



Impact assessment Crelan Green Buildings Portfolio Belgium

Project: Impact Assessment Crelan Green Buildings Portfolio Belgium (GBF 2025)

Subject: Reduced CO₂-emission calculation

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Status: Final

As requested by Crelan, CFP Green Buildings has been tasked to compare the greenhouse gas emissions¹ of a specific, energy-efficient group of mostly residential Real Estate, in this document indicated as Crelan Green Buildings Portfolio², to that of a comparable group of real estate with an average energy efficiency, indicated as “Reference” or “Reference Group”³. The objective of this analysis is to demonstrate that the selected buildings are among the more energy-efficient and lower-emission buildings in Belgium, based on the applied eligibility criteria and impact assessment methodology. This document outlines the results of this analysis.

The Eligible Green Building Portfolio

A total of 26,327 buildings have been selected by Crelan as eligible for Crelan's Green Buildings Portfolio under the updated [2025 Green Bond Framework](#) and [Green Bonds Asset Selection Methodology](#).

Crelan's Green Buildings Portfolio consists of loans that finance or refinance buildings located in Belgium and that meet the updated

eligibility criteria for Green Buildings. The 2025 methodology aligns with the ICMA Green Bond Principles 2025, follows the Febelfin/UPC BVK definition of energy-efficient mortgages with one stricter Crelan-specific threshold, and distinguishes between deed dates before 2020 and deed dates from 2020 onwards.

- 1) loans for the acquisition and ownership of buildings with a deed date before 2020, where the building is part of the top 15% most energy-efficient buildings, defined by Crelan as buildings with an Energy Performance Certificate of ≤ 150 kWh/m²/year;
- 2) loans for the acquisition and ownership of buildings with a deed date from 2020 onwards, where the eligibility is based on the E-level standard minus 10%, reflecting the NZEB-10% proxy approach;
- 3) loans for the construction of new buildings with a deed date between 2013 and 2019, for which buildings in Flanders, Brussels and Wallonia are considered part of the top 15% in terms of energy performance;
- 4) loans for the construction of new buildings with a deed date from 2020 onwards, where eligibility is based on the E-level standard minus 10%;
- 5) loans for the renovation of buildings, where the renovation results in at least

¹ Greenhouse gas emissions are calculated in CO₂-equivalent, which will be referred to as CO₂ throughout this document.

² When referring to the Eligible Asset Portfolio in this document, we refer residential buildings in Flanders, Brussels and Wallonia.

³ The Reference Group represents the average CO₂-emissions of residential buildings in the Brussels, Flanders and Wallonia regions, taking the floor area of the eligible buildings into account.

a 30% reduction in Primary Energy Demand (PED).

For buildings with a deed date before 2020, the full outstanding credit amount is considered in scope where the applicable top 15% or construction criteria are met. For buildings with a deed date from 2020 onwards, 90% of the outstanding credit amount is considered in scope, reflecting the conservative haircut applied under the NZEB-10% proxy approach used in the Febelfin/UPC BVK methodology and applied consistently across Belgium.

Compared with the previous framework, the 2025 methodology introduces a more restrictive and nationally consistent approach. Crelan applies a threshold of ≤ 150 kWh/m²/year for the top 15% most energy-efficient buildings, which is stricter than the Febelfin/UPC BVK threshold of ≤ 159 kWh/m²/year. Crelan also explicitly excludes mortgage loans associated with buildings located in high-risk flood zones, based on publicly available regional data sources. This exclusion is inspired by the EU Taxonomy Do No Significant Harm approach for climate-related physical risks and strengthens the climate resilience of the Green Buildings Portfolio.

Changes in the eligibility criteria compared with the 2023 Green Bond Framework do not apply retroactively to buildings already selected and validated under the previous framework. The updated 2025 criteria apply to future Green Bond issuances after publication of the updated framework.

Group Composition

The group composition of the 26,327 buildings is shown in Table 1. Residential buildings have the largest footprint, with 97% of total square meters. Some identified buildings were

omitted from the group composition as they were land only assets containing no buildings. The eligibility of the underlying loan exposures remains determined by Crelan in accordance with the criteria set out in Crelan's [Green Bonds Asset Selection Methodology](#).

Property type	#	m ²	Footprint %
Residential	26,022	3,232,317	97%
Retail	4	323	<1%
Office	146	32,969	1%
Storage & Distribution	146	70,275	2%
Community, conference, restaurant	8	1,535	<1%
Hotel	1	774	<1%
Total	26,327	3,338,193	100%

Table 1: Group composition Crelan Green Buildings Portfolio.

Methodology

Crelan Green Buildings Portfolio

One of the key data points required to calculate the expected CO₂-emissions of the 26,327 selected buildings is the size of these buildings expressed in m². As this data was not readily available by Crelan, these data points were sourced from the Belmap database via GIM⁴ utilising address matching methods to source building data based on the addresses provided by Crelan. The majority of the database was able to be matched with an address within the Belmap database to enrich the data with the buildings' m². The remainder of the data was enriched with the median calculated area per property type for each of the eleven provinces. If there were insufficient datapoints to calculate a reliable average (<10 buildings), then the median for that property

⁴ Data | GIM

type within the region or the country was applied.

In this study, the CO₂-emissions of 26,327 buildings, as selected by Crelan, was determined using the calculated energy consumption of these buildings.

The energy usage (kWh) for the buildings in Crelan's Green Buildings Portfolio is calculated based on the algorithms and benchmarks from the expert system of CFP Green Buildings. CFP's Expert system is a database consisting of actual energy data of buildings. A section of this anonymised data provides live energy data derived from CFP's Energy Monitoring projects.

Table 3 shows the calculated energy consumption of the Crelan Green Buildings Portfolio. This includes all energy sources used to heat and operate the buildings. The calculated energy consumption for the eligible buildings is 291 million kWh. The total calculated energy intensity is 87 kWh per m².

Region	Total energy (kWh)	Energy intensity (kWh/m ²)
Brussels	12,978,282	81
Wallonia	112,571,005	89
Flanders	165,569,043	86
Total	291,118,331	87

Table 3: Energy consumption Crelan Green Buildings Portfolio

The CO₂-emissions in this report were calculated with the Belgium market standard conversion factors, derived from [CO₂emissiefactoren.be](https://co2emissiefactoren.be). The applied factors are illustrated in Table 2 below.

Applied GHG emission factors⁵

Natural gas	0.2142	kg CO ₂ /kWh
Electricity	0.167	kg CO ₂ /kWh
Wood pellets	0.2146	kg CO ₂ /kg
Oil	3.462	kg CO ₂ /litre

Table 2: Belgian CO₂-emission factors

Across the three distinct regions within Belgium – Brussels, Wallonia and Flanders – the energy mix and therefore emission factor for every kWh varies. Using the emission factors from Table 2, a blended emission factor was calculated per region by taking into consideration the energy source split across the region for space and water heating within buildings and the portion of the building's total energy consumption which is attributed to heating.

Utilising the greenhouse gas emission factors per fuel type listed in Table 2 and the fuel splits per region, a blended emission factor per kWh was calculated for each region as stipulated below in Table 4. The relevant emission factor was then applied to each asset in the Crelan Green Buildings Portfolio, multiplied against the calculated kWh consumed per building to determine the asset's CO₂-emissions.

CO₂ emissions per kWh per region

Brussels	0.216	kg CO ₂ per kWh
Wallonia	0.254	kg CO ₂ per kWh
Flanders	0.211	kg CO ₂ per kWh

Table 4: Blended emission factors per kWh

Reference Group

In this study, the calculated energy consumption of the Reference Group was determined based on data from open government sources and databases and CFP⁶.

⁵ Source: [CO₂emissiefactoren.be](https://co2emissiefactoren.be) (co2emissiefactoren.be) using the emissions factor for grey electricity unknown, WTW.

⁶ The reference group has the same floor area as the eligible buildings. The CO₂-emissions are calculated by CFP algorithms taking into account the energy usage of all residential buildings in Brussels, Wallonia and Flanders.

Buildings in Brussels consume an average of 242 kWh/m²/year⁷, while buildings located in Wallonia or Flanders are, on average, less energy efficient, consuming 325⁸ and 330⁹ kWh/m²/year.

Belgium's average CO₂-emissions per square meter per region are calculated based on these sources, and the emissions shown in Table 5. These averages are regularly updated as the public sources are also updated regularly. The numbers used for the calculations in this report are given in the table below¹⁰.

CO₂ emissions per m² per region

Brussels	52	kg CO ₂ per m ²
Wallonia	82	kg CO ₂ per m ²
Flanders	69	kg CO ₂ per m ²

Table 5: Average emissions per region

In order to determine the CO₂-emissions for the reference group, the reference emissions for each asset in the Crelan Green Buildings Portfolio was calculated by multiplying the m² by the relevant factor above in Table 5.

CO₂-emissions – Estimated positive impact

Table 6 shows the total CO₂-emissions of the Crelan Green Buildings Portfolio and the reference group based on the calculated energy consumption and the blended emission factors. The total CO₂-emissions of the Crelan Green Buildings Portfolio is 66,331 tonnes of CO₂ per year. The Reference CO₂-emissions is 245,477 tonnes of CO₂ per year. This is a reduced amount of 179,146 tonnes of CO₂ per year.

GHG Emission

Crelan Green Buildings Portfolio (tonnes CO ₂)	GHG Emission reference (tonnes CO ₂)	GHG Emission reduction (tonnes CO ₂)
66,331	245,477	179,146

Table 6: CO₂-emissions Crelan Green Buildings Portfolio compared to Reference

The Crelan Green Buildings Portfolio is therefore estimated to emit 179,146 tonnes of CO₂ less than the Reference Group, which is a reduction of 73%.

Conclusion

The following conclusions are drawn from this study:

- Based on the calculated energy consumption, the Crelan Green Buildings Portfolio has CO₂-emissions that is 179,146 tonnes per year lower than the reference, which is a reduction of 73%.
- The calculated energy intensity is 87 kWh/m² for the whole portfolio.
- The current indexed loan to value of the Crelan Green Buildings Portfolio is 35%. The total financed emissions under the mortgage loan receivables are 22,958 tonnes CO₂ per year.
- The portfolio has been selected in line with the eligibility criteria set out in Crelan's 2025 Green Bonds Asset Selection Methodology, which is designed to align with relevant EU Taxonomy Climate Change Mitigation eligibility and, where applicable,

⁷ Sources: [Statistisch verslag EPB-certificatie van wooneenheden - gegevens 2024 & Leefmilieu Brussel](#). The average energy consumption of the reference group was calculated based on the distribution of energy labels within Brussels. For each energy label, its share was combined with the midpoint of the corresponding EPB score range. These weighted scores were then summed to determine the average EPB score for Brussels.

⁸ Source: [Energy performance of the residential housing stock - State of the Walloon environment](#). The average energy consumption of the reference group was calculated based on the distribution of energy labels within Wallonia. The share of

each energy label was determined by taking into account both new and existing buildings stated in the source. For each energy label, this share was combined with the midpoint of the corresponding E_{spec} range, and the resulting weighted scores were summed to determine the average E_{spec} for Wallonia.

⁹ Source: [Energiescore van bestaande woningen - Vlaanderen.be](#). The average energy scores of single-family homes, apartments, and collective residential buildings, together with the number of dwellings in each category was considered. Based on these figures, we calculated a weighted average energy score for Flanders.

¹⁰ The emission factors of Table 2 are used.

substantial contribution criteria
(December 2025).