and solutions that stand the test of time.
- In the design phase, we examine the various alternative construction materials, systems and energy systems from the perspective of their carbon footprint and energy efficiency.
- Long useful life requirements: at least 100 years for frames and load-bearing structures, 50 years for replaceable facades and at least 25 years for building services.
- The carbon footprint of every new construction project is calculated in the design phase. This supports designers when planning the project and the carbon footprint calculation will be adjusted to reflect the final plans. The objective is to expand the calculation also to renovation and conversion projects.
- The design takes into consideration the preparation for the weather stresses brought about by climate change (e.g. variations in precipitation, air humidity, storm winds).

Practical examples of integrating biodiversity and natural capital during the building life cycle

- City planning has a major impact on biodiversity and natural capital. We avoid unnecessary clearing of land to preserve old trees and the landscape in virgin environments.
- In conversion city planning we aim to preserve the buildings' old frames. This reduces the need for clearing new areas.
- We preserve unbuilt land.
- We preserve old trees.
- We follow the contours of the land when planning.
- We take into account the need for green areas from the perspective of, for example, pollinators.
- On-site solutions, e.g. local soil production in soil factories, insect hotels and other similar solutions to suit the building.
- Circular economy solutions and the use of circular products can reduce the need for new materials and thus preserve natural capital.

Adapting to climate change

According to estimates, the average global temperatures have already risen by one degree Celsius, and climate change adaptation is something that needs to be addressed today, considering the long life cycle of buildings. For real estate, key issues include flooding and changes in precipitation, wind and temperature conditions. When choosing materials in the design phase, we take into consideration protection from wind-driven rain, for example. This has an impact on the choice of surface materials and on energy solutions through a possibly increasing need for cooling in summer.

Design and city planning targets and indicators

In terms of city planning and design, we have set the following targets for real estate investments:

Certification

- LEED Gold certification for all new construction and renovation projects in commercial properties by 2025.
- LEED Volume certification for all existing commercial properties by 2025.
- We are working to find a suitable certification system for residential buildings.

Energy efficiency

- **Residential buildings:**
 - * As of 2022, all of our new construction projects will be implemented with an E value of ≤ 80 .
 - * In renovation projects our aim is to get as close to an E value of ≤ 80 as possible.
- **Commercial properties:**
 - * A energy class for all new construction and renovation projects.
 - * At least 30% relative improvement in energy efficiency in all of our renovation projects.

- **Carbon footprint**

- * We develop project-specific life-cycle carbon footprint targets for new construction and renovation projects.

Construction

We collaborate with construction companies. We engage in property development through a negotiated procedure or through competitive bidding. In construction phase climate action, the requirements and expectations on designers and construction companies are key. We integrate sustainability, responsibility and decarbonisation targets into the procurement procedure in all property development procurements, regardless of their form.

According to the calculations of the Confederation of Finnish Construction Industries (RT), construction accounts for around a quarter of the carbon footprint of the built environment. The majority (65 per cent) of this, or two thirds, comes from materials and a third from work-site operations, transport and waste. Among these, the most significant carbon footprints are related to concrete and steel. These high-emitting materials are used in building foundations and parking solutions, in particular. This is why we calculate the carbon footprint for the entire building according to the permit process, both for the construction phase and over the life cycle of the completed building. We naturally include the foundation and the parking solutions in the carbon footprint calculation, because we want to disclose the carbon footprint in its entirety.

Close collaboration with materials suppliers is key to finding low-carbon materials solutions. We aim to use circular materials. The circular solutions currently in use need to be developed and expanded to evolve into large-scale solutions. Individual players cannot do this alone: Collaboration between social actors and a smart regulatory framework are key enablers in creating innovative solutions and making them mainstream. Low-carbon materials must always be healthy, safe, durable and economic.

When it comes to worksite operations, learning and sharing best practices across the value chain plays a key role. We pay attention to the energy consumed at the worksite, low-emitting logistics and electrical machinery, among other issues. In this, collaboration with construction companies is key.

Another key aspect is a common mindset across the construction industry – the more building developers require strong climate action, the faster the industry's decarbonisation and creation of new practical solutions will be.

The real size of the carbon footprint needs to be taken into account: 10–45 per cent of the carbon footprint will be ignored if foundations and parking facilities are not included in the calculation

Finland is well on its way towards a low-carbon society. Construction plays an important role in achieving that goal. Reducing the life-cycle environmental impact of buildings will bring us closer to new kinds of cities built in line with the principles of sustainable development. However, a holistic approach to land use and construction is required to achieve a successful end result. There is a risk that the reform being prepared in 2021 will focus on the carbon footprint of individual building subsystems, omitting land use and the underground structures at the construction site from the overall estimate.

We have made calculations for more than 30 properties we have built. According to our calculations, not taking into account the share of underground structures means omitting 10 per cent at minimum and close to 45 per cent at maximum of the carbon footprint. Failing to take into account the real size of the carbon footprint will not promote the climate goals of Finland and the real estate and construction sector.

Monitored targets and indicators related to construction

All construction projects net zero carbon in 2035

Materials

- Our aim is to use steel and concrete with less and less carbon. It is important to us that our key partners set a net zero carbon target that is aligned with our target. We already expect a year-on-year carbon footprint reduction of at least three per cent for materials compared to the 2020 baseline. We carry out carbon footprint calculations for each project based on the benchmark data. As a first step, we aim to create a baseline for key materials, such as steel and concrete. According to current information, the emissions from materials can be reduced -50 per cent by 2035 compared to 2017.

In 2022 and 2023 we aim to calculate a baseline for key materials and set emission reduction targets for our own activities in line with the current industry best practice.

Worksite operations

- We calculate the carbon footprint for each project. At present, however, we do not know how large a share the carbon dioxide emissions from worksite operations make up of the project-specific carbon footprint. Measuring the emissions from worksites is currently a common challenge for the construction sector. Together with our partners operating in the industry we aim to calculate a baseline for the emissions from worksite operations and to create measurable reduction targets for them.

Waste

- According to our design guidelines, approximately 70 per cent of worksite and demolition waste is recycled.
- Targets for the construction and demolition waste recycling rate:
 - * 2025: 80%
 - * 2030: 90%
 - * 2035: 100% of recyclable waste

Within the current regulatory framework, achieving a 100 per cent recycling rate is not possible, because it does not allow for the recycling of all substances and materials.

Practical examples of climate action in the construction phase

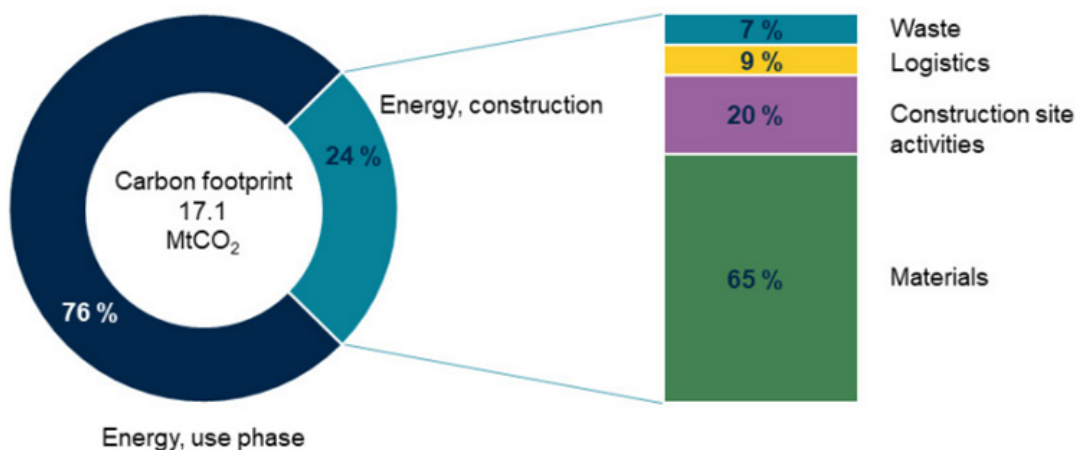
- Reuse of old frames: reduces the construction-phase carbon footprint.
- Change in requirements and industry mindset: requirements concerning low-carbon, sustainable and circular activities for construction companies and materials suppliers.
- Use of circular materials to the extent possible, e.g. waste, excess and demolition materials.
- Zero-emission energy in the construction phase and low-emission and zero-emission work machinery and equipment.
- Low-carbon and carbon efficient materials.
- Logistics requirements: optimisation and decarbonisation of logistic transports.
- New energy and construction solutions.
- Designing the worksite area to enable recycling by material type.

- Guidance and training for main contractors' and subcontractors' worksite personnel.
- Collaboration with the energy industry.
- Take a look at a completed project: Pasilan Postipuisto.
- Collaboration with the materials industry (launched as a result of the roadmap process).

Use phase

The most significant part of the carbon dioxide emissions from the built environment comes from the buildings' in-use energy consumption, with heating being the most important source of emissions. We outline policies in the design phase that will be decisive for the use phase.

The climate roadmaps of energy suppliers are an important foundation for our efforts to reduce the energy emissions from existing buildings. As part of our roadmap process, we collected the current and estimated future energy factors for our buildings from our energy suppliers. This allows us to identify the low-carbon solutions our energy suppliers can provide us with and what additional measures are required to complement them in order to reduce the carbon footprint caused by the energy consumption of our buildings. These additional measures include, for example, energy efficiency measures, certified renewable energy and our own energy generation solutions together with energy producers.



Total carbon footprint of construction and real estate (2017)
Source: Gaia Consulting

Practical examples of climate action in the use phase

Energy efficiency

We work actively to improve the energy efficiency of our real estate. Thanks to our successful measures, we exceeded the set targets. On the part of commercial properties, we exceeded the interim target (TETS) for 2020 (277%) and the final target for 2025 (184%). On the part of residential properties, we exceeded the interim target (VAETS) for 2020 (148%) and the final target for 2025 (99%).

The abbreviations refer to the Ministry of Economic Affairs and Employment's energy efficiency agreements that we have committed to. The target was to cut consumption by 7 per cent by the end of 2020 and by 10.5 per cent by the end of 2025 compared to the 2015 baseline.

Heat

We have compiled emission factors for all heat generators, which will enable us to move towards CO₂-free heat. Specific emissions from district heating will decrease 33% by 2025 and 70% by 2030.

Electricity

The electricity consumed by our real estate will be 100% CO₂-free by the end of 2021.

Local energy production

We aim to make use of all technically and economically feasible opportunities offered by the buildings for local renewable energy production. One example is the rooftops of logistics centres that can be harnessed for solar energy generation together with local energy utilities.

Cooling

In our properties located in the centre of Helsinki, we use net zero carbon district cooling, a solution that we switch over to whenever possible.

Environmental ratings

The commercial properties in the centre of Helsinki have LEED Volume certification.

We are working to find a suitable system for residential properties.

Waste

Sorting waste at source, instructing and guiding customers.

The opportunities for and ease of sorting waste fractions in the properties' waste collection room are being improved together with waste industry operators. In the centre of Helsinki, for example, there is limited space for waste management. We will review the achievement of the target in each property. Mixed waste must be brought on a downward trend. Making tenants aware of the current situation and the targeted situation.

Occupancy rate

We aim to keep the real estate portfolio's occupancy rate as high as possible, at least on a par with the market.

Tenants

We will enable our tenants to purchase low-emission electricity, we will encourage their transition and inform them of the climate impacts of their choices.

We will provide tenants with property-specific carbon footprint information.

We will develop a carbon indicator for tenants.

Targets and monitored indicators for use, maintenance and repairs

Environmental ratings

- LEED Gold certification for all new construction and renovation projects in commercial properties by 2025.
- LEED Volume certification for all existing commercial properties by 2025.

Energy

- 2025
 - * District heating: specific emissions will decrease by 33% from 2021.
 - * Electricity: 100% CO₂-free from 2021 on.
- 2030
 - * The specific emissions from the district heat used by our buildings will be reduced by 70% by the district heating utilities compared to 2021. The remaining share of fossil energy will be replaced by purchasing CO₂-free energy.
 - * Electricity: CO₂-free from 2021 on.
- 2035
 - * We expect the district heating utilities we use to supply CO₂-free energy in 2035.
 - * Electricity: CO₂-free from 2021 on.

Biodiversity

- As of 2023, biodiversity will be taken into account in the modification work on outdoor areas depending on local conditions.
- In 2022 we already had pilot projects related to biodiversity: meadow land on the roof of our properties and local small scale soil production on site.

Water

- 2025: We will reduce water consumption by 15% compared to 2017.
- 2030: We will reduce water consumption by 30% compared to 2017.

Waste

- Waste management targets for existing properties:
 - * 2025: mixed waste less than 9% and targeted recycling rate 75%.
 - * 2030: mixed waste less than 5% and targeted recycling rate 80%.
 - * 2035: mixed waste less than 3% and targeted recycling rate 85%.

Repairs

- We will achieve at least 30% relative improvement in energy efficiency in all of our renovation projects.

CO₂-free and renewable energy

In-use energy makes up more than 75% of a building's life-cycle climate impact.

The electricity consumed by our real estate will be 100% CO₂-free by the end of 2021.

As for heat, we have looked into the emission factors of energy companies. In 2020, coal-based heat accounted for 35%, natural gas for 34%, wood, biofuels and other renewable sources for 15% and waste for 5%. According to Finnish law, the use of coal in energy production must be phased out by 2029. Specific emissions from energy utilities will decrease at least 33% by 2025 and at least 70% by 2030. Any remaining share of fossil energy will be replaced by purchasing CO₂-free district heat by 2030.

Ilmarinen is developing an innovative partner solution for producing new renewable energy. Solar power plants are created on the rooftops of Ilmarinen's properties and Ilmarinen purchases or consumes the emission-free energy generated. This allows us to participate in the creation of new renewable energy generation.

In addition to renewable energy purchased from the grid, we are also looking for opportunities to generate new renewable energy through partners with a Power Purchase Agreement (PPA).



Demolition

Little attention has been paid to the demolition of buildings from a carbon footprint perspective. When designing and constructing a building, demolishing it is not the first thing that comes to mind. However, it is in the design phase that the most crucial choices are made, even from this viewpoint. The more sustainable choices we make, the longer the period over which the environmental load caused by construction will span. The best solutions from the climate and circular economy perspectives are often those that do not require existing buildings to be demolished; instead, they can be repaired and converted to give them a new lease of life. It is also important to design buildings so that their structures can be reused to the highest degree possible. Demolition is a last resort, and we assess the need to demolish a building also from the climate perspective. The decision to demolish a building is affected by a number of factors, and sometimes demolition can also be the most climate efficient thing to do.

The demolition Green Deal was introduced in 2020, making recycling one of the criteria for projects.

Key means:

- Avoiding demolition.
- Increasing the efficiency of land use through infill construction, thus also creating new, more energy-efficient buildings.
- Maximising the building's life cycle in the design phase and designing for solutions that enable conversions, e.g. materials passport.
- Circular economy.
- Minimising demolitions, using the frames.

Targets and monitored indicators for the demolition phase

According to the design guidelines for construction and demolition waste, a 70% recycling rate is required. In 2020, the recycling rate was around 70%.

Targets:

- 80% in 2025.
- 95% in 2030.
- 100% of recyclable waste in 2035.

We are also looking into opportunities to set targets for the reuse of recycled and waste materials in the future.

Enablers and dependencies

In order for us to reach our goals, the regulatory framework and industry must also keep up with the development. EU legislation, including emission trading, has an impact on the decarbonisation of the industry and speeds up the sector's climate action.

In terms of industry, steelmaking, for instance, is a major source of emissions, and recyclable steel structures are a low-carbon solution. Another example is the development of hybrid materials by partly replacing high-emitting materials through renewable materials. This requires the harmonisation of construction design and its regulation, however.

Climate-friendly solutions can also be cost neutral

New solutions and materials can bring moderate additional costs before being scaled for the markets. In our experience, overall project cost levels can be optimised in project design such that climate-friendly real estate projects are cost neutral on an overall level.

Materials innovations are key – low-carbon materials must be developed. The full decarbonisation of high-emitting materials, such as steel, cement and concrete will probably require carbon capture, storage and utilisation (CCS, CCU). These technologies still need to be developed into scalable solutions. If fully emission-free scalable solutions are not created in the next few years, emission compensation is likely.

Climate action requires increasingly in-depth competence at different organisational levels. To reach the climate goals, the competence related to climate action in the organisation must be supported through, among other things, training. Climate action is taken into account in competence requirements and in the training provided at various levels of the organisation, and in a way that is adapted to different job profiles. Climate action can also be supported and implemented through reward systems.

The sector's ways of thinking and forward-looking attitude are important, especially in the design phase. This will scale up new patterns of thought and approaches that integrate climate considerations.

Low-carbon construction requires operators on circular economy platforms for the processing of demolition and excess materials, for example.

Collaboration across the chain is key for decarbonisation to be seamlessly integrated into all stages of a building's life cycle.

New materials and technologies affect the price through investments and costs. On the other hand, material efficiency can bring savings while sustainable solutions provide industry players with a competitive edge. Cost-neutral low-carbon solutions are a significant enabler of the sector's transition to a low-carbon economy.

New technologies, such as carbon capture and utilisation, play a major role in the decarbonisation of construction and particularly the production of construction materials. We hope to see these innovations come to life, but we do not use them as the foundation for our roadmap. That is why we expect some of the products to continue to cause emissions in 2035 and, with this in mind, we are reviewing compensation solutions.

Data sources

Reliable data is paramount for us to be able to measure our progress towards our goals using the chosen indicators. We work together with data service providers in, for example, calculating the carbon footprint and other environmental indicators. The carbon footprint calculation for new construction projects follows the principles of European standardisation (CEN/TC 350 Sustainability of Construction Works).

For energy, the calculations are based on both measured and computed data.

We also collaborate with key value chain partners. These include materials suppliers, who provide us with high-quality benchmarks for our goals and enable us to measure and monitor annual progress.

We report publicly in our annual report and our reporting is verified.

Glossary

Net zero carbon A situation in which the climate emissions from the activities and the greenhouse gases removed by the activities from the atmosphere (carbon sinks) are balanced, so that the net climate emissions are zero (carbon footprint – climate emission benefits = 0). When using the term net zero carbon, the review period, the calculation limits and the calculation method must always be indicated.

Carbon footprint A carbon footprint describes a product's or service's climate impact converted into carbon dioxide equivalents. The carbon footprint of construction and infrastructure projects usually refers to a life-cycle carbon footprint, but the term is also used to describe the annual emissions of an organisation, for example.

Carbon negative A situation in which the activities remove more greenhouse gases from the atmosphere than they produce during their life cycle, so that the net climate emissions are negative.

Climate emission Climate emissions (commonly also carbon emissions) refer to greenhouse gas emissions that cause climate change (see also greenhouse gas).

Building life cycle A building's life cycle covers all phases from the procurement of raw materials and products to the demolition of the building. The life cycle is divided into four phases: product phase, construction phase, use phase and end of life.

Construction carbon footprint The climate impact caused by construction and the transport of construction products from the manufacturer to the worksite. Includes life cycle phases A4–A5.

In-use carbon footprint The climate impact caused during the use phase of the building. Includes life cycle phases B1–B7.

Demolition carbon footprint The emissions caused during a building's demolition phase by the demolition, transport, waste management and disposal. Includes life cycle phases C1–C4.

Low-carbon energy Energy produced with low or no carbon dioxide emissions; produced with renewable energy sources, nuclear energy and/or waste energy.

Renewable energy Renewable energy refers to energy that comes from renewable, non-fossil sources. These include wind and solar energy (solar heat and solar electricity), geothermal energy, environmental energy, tidal and wave energy and other forms of ocean energy, hydropower and biomass, gas and biogas generated at landfills and water treatment plants.

Compensation In climate compensation, climate emissions are compensated for by investing in projects that have been developed for the sole purpose of reducing emissions elsewhere, for example, by strengthening carbon sinks or increasing renewable energy sources.

Foreign Real Estate Climate Roadmap

Foreword: The real estate sector plays important role in solving the climate crisis

This Ilmarinen's climate roadmap for direct international real estate investments is the continuation of Ilmarinen's climate roadmaps. In this roadmap, we describe our interim targets, the actions identified to achieve them, and the key indicators we use to monitor our progress towards our net zero carbon target in the investment of pension assets by the end of 2035.



Despite broadly spread awareness of climate change, the observed warming of the earth since the mid-20th century is still the defining issue of our time. Furthermore, the real estate sector as a whole is crucial in the transition as, for example, the built environment is responsible for more than a third of energy consumption and around 40 per cent of total emissions globally. Therefore, we will increase our collaboration with industry actors who share our ambitions and will help us achieve our goal of being net zero and more broadly help addressing climate change. Collaboration between various sectors and value chains plays an essential role in achieving the goals of Paris Climate Agreement. Our main targets that we outline in this document are closely linked in robust data feed which can then be used in monitoring and reporting our performance and to ensure goal-oriented engagement with our managers.

Mikko Antila, Head of International Real Estate

Introduction: Manager selection important to reach our goals

Ilmarinen has a board-approved commitment of achieving a net zero portfolio by the end of 2035. The direct international real estate portfolio value is around 3 per cent of our total pension assets under management but on the other hand, as said the real estate sector as a whole is responsible for around 40 per cent of all greenhouse gas emissions globally and therefore plays an important role in our climate actions. This roadmap describes our climate commitments, actions we are taking and how we monitor, measure, and report our climate progress through milestones and key performance indicators on our direct international real estate portfolio.

We aim to realize our climate goal through our action on manager selection, portfolio construction, through collaboration, goal-based engagement, and advocacy.

Yet again, the climate actions in our roadmap are very much dependent on multiple factors beyond our control. This includes, for example, the climate actions that our external real estate managers undertake in the future. Nevertheless, we feel that we can focus on aligned climate targets in new manager selection and positively impact the climate actions our current managers take. In some cases, where ambitions are not aligned, we may exclude certain operators that do not share the same level of climate ambition.

We are members of various global investor alliances and collaborative efforts, for example, Institutional Investor´s Group for Climate Change which is a collaborative effort to find practical measures for net zero portfolios. Among other asset classes, real estate approaches are included in the current IIGCC scope to help investors work towards better alignment of the real estate sector with the goals of the Paris Agreement (IIGCC website). Furthermore, at all times our approaches aim to be aligned with best international investor practices. Thus, our climate roadmap is a living document that we assess, adjust, and develop on a continuous basis as the climate science, international investor best practices and our learning evolve.

More direct approach implemented to international real estate

In 2013, Ilmarinen revised its international real estate strategy to address the experiences of the Global Financial Crisis (“GFC”) and subsequent changes to the investment landscape. Since 2004 Ilmarinen has had a strategic goal to diversify its real estate portfolio which had historically been fully domestic, as was the case with most Finnish institutional investors. At inception, and primarily due to the local nature and management-intensity of real estate, non-listed indirect vehicles were considered the most appropriate avenue in achieving improved geographical diversification. However, the GFC proved that indirect vehicles had features, namely lack of investor control and high fee loads that made them suboptimal as the sole investment instrument for an investor of Ilmarinen’s size and level of sophistication.

Since 2014 Ilmarinen has been applying a more direct approach to international real estate through joint ventures and club-type structures with the intention of achieving the following three key targets:

- Maintain control over major decisions
- Secure better alignment of interest in its investments
- Reduce the fee load of its investments

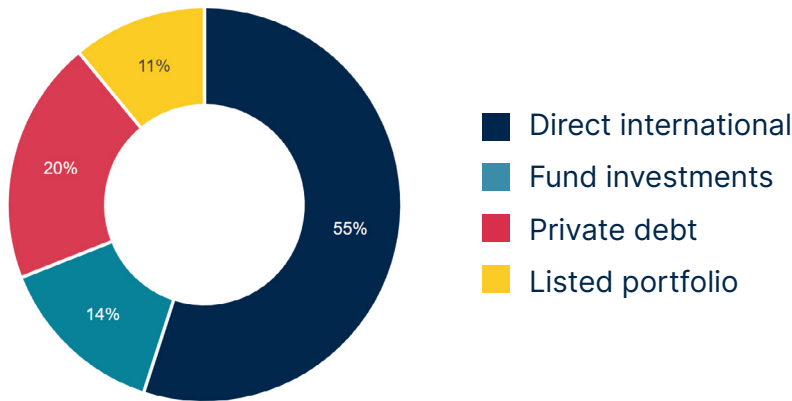
Due to the local and illiquid nature of real estate, Ilmarinen invests with locally experienced, like-minded partners with aligned interests. The ambition has been to forge multiple deep partnerships with select investment management partners and capital partners. Focus was initially on office and residential real estate in Western European and the US, but scope has expanded to cover Asia-Pacific and a broader range of property types in the last few years. Furthermore, Ilmarinen has made a partial pivot back to real estate funds to provide easier access to regions further away and/or culturally more challenging to access, namely regions in Asia-Pacific. Funds have also been utilized selectively to access niche sectors or operationally more intense asset classes, for example, hotels.

Since 2018, Ilmarinen has taken a more systematic approach to real estate debt with focus on senior secured loans in Western Europe and the US. The strategy has been akin to that with direct investments where Ilmarinen maintains control over major decisions and targets cost savings on fees.

Portfolio level key targets for direct international real estate

The current scope of this document’s target setting covers solely Ilmarinen’s direct international real estate investments, which accounted for ~55 per cent of the international real estate portfolio with 2021 figures. In the graph below is a visual illustration of our capital allocation for our international real estate portfolio again with 2021 figures. Additionally, one should note that listed real estate companies and REITs are part of our direct listed equity climate roadmap. Lastly, private real estate debt investments will be incorporated into coming climate roadmaps as well as real estate fund investments.

Capital allocation of Ilmarinen's international real estate portfolio



Our approach is built from the following key themes

- **Manager selection and portfolio construction:** understanding and mitigating climate risk while decarbonizing portfolio by 2035.
- **Engagement and active ownership:** engaging through various channels and active ownership with the aim to accelerate transition and decarbonize.
- **Constant monitoring:** observing the most material key indicators and discussing the development with our managers.
- **Advocacy and partnerships:** memberships in various collective efforts in the financial industry working towards net zero portfolios and advocating climate action by all stakeholders.

We invest in a sustainable future – net zero carbon foreign real estate investments 2035



Key goals	Our approach is built around the following themes	Key monitoring indicators		
1. Net zero 2035 2. Accelerate manager transition 3. Encourage best practises	<ul style="list-style-type: none"> • Reduce emissions - manager selection and portfolio construction • Active ownership and engagement • Advocacy and call for climate action • Partnership and continuous learning • Monitor key indicators • Report progress 	 GHG emissions	 Renewable Energy %	 Energy intensities
		 Diverted waste %	 Water intensity	 SBTi commitments

(*) GRESB = Global Real Estate Sustainability Benchmark.
 (**) NAV = Net Asset value. Rule not relevant for all managers e.g., family offices where resources are more scarce.
 (***) Certifications are applied to all assets where applicable and some may not be included in calculations.

Timeline of main past climate actions

Instead of making a distinction between different asset classes, Ilmarinen approaches responsibility through an overarching policy and guideline. Yet, international real estate investments as an asset class possess several unique qualities, such as long investment horizon and locality, making tailored responsibility approaches important for this asset class. Thus, in practice the implementation of the responsibility strategy requires, in some cases, asset class specific consideration. Hence, after the inception of investment operations, an internal strategy guideline was developed and tailored specifically to strategy requirements. For example, as operations rely heavily on external managers a strategic decision was made to work only with managers who share the same ambitious climate goals as Ilmarinen and are acting as forerunners in the industry. Furthermore, other responsibility actions, such as our certification requirements and GRESB co-operation has been put in place (Global Real Estate Sustainability Benchmark, more in chapter “Main analytical tool to monitor, report and engage with managers”).

Below is a detailed illustration of the selected key responsibility actions the international real estate team had during the past eight years.



Key targets

1. Increasing GRESB coverage to ensure robust data for decision making, monitoring, and goal-oriented engagement processes with our managers

- The 2021 GRESB coverage for our portfolio was 70%. We aim to increase the coverage closer to 100% by the year 2025 (calculations based on net asset values).
- We apply this rule for all managers with an exception to, for example, small family offices. This exclusion is seen necessary because smaller operators often have scarce resources and are not as well-positioned to complete the resource heavy GRESB submission. Nevertheless, we aim to operate with managers ranging from small to large and do not exclude based on managers resources or size. However, alternative

solutions are being sought in all cases to ensure that relevant data is on our disposal. One possible solution, for example, is limited scope submissions for smaller operators to ensure some robust ESG data feed for us.

2. GHG emission and energy reduction targets

- For us to set targets regarding our portfolios GHG emissions and energy consumption, we have analyzed each managers' own target setting. Then based on managers' targets, we have set our own targets for our direct international real estate portfolio.
- In 2021 we collected our baseline for both GHG emissions and energy consumption. By 2025 we aim to reduce both GHG emissions and energy consumption by 15% and by 2030 by 25%.
- Our aim is to encourage managers to set more ambitious targets during the coming years and this roadmap guides our goal-oriented engagements with current and new managers.
- The above targets are using GRESB's intensity-based figures. The methodology GRESB utilizes to compute GHG intensity of a portfolio is aligned with well-established global standards, such as the GHG Protocol's Accounting and Reporting Standard for Corporates and the PCAF Global Standard, and consists of estimating missing energy consumption data, converting data into absolute GHG emissions, and calculating and aggregating GHG intensities²².

3. Certification requirement

- As of 2021, based on net asset value, 70% of our assets are certified. Our aim is to increase the amount of certified assets to 90% by 2025, to 95% by 2030, and eventually closer to 100% by 2035.
- The certification requirement is applied to all assets where feasible, and some may not be included into calculations for example due to limitations of local requirements such as protection of historical buildings or alike preventing the asset to carry out necessary measures to meet certification requirements. The objective is to clearly communicate the amount of excluded assets and the rationale behind each decision.
- For each asset we need to critically assess that the certification is appropriate and relevant when considering the asset type and geographical location.

4. Key monitoring indicators

- We have mapped most material monitoring indicators in order for us to track our progress over time and further achieve our targets outlined above.
- GRESB score and its subcomponents – We monitor the development of main results and how the results compare to the respective peer group.
- Renewable energy percentage is monitored as it reduces the negative environmental impacts related with, for example, fossil fuel use – We monitor the development of the metric and compare to the selected benchmark.
- GHG emissions – We monitor the development of the metric and compare to the selected benchmark.
- Energy intensities are monitored as they are fundamental aspects of environmental performance of an asset – We monitor the development of the metric and compare to the selected benchmark.

22 [GRESB | Global ESG Benchmark for Real Assets \(gresb.com\)](https://www.gresb.com)

- Diverted waste percentage – We monitor the development of the metric and compare to the benchmark.
- Water intensities as they are fundamental aspects of environmental performance of an asset – We monitor the development of the metric and compare to the selected benchmark.
- Science Based Targets initiative (SBTi) – We monitor the number of managers that are committed to Science Based Targets initiative and further aim to encourage managers to commit to the initiative as we feel it mobilizes operators to take urgent climate action.

We constantly follow the best market practice and integrate new metrics and objectives as market practices evolve. Thus, if needed we may adjust selected key targets in the future.

Active ownership and engagement

We engage with companies on various ESG themes, including climate action. Our portfolio managers and responsibility specialists frequently discuss with our external managers on climate matters. We engage both through collaborative efforts, services providers and directly. When considering the nature of our investment activities in the direct international real estate unit, the engagement happens, in general, directly. We consider that company robust climate strategy and action and long-term shareholder value protection and generation are aligned rather than mutually exclusive. In 2023-2025 we aim to further develop our engagement practices, including targets and monitoring indicators.

For us to have meaningful engagement processes we aim to identify potential climate laggards through our climate analytics available (for example, GRESB and CRREM tool), comparing climate, sector, and peer performance. Then we engage with climate laggards either through collaborative efforts (for example, with joint venture partners), directly or through both channels. We feel that the active dialogue is vital in driving real-world change and transition towards more low carbon economy.

Main analytical tool to monitor, report and engage with managers

GRESB, previously known as Global Real Estate Sustainability Benchmark, is a community established by investors in 2009, which provides its members the opportunity to measure, benchmark and develop the ESG performance of their real estate assets. With a membership base of over 140 institutional investors, GRESB's ESG data covers real estate and infrastructure assets worth around EUR 6,000 billion. GRESB assessments cover the various dimensions of sustainability, from managing sustainability at the company level to the environmental efficiency of the real estate portfolio and stakeholder collaboration.

Ilmarinen started adopting GRESB in 2020 to gain more validated sustainability data on our international real estate investments. GRESB assessments are conducted annually, with more than 1,500 entities from 66 countries participating in 2021. Our first assessment was based on the reporting year 2020 for our direct global real investments. The assessed real estate assets included 18 office buildings with a total value of close to EUR 3 billion at the time. Ilmarinen earned four stars and 82 points out of 100, which can be considered an excellent achievement for a first-timer. We scored above average in GRESB points and placed among the strong average performers in our peer group. Moreover, after the results we held meetings with our managers to discuss results and further improvements. As a result, we were able to improve the results for the following year by 4 points making our total score 86/100 and 4 stars.

Data and service providers such as GRESB are an essential support for us. They enable us to annually monitor our managers climate and ESG approaches and performance. Furthermore, with the insights from GRESB we are able to have goal-oriented engagements with our managers and better identify potential laggards. Finally, we collaborate, engage and advocate with other data and service providers to continuously have the best possible tools and solutions at disposal.

Governance

This Climate Roadmap for direct international real estate is part of Ilmarinen Climate Roadmap and Responsible Investment Policy. Our Responsible Investment Executive Committee, including CEO and CIO, receive reporting and monitor the implementation of the roadmap. At the highest level, the Ilmarinen Board or Directors receives reporting on and monitors of the Climate Roadmap and the underlying asset class specific climate roadmaps with the view to attain the 2035 target.

The International Real Estate Team, in collaboration with the Responsible Investment Team, establishes, implements, and monitors this roadmap.

