

# **Financing towards net-zero buildings - a European initiative with global reach**

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## **ABSTRACT**

Set out in the European Green Deal, the European Union (EU) aims to become climate-neutral by 2050. Collectively, buildings in the EU account for approximately 36% of greenhouse gas (GHG) emissions. Decarbonizing the European buildings stock is therefore essential to achieve this ambitious goal. Together with public and private investors, financial institutions (FIs) play a pivotal role in financing this transition towards a net-zero building stock by 2050. This paper presents the outcomes of the project “Financing towards net-zero buildings”, funded by the Laudes Foundation and conducted by the industry-led global initiative “Partnership for Carbon Accounting Financials” (PCAF).

The project was launched in 2021 to support FIs in measuring their climate impact and accelerating the transition of their building portfolios towards net zero. A multi-stakeholder collaboration was formed across Europe, involving representatives of European FIs, an Expert Advisory Group comprised of technical, financial, environmental, and societal experts and the PCAF Secretariat. Through regular meetings a unique platform was provided for knowledge sharing, insights exchange, and advice from and for FIs. The meetings facilitated joint decision-making regarding impactful content, guidance, and outreach strategies, which led to multiple key deliverables including the best practice guideline “PCAF Guidance on financing the net-zero building transition”, the “PCAF European building emission factor database” with over 60,000 operational and embodied building emission factors, a joint release by the Global Real Estate Sustainability Benchmark (GRESB), Carbon Risk Real Estate Monitor (CRREM) and PCAF of a technical guidance on “Accounting and Reporting of GHG Emissions from Real Estate Operations” as well as strategy reports and online seminars on improving FIs’ accounting capabilities and effectiveness of sustainability driven financial products.

Key for the successful implementation of the project was the co-creation of target-specific guidance between FIs and scientific experts, as well as the collaboration with other climate-initiatives, ensuring harmonization and market acceptance. Through this, the project activities and deliverables received high attention and uptake across the building and the financial industry in Europe and beyond.

## **Introduction**

### **The role of financial institutions to reach a net-zero buildings stock**

In its long-term strategy, the European Union (EU) is striving to become the world's first climate-neutral continent by 2050 (EC, 2019). The transition to a net-zero economy by 2050

requires the transformation of all sectors. In the EU, buildings account for approximately 36% of energy related GHG emissions (EC, 2020). To reach the net-zero targets, effective decarbonization measures in existing and new buildings need to drastically increase. Notwithstanding, the current levels of renovations (particularly energy retrofits) of existing buildings and the construction of net-zero buildings are far too low (BPIE 2022). The building sector requires massive investments in renovations and new buildings, where the bulk needs to originate from private and commercial investors.

Mobilizing the financial sector is henceforth key to accelerate the transition of the building stock towards net zero. FIs have the unique ability in the construction value chain to move the needle towards these net-zero investments. By doing so building owners, real estate developers and the broader building sector are pressured and incentivized to converge towards net-zero decision making. This responsibility, however, also entails potential pitfalls: Financing particular new building constructions and renovation measures today might lead to locking-in technologies that are difficult to replace for a longer-term continuation of the path to net zero by 2050. FIs therefore need clear guidance for acting as an accelerator and leveraging public with private finance in the right direction. Steering FIs into this direction requires the market to know about its current position, the target position, and the suited pathway to be taken. FIs need this information on a European and global scale to plan and implement effective interventions in the form of innovative financial products and services that will help achieve a net-zero emission building stock by 2050 at least cost and without detours.

## **The Partnership for Carbon Accounting Financials (PCAF)**

The Partnership for Carbon Accounting Financials (PCAF) is a financial industry-led initiative. Created in 2015 by Dutch financial institutions, PCAF extended to North America in 2018 and scaled up globally in 2019. PCAF helps FIs assess and disclose the greenhouse gas (GHG) emissions from their loans and investments through GHG accounting. Measuring financed emissions allows FIs to make transparent climate disclosures on their GHG emissions exposure, identify climate-related transition risks and opportunities, and set the baseline emissions for target setting in alignment with the Paris Agreement.

Responding to industry demand for a global, standardized GHG accounting approach, PCAF developed the Global GHG Accounting and Reporting Standard for the Financial Industry. The PCAF's Global GHG Accounting and Reporting Standard published in November 2020 was the first-ever global standard, detailing the measurement and reporting of GHG emissions associated with loans and investments. The standard covers eight asset classes, amongst other the GHG accounting methodologies for mortgages and commercial real estate. Since the standard was reviewed and approved by the GHG Protocol, the standard has been referenced in many other sustainability standard developments including Taskforce on Climate-related Financial Disclosures recommendations (TCFD 2020), International Sustainability Standards Boards' exposure draft for climate-related disclosures (ISSB 2023) and regulations such as the EU Sustainable Finance Disclosure Regulation (SFDR) (EC 2022), European Banking Authority Pillar III (EBA 2023) and the US Securities and Exchange Commission Climate-related financial disclosure (SEC 2022).

To date, over 460 FIs from across 73 countries have joined PCAF with more than \$86+ trillion in total assets. The initiative provides a unique network of FIs and collaboration with other key initiatives including CDP<sup>1</sup>, CRREM<sup>2</sup>, Green Climate Fund<sup>3</sup>, GRESB<sup>4</sup>, and SBTi<sup>5</sup> for streamlining the measurements of emissions associated with financial activities as a precondition for steering towards net zero.

## PCAF project “Financing towards net-zero buildings”

Building on the PCAF approach to help FIs assess and disclose the GHG emissions of their commercial real estate and mortgages, the overarching aim of the European-focused PCAF project “Financing towards net-zero buildings” was to further mobilize FIs and accelerate their efforts to transition the European building stock to net zero. Funded by the Laudes Foundation, the project started running in July 2021 and followed three main objectives:

1. **Mobilization:** Mobilize FIs (banks and investors) and make them accountable for taking actions to finance the transition of European buildings towards net zero, with a major focus on existing building but also providing guidance for financing of new buildings.
2. **Accounting and target setting:** Enable FIs to measure and track progress towards net zero by harmonizing the measurement, target setting pathways and methods for mortgage and real estate portfolios.
3. **Operationalization:** Make the transition of the building stock towards net zero actionable by exploring technical and financial measures and developing good practice guidelines with examples of financial products and services that could be deployed to accelerate the transition of the European building stock towards net zero.

## Project set-up

The project work was structured into two consecutive project phases, each comprising multiple parallel workstreams. Phase 1 of the project ran from July 2021 to December 2022 and focused on:

1. **Governance:** Set-up of a project governance structure and communication strategy

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<sup>1</sup> CDP is a not-for-profit organization (NGO) running a global disclosure system for environmental impacts for private and public sector stakeholders.

<sup>2</sup> CRREM (Carbon Risk Real Estate Monitor) is an EU-funded research project to develop tool that allows investors and property owners to assess the exposition of their assets to stranding risks based on energy and emission data and the analysis of regulatory requirements.

<sup>3</sup> The Green Climate Fund was established within the framework of the United Nations Framework Convention on Climate Change (UNFCCC) as a fund for climate finance.

<sup>4</sup> GRESB (Global Real Estate Sustainability Benchmark) is an industry-led organization that provides environmental, social and governance (ESG) data to financial markets.

<sup>5</sup> Science-based target initiative (SBTi) is an initiative that provides frameworks and tools for companies to set science-based net zero targets.

2. **Database and Technical Guidance:** Launch of a publicly available “European' emission factor database” and technical accounting guidance for building emissions and development of a harmonized guidance on “Accounting and Reporting of GHG Emissions from Real Estate Operations” together with CRREM and GRESB.
3. **Pathway guidance:** Development of a best practice guidance for FIs in collaboration with other initiatives, describing a stepwise approach on how to accelerate the European building stock transition and on how to leverage finance to do so.
4. **Outreach:** Ensuring visibility of the initiative and output by presentations to networks and social media, promotional material, exchange sessions and events.

Phase 2 of the project started in January 2023 and ended in June 2024. The focus of phase 2 was set on further accelerating the operationalization of the accounting and decarbonization efforts of FIs, supported through the following workstreams:

1. **Database expansion:** Provide FIs with an extended set of emission factors by geographical and emission scopes together with an initial accounting guidance for embodied carbon.
2. **Public-private collaboration:** Facilitate round tables and webinars with public and private collaboration partners in selected countries.
3. **Implementation:** Showcase the potential for bridging the gap between estimated and actual measured data to increase accuracy of FIs' accounting capabilities and effectiveness of sustainability driven financial products.
4. **Outreach:** Increasing visibility by continuing outreach with focus on mobilization of European countries with limited PCAF activity, particularly in Southern and Eastern Europe.

From the beginning, the project focused on three key premises to maximize the level of impact:

- **Target group tailored guidance:** Creating scientifically robust and target group tailored guidance, that enable key stakeholders in the market to embark on and progress their journey towards a net-zero building stock and integrate experiences from frontrunner FIs.
- **Harmonization with other initiatives:** Providing guidance in close collaboration with other key initiatives to increase cross-market harmonization and broad market acceptance.
- **Wide market focus:** Ensuring that the projects' actions and output material penetrate the market and reach both early and late adopters to maximize the impact across the board.

The following sections provide insights into the key action items and deliverables of both project phases, which accelerated the project's impact and reach.

## Outcomes

### Governance: Maximizing the projects' impact through a comprehensive governance and collaboration structure

To maximize the impact on the projects' work and effectively progress towards the above-mentioned objectives, the project established a comprehensive governance structure illustrated in Figure 1.

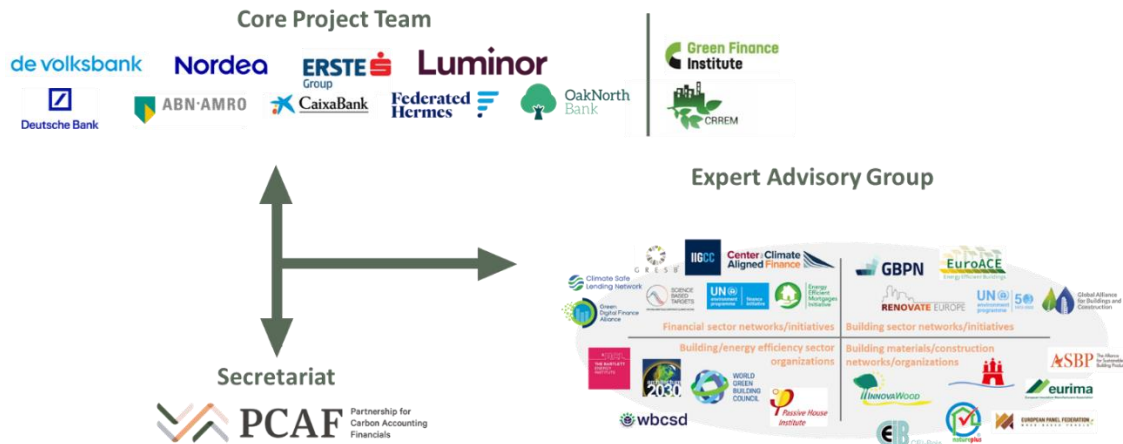


Figure 1 Overview of the PCAF Financing towards net-zero buildings project's governance structure and representatives of phase 2 (source: PCAF, own illustration)

- The multi-stakeholder collaboration was formed across Europe and consists of:
- A Core Project Team (CPT), constituted of a diverse set of representatives from FIs across Europe,
- An Expert Advisory Group (EAG), comprised of key stakeholders from the building and financial sector representing technical, financial, environmental, and societal expertise and
- The PCAF Secretariat run by Guidehouse, committed to the achievement of the objectives through effective implementation of the initiative and the development of its project deliverables.

Over the course of the projects' operation, the CPT met monthly, to provide key expertise and advance the initially defined workstreams towards achieving the overall objectives. Under the governance of the Secretariat, the EAG met quarterly to deepen the understanding of the needs and challenges to move towards a net-zero building stock. Through these regular meetings, a crucial platform was provided for knowledge sharing, insights exchange, and advice from and for FIs. The meetings facilitated joint decision-making regarding impactful content, guidance methods, and outreach strategies. Multiple review cycles, heavily involving the CPT and the EAG, ensured the dissemination of user-friendly materials grounded in sound scientific principles. An even distribution among representatives of FIs across European regions and size

of FIs was considered in the set-up of the CPT and EAG. Considering the need to look beyond European countries with significant participation, the CPT and EAG memberships were expanded in the second phase of the project to include banks from Cyprus (Bank of Cyprus) and Estonia (Luminor bank).

### **Database and Technical Guidance: Increasing coherence of GHG accounting through the “PCAF European building emission factor database” and the “Accounting and Reporting of GHG Emissions form Real Estate Operations”**

Scattered and incomplete asset level data, different implementation and scope of energy performance certificates (EPCs) across European countries and the variety of building type classifications impede the measurement of financed emissions from mortgages and real estate loans and investments. Therefore, one core deliverable to the project was the publication of a “PCAF European building emission factor database”. The database was published in 2022 and since serves as an important tool for FIs to overcome data gaps and thus, to initiate their journey towards net zero by measuring and tracking the financed emissions of their portfolios.

The database provides a set of emission factors for Commercial Real Estate and Mortgages, collected from publicly available sources, for all countries in the European Union, as well as Norway, Switzerland, and the United Kingdom. Users can filter by asset classes, European countries, residential and non-residential building types and EPC ratings to extract the specified emission or energy intensity per unit or floor area. The database is available for free to all FIs and interested stakeholders. It is provided in a web-based format with downloadable files, making it an easy to access and user-friendly tool. (PCAF 2022c, 2022a)

In total 62,400 operational emission factors for 39 countries establish a common basis for GHG accounting of FIs across Europe. To expand the scope of GHG accounting towards a more holistic approach along the entire building life cycle, the database was expanded by an initial embodied carbon dataset, comprised of 604 datapoints and a guidance document on initiating accounting of embodied carbon by FIs, in phase 2 of the project. Phase 2 also included the dataset being updated to reflect the new CRREM global pathways to ensure mutual alignment. To increase geographical coverage, new countries like Serbia, Bosnia & Herzegovina, Kosovo, Turkey were added to the dataset. To date, the database has gained substantial traction, with over 3,500 users from across the building and financial sector by May 2024.

Since collaboration between different climate initiatives is fundamental to create synergies and add value to the process of reaching net zero, strategic collaboration with other climate initiatives were strengthened through the project. Supported by the project, PCAF, CRREM and GRESB jointly developed a technical guidance for the “Accounting and Reporting of GHG Emissions form Real Estate Operations” (PCAF, GRESB, CRREM, IIO 2023). In the Technical Guidance the initiatives set out their harmonized recommendations for accounting procedures for both investors and banks, direct and indirect investments, equity and debt, full ownership, and joint partnerships, under a variety of consolidation approaches. Furthermore, additional specifications to the PCAF’s Global GHG Accounting and Reporting Standard for the Financial Industry on a range of technical, data, and standards issues relating to GHG emissions from real estate are offered. Next to the close collaboration of the participating initiatives, the

development of the guidance has undergone an extensive public consultation process, which ensured high market acceptance and immediate uptake of the interested public.

### **Pathway Guidance: A stepwise approach guiding financial institutions on their decarbonization journey**

On many occasions FIs expressed the need for a joint vision of how a net-zero building is defined, what the corresponding requirements are and how to satisfy these requirements. This is considered a crucial prerequisite to starting the net-zero journey and financing the European building transition. Leveraging the experiences of the extensive PCAF signatory network and partnerships with other climate initiatives (i.e., Banking Alliance of Net-Zero, Net-Zero Asset Managers Initiative/Net Zero Investment Framework, Net Zero Asset Owners Alliance, Science Based Targets initiative, GRESB, CRREM, Green Finance Institute), the project was able to develop a guidance document for FIs “PCAF Guidance on financing the net-zero building transition”, on how to initiate the net-zero journey and decarbonize their building portfolios along a stepwise approach shown in Figure 2 (PCAF 2022b).

As depicted in Figure 2 the net-zero journey includes four key steps, (1) measuring and disclosing of GHG emissions, (2) establishing climate targets, (3) developing a strategy for implementation and (4) taking action. This approach finds its foundation in the experiences of FIs that already started their net-zero journey and participated in the project. It is important to note that the stepwise approach is intended as an iterative process with feedback, lessons learned and good practices continuously feeding into this loop.

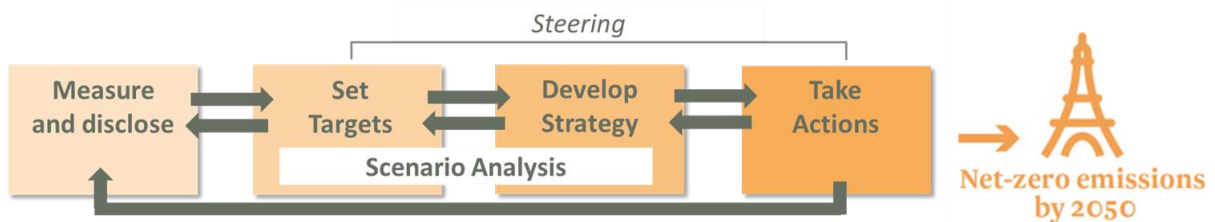


Figure 2 Stepwise approach developed under the Financing towards net-zero buildings project’s good practice guideline on financing the European building transition to net zero (source: PCAF 2022, own illustration)

The guidance document provides a detailed description of different steps as well as an aligned net-zero building definition constituting the target state for buildings: “[...] seeking to reduce the energy use through energy efficiency measures and supply the reduced energy use through 100% renewable energy, preferably on-site”. Further the definition specifies that at the same time, a net-zero building does not generate any on-site GHG emissions from fossil fuels and reduces embodied carbon to a significant extent. Corresponding requirements are set out in the guidance to support FIs in identifying and financing respective buildings. Based on the

definition, the overarching pathway towards net-zero buildings is described to steer their strategies and actions.

### **Public-private sector collaboration: Fostering knowledge exchange between private and public stakeholders**

To encourage the collaboration between the financial industry and policymakers, and to align on efforts as well as raise the ambition level for the decarbonization of buildings, the project set up a webinar series, co-hosted with the Green Finance Institute of Spain (GFI). These webinars covered embodied carbon emissions in the European building sector, with a focus on the role that can be played by FIs to measure and mitigate them in their investment portfolios. An overview of embodied carbon in the building sector, tools available for FIs to start measuring their portfolio embodied emissions, access to data and cost involved, were shared in the first webinar. The second webinar focussed on European policy developments surrounding embodied carbon, revisions to the European Energy Performance of Building Directive (European Commission (EC) 2021) and their impact. The third webinar explored what FIs could do after the measurement of emission factors. Collaborating with the Science Based Targets Initiative (SBTi), the newly published SBTi buildings target-setting pathway and its implications were presented and discussed.

### **Implementation: Showcasing use cases of energy measurement services and improvement potential for green finance products**

Measuring emissions in the real estate sector poses significant challenges. Unlike industries with well-defined emission sources, real estate encompasses a diverse range of source activities, across residential, commercial, and industrial properties, each with its own unique characteristics and energy consumption patterns. Moving the needle from estimated emissions (e.g. through databases) towards actual emission measurements is therefore key to increase the precision of financed emission measurement. One of the workstreams in phase 2 therefore focused on bridging the gap between estimated and measured data and supporting financial institutions in linking financial products with building performance in real-life.

As a first step of this workstream, a brochure was developed giving an overview of relevant actual measurement initiatives across Europe (PCAF 2023). The assessment showed a versatile market of initiatives, ranging from partnerships and collaborations to measurement modelling and digital Energy Performance Certificate based solutions, illustrated in Figure 5.



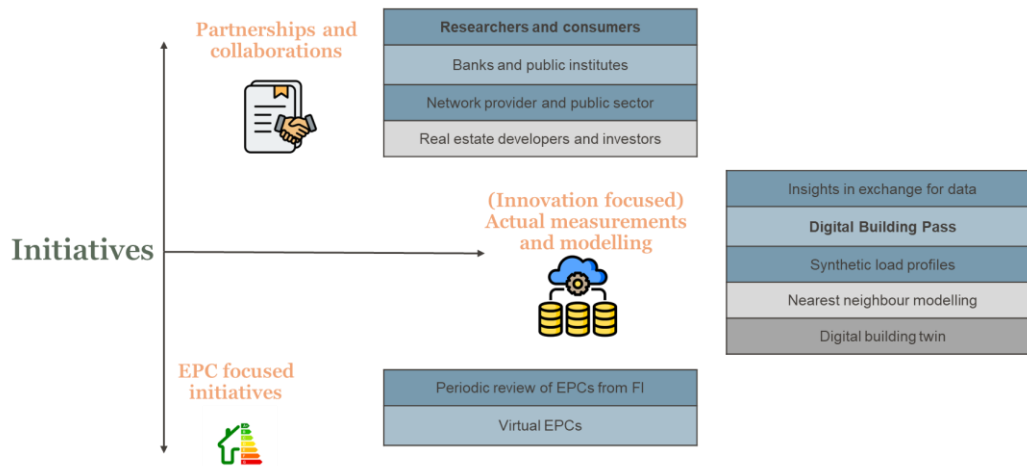


Figure 3 Key findings from the assessment of European Initiatives providing solutions for measuring and modelling actual energy consumption of buildings (source: PCAF, own illustration)

To test data collection approaches, two pilot studies were conducted and findings were published in two strategy reports<sup>6</sup>. Both pilot studies focused on different initiatives identified in the initiative assessment, namely:

- Explore application potential of digital platforms providing (modelled) energy data for buildings for use by FIs across Europe
- Explore application potential of the research initiative by the University College London’s Smart Energy Research Lab (SERL) around the UK government’s smart meter rollout in EU countries and for use by FIs.

Different potential collaboration and use cases were identified for each respective data collection approach, ranging from the potential of enhancing the quality of GHG accounting to improvement potential for green financial products. The assessment of application potential in different European countries showed that barriers and drivers can vary significantly, circling amongst other around smart-meter rollout rates, ownership of data as well as accessibility of data to third parties and data protection laws.

To support FIs, property management companies and other important market participants in identifying appropriate sustainable financial products and linking them to the performance of financed building types and their potential improvements, PCAF organized a knowledge-sharing session and open discussions with these stakeholders. In addition, PCAF collaborated with a subject matter expert to gain a better understanding of how public-private finance could support

<sup>6</sup> The reports should be available on the PCAF website since June 27<sup>th</sup>, 2024: [PCAF releases findings from building actual emissions measurement pilot studies \(carbonaccountingfinancials.com\)](https://www.carbonaccountingfinancials.com/)

building decarbonization. Out of these activities a paper on “Sustainable Finance Products for improving building performance” could be developed.<sup>7</sup>

On the customer side a complicated user journey was identified as one of the key implementation challenges for building owners to start the decarbonization of their buildings. Sources of complexity include non-user-friendly legislation, many different stakeholders being involved throughout the implementation process ranging from banks to developers and technicians, lack of transparency on public support schemes and green finance products as well as challenges with the decision-making process and technical integration. Since FIs can be a key partner for building owners on this journey, the project developed recommendations for FIs to create clear and well-integrated user journeys to encourage building owners in making use of embedded financial and non-financial products. This can for instance be achieved by FIs providing customers with a simple and efficient roadmap to secure sustainable financing, easy links to third parties and by providing educational resources explaining the process, legislation, and the proof of outcome. FIs furthermore need to consider the external context by ensuring that they do not underserve certain areas of society and account for economic and governmental influences.

### **Outreach: Raising awareness through PCAF’s outreach campaign**

To position the project to the public and create a distinct narrative on making net-zero commitments, the Secretariat developed a comprehensive communication strategy. The outreach campaign was designed to reach FIs and further key stakeholders across all regions in Europe and beyond. The outreach campaign comprised activities including:

- **Publication events:** Both for launch of relevant milestones, such as the guidance publication, database launch and input sessions to members of financial networks
- **General outreach:** Distribution of guidance documents, key messages, and news articles
- **Targeted outreach:** Targeted outreach to FIs across European regions
- **Exchange and awareness raising:** Showcasing good practice examples for measures to decarbonize building portfolios and peer-to-peer knowledge exchange sessions between FIs (PCAF 2022d)

Both collective and bilateral outreach activities were conducted through existing PCAF partnerships and connections of the CPT and EPG. Outreach also covered net zero and building sector alliances, addressing FIs. The activities were published on the project’s web page and professionally designed by an external communications firm. They were accompanied by a social-media campaign and promoted through journalistic networks. Furthermore, a series of webinars and publications to present progress at key moments were conducted, increasing visibility and peer group discussions of the main initiative’s deliverables.

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<sup>7</sup> The reports should come available by July 2024 on the PCAF website.

In phase 2 of the project, one important aim of the outreach campaign was to increase the presence of PCAF in European countries with limited activity. For taking target-oriented action as a first step, database statistics were analyzed by number of registrations per countries as shown in Figure 4.

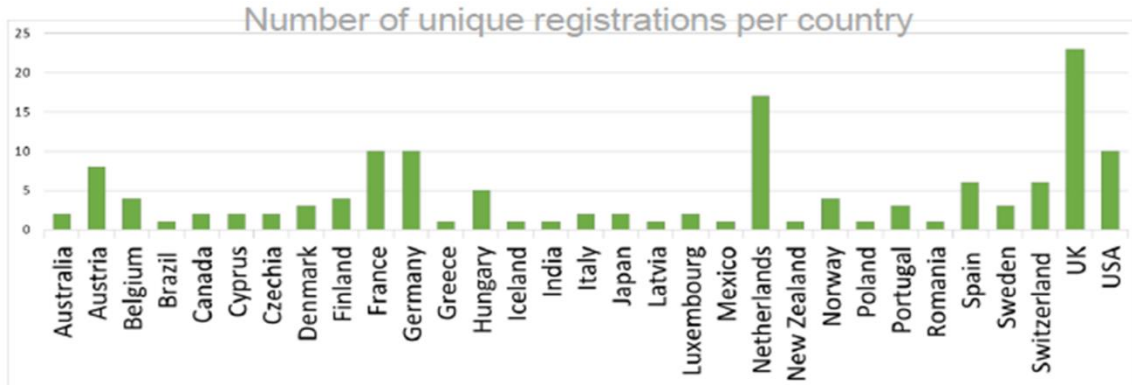


Figure 4: Number of unique registrations per country to the publicly available PCAF database for building emission factors since the launch in March 2022 until December 2023 (source: own analysis).

Since the launch of the database in March 2022, Figure 4 shows the lowest registration coming of European countries in southern and eastern Europe. Therefore, outreach measures were intensified to focus on countries of these regions. To increase engagement, contacts of the wider PCAF network were leveraged and relevant FIs in target countries were systematically contacted. Outreach activities in southern Europe focused on a sustainable finance workshop, targeted webinars, and through the inclusion of Bank of Cyprus in the CPT. In the Baltics, an outreach event with the Baltic banking association was planned. Furthermore, one on one calls for database demos with selected FIs in targeted countries were conducted. To increase the potential for interaction, outreach material and contacts were translated into the respective languages and contacts were made through language proficient PCAF members. Over the course of the phase 2, over 1754 new registrations were counted May 2023-May 2024).

## Conclusion and Lessons Learned

Since its launch in June 2021, the PCAF project Financing towards net-zero buildings has supported growing efforts in the transformation of the mortgages and commercial real estate market towards reaching net-zero by 2050 in Europe. The activities under different workstreams were constantly monitored against the impact principles: Target group tailored guidance, harmonization with other initiatives, wide market focus, and continuous steering was provided to maximize the project’s impact towards these premises. The following conclusions and lessons learned can be drawn from the project activity:

- Key for the successful implementation of the project was the valuable support by the members of the CPT and EAG that provided feedback and actively supported the outreach and promotion of project deliverables. Close involvement of representatives from the financial industry helped ensure co-ownership from frontrunners/early adopters as well as market relevance of the activities and products of the project. Monthly meetings with the CPT were important to receive continuous guidance and expertise on project developments.
- Project meetings and knowledge exchange sessions to raise awareness on the urgency for FIs to join the net-zero journey and promote the project outputs have been both held online and in-person. This dual approach maximized the potential reach of the project and contributed substantially to strengthen connections with financial and building sector stakeholders across Europe.
- Collaboration between organizations and other relevant stakeholders working on the decarbonization of the built environment was crucial to foster alignment and a joint vision. Throughout the project, PCAF encouraged cooperation and alignment with these climate initiatives. Seeking synergies to harmonize approaches such as for the joint Technical Guidance by PCAF, CRREM and GRESB was key to increase the acceptance to the guidance across the financial industry.
- As a first step, mobilization of FIs can be fostered, if frontrunner peers raise the urgency of the matter and explain the methods and measures, they are taking to decarbonize their building portfolios. Over the course of the project, efforts to mobilize FIs in countries without active PCAF presence were intensified to reach a more inclusive growth. This tailored outreach and recruiting approach were driven by the members of the CPT and EAG and local partners, which enabled low-barrier and direct interactions and engaged multiple new stakeholders.
- Adequate data sets are required for FIs to estimate the status quo of their building portfolios and set net-zero targets. The estimated or proxy data based on the PCAF European building emission factor database was highly appreciated by the sector to identify carbon-intensive hotspots in their portfolios and develop corresponding climate strategies. To support FIs in accelerating measurable decarbonization action, the second phase of the project focused more on actual climate impact and accountability of the financial sector. Through this two-step approach the project was able to take stakeholders along on the journey of increasing accounting accuracy.
- Lastly, monitoring policy and regulatory developments was important to identify key areas where the project was able to add the most value, gain visibility and relevance to the policy and regulatory sector.

Overall, the PCAF project “Financing towards net-zero buildings” was able to mobilize FIs and stakeholders in the construction ecosystem to jointly learn about, discuss and accelerate the transformation towards a net zero building stock in Europe. The project activities and deliverables received high attention across the building and financial industry in Europe and beyond. As continuation of joint efforts between the financial and building industry will be key to reach the goals of the Paris Agreement, numerous stakeholders expressed the intend to make use of this momentum and further operationalize the decarbonization of their building stock.

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