

Green Bond Report 2022

Executive Summary

OTP Jelzálogbank Zrt. (hereinafter: OTP Mortgage Bank or Company) aims to contribute to the achievement of the UN Sustainable Development Goals¹ by financing the energy renewal of the Hungarian housing stock, primarily by increasing the share of affordable and clean energy and reducing the per capita adverse environmental impact of settlements. We believe that, in addition to the direct environmental benefits of financing green real estate, the initiative's awareness-raising effect will also indirectly contribute to the achievement of sustainability goals.

The purpose of the Green Bond Report (hereinafter: Green Bond Report or Report) is to present the key metrics illustrating the expected environmental impact of the portfolio of green bonds issued and green loans granted, as well as of the green lending activity.

Green bonds issued and in circulation

2021 marked the first time OTP Mortgage Bank issued green bonds. There was no issuance in 2022. The nominal value of the portfolio at the end of the year was HUF 95 billion.

Portfolio of green loans meeting the criteria of the Green Bond Framework

At the end of 2022, OTP Mortgage Bank's retail mortgage loan portfolio comprised 248 thousand transactions, representing a total of HUF 1,639 billion in receivables from customers. The loan portfolio was secured by 247 thousand properties.

At the end of 2022, the number of transactions meeting the criteria set out in OTP Mortgage Bank's Green Bond Framework was 33 thousand, representing a total of HUF 336 billion in receivables from customers. These transactions are considered to be green loans.

Environmental impact of the green lending activity

The main sustainability metrics related to green lending activities and green bond issuance are summarised below.

- The estimated annual energy consumption of the properties financed by the total customer loan portfolio is 1,605 GWh, which brought about 313 thousand tonnes of carbon dioxide equivalent greenhouse gas (GHG) emissions.
- The total estimated annual energy consumption of energy-efficient properties is 34 GWh, resulting in 14 thousand tonnes of carbon dioxide equivalent greenhouse gas emissions.

- According to OTP Mortgage Bank's portfolio data for the end of 2022, green lending will save 159 GWh of energy consumption and 23 thousand tonnes of carbon dioxide equivalent greenhouse gas emissions.
- The loans financed by the issuance of green bonds will help to avoid 45 GWh of energy consumption and 7 thousand tonnes of carbon dioxide equivalent greenhouse gas emissions per year.

Quantifying the emissions associated with the financed portfolio faces a number of difficulties, including the lack of data, and where data are available, the options for verifying such data are limited. When assessing sustainability indicators, it is expedient to take into account the outdated condition of the Hungarian real estate stock and the fact that without dedicated energy modernisation programmes, only moderate success can be achieved in the energy renewal of used housing stock.

Table 1: OTP Mortgage Bank green loans – estimated annual energy savings

Portfolio	Volume of green loans	Part financed by green bonds	Average remaining term	Annual energy consumption avoided		Annual GHG emissions avoided
	HUF billion	HUF billion	year	GWh	TJ	t CO ₂ eq
High energy efficiency	336	95	20.3	159	572	23,080
Significantly improving energy efficiency	-	-	-	-	-	-
Total green loans	336	95	20.3	159	572	23,080
Impact of the HUF 1 billion financing				0.5	1.7	68.7
Effect of green bonds				45	162	6,531

1 Sustainable Development Goals (<https://sdgs.un.org>)



Introduction

Incorporated in Hungary, OTP Mortgage Bank is a specialised credit institution engaged in mortgage lending and is a member of OTP Group. As a core activity, it is involved in the financing of the modernisation, the purchase and construction of residential properties and the provision of general purpose mortgage loans. In 2021, the Company created its Green Strategy² and Green Bond Framework³ with the aim of contributing to the achievement of environmental and climate objectives through its own efforts.

The objective of the Green Bond Framework is to define what the Company considers to be green bonds. This document presents all the concepts, procedures and commitments that define green bonds: eligibility criteria of green bonds in the course of the lending activity; selection process of green instruments, use of proceeds from green bond issuance and the related reporting commitments.

In establishing the Green Bond Framework, the Company took into consideration all recommendations that are included in the Green Bond Principles⁴ issued by the International Capital Market Association.

It is the primary intention of OTP Mortgage Bank to support, within the limits of its own capabilities, the international and domestic efforts aimed at sustainable development. One of its strategic goals is to facilitate energy-efficient retail real estate investment projects by offering appropriate credit instruments and thus, to contribute to improving the energy efficiency of Hungary's stock of buildings. OTP Mortgage Bank intends to issue green bonds, the proceeds of which will be allocated for the purposes of financing green mortgage loans.

In 2021, OTP Mortgage Bank issued green bonds for the first time. Using its proceeds, the Company ensures the source of green loans to support energy-efficient mortgage lending.

The Green Bond Framework is intended to comply with the requirements of the four components set out below, as well as the recommendations on the Green Bond Framework and the External Review.

- 1. Use of Proceeds**
- 2. Process for Project Evaluation and Selection**
- 3. Management of Proceeds**
- 4. Reporting**

To ensure compliance with investors' requirements and with the recommendation included in the Green Bond Principles, OTP Mortgage Bank publishes an annual Report on the allocation of proceeds from Green Bond issuance into suitable green instruments. It is the Company's intention to provide adequate information to investors in order to enable them to assess the sustainability impacts of their investments. The Report is published in parallel with the publication of the Annual Report of OTP Mortgage Bank.

This document is the Company's Green Bond Report for 2022. The aim of the Report is to present the portfolio of green bonds and green loans in circulation in such a way as to comply with the recommendations set out in the 'Harmonised Framework for Impact Reporting' handbook⁵ published by the International Capital Market Association.

In addition to key data on the portfolio of green bonds issued and in circulation, and on the key data on the portfolio of green loans that meet the criteria of the Green Bond Framework, the Report also presents the main metrics of the expected environmental impact of green lending activity. The stock figures in the Report are as at 31 December 2022.

The Report was approved by the Company's Green Bond Committee on 28 June 2023.

OTP Mortgage Bank publishes the Report – along with all other documents related to green bonds, including the Green Bond Framework – on its website⁶.

OTP Mortgage Bank has commissioned Deloitte Könyvvizsgáló és Tanácsadó Kft. to conduct an independent external review – providing assurance – regarding the Green Bond Report. The independent auditor's report of Deloitte Könyvvizsgáló és Tanácsadó Kft. will be published on the website of OTP Mortgage Bank.

² OTP Mortgage Bank Green Strategy 2021 (https://www.otpbank.hu/static/otpjelzalogbank/sw/file/OTPMortgageBank_GreenStrategy.pdf)

³ OTP Mortgage Bank Green Bond Framework 2021 (https://www.otpbank.hu/static/otpjelzalogbank/sw/file/OTPMortgageBank_GreenMortgageBondFramework.pdf)

⁴ ICMA Green Bond Principles (<https://www.icmagroup.org/assets/documents/Sustainable-finance/2021-updates/Green-Bond-Principles-June-2021-140621.pdf>)

⁵ ICMA Handbook Harmonised Framework for Impact Reporting (https://www.icmagroup.org/assets/documents/Sustainable-finance/2022-updates/Harmonised-Framework-for-Impact-Reporting-Green-Bonds_June-2022-280622.pdf)

⁶ <https://www.otpbank.hu/otpjelzalogbank/english-contents>

Meeting green targets in 2022

OTP Mortgage Bank has identified four areas through which it can contribute to sustainable development. These areas are: green lending, green bond issuance, green operation and corporate social responsibility for sustainability.

Green lending and green bond issuance

OTP Mortgage Bank is committed to facilitating energy-efficient retail real estate investment projects by offering appropriate credit instruments and thus, to contribute to improving the energy efficiency of Hungary's stock of buildings. The strategic objective set out in the Green Bond Framework is to continuously increase the share of green mortgage loans in the retail mortgage loan portfolio and to support this process by issuing green bonds on the funding side.

To this end, in 2022 we carried out the following tasks.

The identification of green loans in OTP Mortgage Bank's portfolio, as defined in the Green Bond Framework, has continued. The volume of green loans identified in the Mortgage Bank's loan portfolio exceeded the volume of green bonds issued throughout the year. The Company was actively involved in the Green Home Programme (ZOP), created by the Magyar Nemzeti Bank (the National Bank of Hungary) to boost the demand for green houses and apartments and consequently, to stimulate supply as well. The first ZOP loans were disbursed in November 2021. The Magyar Nemzeti Bank expanded the programme, which was originally announced with a HUF 200 billion limit amount, by an additional HUF 100 billion in spring 2022, while at the same time imposing stricter energy-related conditions. OTP Group treated participation in the programme as a priority, ultimately accepting a total of more than HUF 175 billion in customer applications.

OTP Mortgage Bank set up its XIX. Mortgage Bond Programme in 2022. The main pillar of the Base Prospectus of OTP Mortgage Bank's Mortgage Bond Programme is the investor information on green mortgage bonds.

Green operation and corporate social responsibility

OTP Bank will achieve net carbon neutrality from 2022 on, using green electricity and carbon credits.

In order to draw the attention of our customers to sustainability aspects from the very beginning of the housing loan application process, OTP Bank Plc., acting as an intermediary for OTP Mortgage Bank, has developed a module on its website⁷ presenting the housing loans available to customers. The module's main function is to direct interested parties to the sustainability page of OTP Mortgage Bank, distinctly from the main content of the website, visually highlighting key information. In addition to the above, OTP Mortgage Bank also pays special attention to providing as much information as possible to its customers in the course of the loan application process, touching in particular on the sustainability aspects related to mortgage borrowing. In the course of the loan application, the personal customer documentation already includes information on where customers can become familiar with the sustainability criteria and OTP Mortgage Bank's Green Strategy and Green Bond Framework.

As part of its corporate social responsibility, in addition to mitigating environmental damage, our Company helps its customers purchase energy-efficient properties through its lending activity. Thanks to the modern technical solutions complying with green standards, the energy consumption of the top 15% of the domestic real estate stock can be lowered, thus offering customers significant savings, especially in the context of today's soaring energy prices.

Further information on OTP Group's environmental, social and corporate governance contribution to sustainability is available on the website of OTP's ESG Programme⁸ and in its annually published Sustainability Report⁹.

The Green Strategy of OTP Mortgage Bank is aligned with OTP Group's initiative to promote sustainable development, the cornerstones of which were set out in OTP Bank's Environmental Policy. OTP Group's commitment to sustainable development is visible in all markets served by the Banking Group, for example, through the introduction of green products and its corporate social responsibility for sustainability. It is due to these efforts that the Group was the first company to receive the Magyar Nemzeti Bank's Green Finances Award in 2019, and the Sustainable Bank of the Year Award established by Mastercard in 2021. In 2022, OTP Bank was the only Hungarian bank to win the Global Finance magazine's Sustainable Finance Awards. Following the issuance of green bonds, the Budapest Stock Exchange awarded OTP Mortgage Bank the 'Mortgage Bond Issuer of the Year Award' at the Best of BSE Awards in 2021, which the Company won again in 2022.

⁷ <https://www.otpbank.hu/porta/hu/Lakashitel>

⁸ <https://www.otpbank.hu/porta/hu/IR/ESG>

⁹ <https://www.otpbank.hu/porta/hu/ir-fenntarthatosagi-jelentesek>

Green bonds

Changes in the volume of green bonds issued by OTP Mortgage Bank

2021 marked the first time OTP Mortgage Bank issued green bonds. There was no issuance in 2022. The nominal value of the portfolio at the end of the year was HUF 95 billion.

Table 2: Changes in the volume of green bonds issued by OTP Mortgage Bank

2022 opening portfolio	HUF 95,020,000,000
Issuance	HUF 0
Maturity	HUF 0
Repurchased mortgage bonds withdrawn from circulation	HUF 0
Currency revaluation effect (in case of denominations other than HUF)	HUF 0
Total turnover	HUF 0
2022 closing portfolio	HUF 95,020,000,000

Summary data of OTP Mortgage Bank's green bonds in circulation as at 31 December 2022

Table 3: OTP Mortgage Bank green bonds in circulation

Series	ISIN identifier	Currency	Face value	Maturity
OJB2031/I	HU0000653456	HUF	95,020,000,000	22 October 2031



Green real estate and green loans

Based on its Green Bond Framework, green loans in the Company's view are loans where the property(ies) serving as collateral for the loan meet at least one of the criteria of the following two categories:

- 1. high energy efficiency real estates: buildings falling within the best 15% of Hungary's total stock of buildings based on their energy efficiency rating; and**
- 2. real estates with significantly improving energy efficiency: properties undergoing refurbishment or modernisation using the loan provided by the Company in order to improve their energy performance.**

High energy efficiency real estate

OTP Mortgage Bank deems properties as ones with high energy efficiency if they fall within the best 15% of Hungarian residential property stock based on their energy efficiency rating.

In determining the energy efficiency of properties, the Company relies primarily on the building's energy quality rating in letters as specified in its energy certificate and the scaled value of consolidated energy characteristics. In determining the best 15% of Hungary's real estate stock, OTP Jelzálogbank primarily relies on data included in the energy performance certificate of the collateral properties, or in the absence thereof, publicly available energy data published by the Lechner Knowledge Centre¹⁰, a professional background institution of the Prime Minister's Office specialising in architecture, construction, land records and electronic spatial planning, data on the national building stock published by the Hungarian Central Statistical Office¹¹, and other publicly available official sources.

From 2021 onwards, as part of the lending process the Company requires the submission of an energy performance certificate along with the keeping of records of the data contained therein, with the consent of the customer concerned. Among the energy performance certificate data on the Lechner Knowledge Centre website, data on ratings are publicly available, and the data identical with the unique identifiers (topographic lot number, address) of the real estate serving as collateral for OTP Mortgage Bank loans were queried from here. The energy rating of 43% of the mortgaged properties is known, covering a total of 107 thousand properties.

Prior to the green bond issuance in 2021, the Company determined which quality rating in letters and aggregate energy performance scale (specific energy requirement) meets the criteria of high energy efficiency properties, i.e. falling within the top 15% of the Hungarian residential property stock. The property's rating must reach at least CC and the scaled value of consolidated energy characteristics must not exceed the threshold of 118 kWh/m²/year.



¹⁰ <https://lechnerkozpont.hu/>

¹¹ <http://www.ksh.hu>



All properties rated AA++, AA+, AA and BB on the energy rating scale are considered green and are part of the top 15% of the Hungarian property stock. The specific energy requirement of real estates in these categories cannot exceed 100 kWh/m²/year. The specific energy requirement of real estates with an energy rating of CC is maximum 130 kWh/m²/year, therefore this portfolio must be divided into two parts, a green and a non-green (less energy efficient) sub-portfolio. Properties with an energy rating of DD or worse, as well as properties with a rating category that was in use prior to 2016, are not considered to be green real estates.

There are a total of 21 thousand properties rated CC in the portfolio, and the specific energy requirement is only known for 16% of these. For the remaining part, CC-rated properties are categorised at portfolio level using the statistical method, according to the following rules.

- A portfolio of properties with unknown energy requirements and a CC energy rating must be divided into two parts, a green and a non-green sub-portfolio.
- For the purposes of this division, a green portfolio is defined as a sub-portfolio that can be statistically shown to have a 99%

probability of containing properties with an energy efficiency better than the specific energy requirement of 118 kWh/m²/year.

- The portfolio is divided on the basis of a statistical ratio. According to the data on energy performance certificates published by the Lechner Knowledge Centre between 2016 and 2019¹², 68% of CC-rated properties are in the top 15% of the Hungarian property stock¹³. Since the portfolio of OTP Mortgage Bank's real estate collateral does not necessarily have the same statistical characteristics as the national real estate stock, a sample-based statistical estimation is required to determine the appropriate statistical ratio.
- OTP Mortgage Bank has used a statistical method to determine the ratio of green and non-green properties within the CC category. The statistical method used determines with a 99% probability the ratio of energy-efficient properties within the CC category with a specific energy requirement better than 118 kWh/m²/year (or the prevailing threshold). Based on the calculation completed in 2021, 67% of the CC category properties registered among OTP Mortgage Bank's collaterals have a specific energy requirement below 118 kWh/m²/year.
- The Company has set a lower ratio (adjusted statistical ratio) in order to manage potential risks arising from the statistical method or the application thereof: the adjusted statistical ratio applied in 2021 is 60%, i.e. OTP Mortgage Bank considers 60% of the properties in the CC category to be in the top 15% of the domestic residential property stock. The 60% coefficient does not affect the number of green properties; properties with green characteristics are considered green properties.

Buildings with significantly improving energy efficiency

The Company considers real estates to have significantly improving energy efficiency if they are refurbished or modernised using the

loan provided by the Company in order to improve their energy performance. Loans for modernisation purposes, as detailed in the Green Bond Framework, can be considered green loans if the energy rating of the property the loan relates to, prior to and after the investment, verifies this. The Company had no loan products for which this information is available, and as such, no property with significantly improving energy efficiency has been identified until the end of 2022.

Definition of green real estate and green loans

Of the retail housing mortgage loans in its portfolio, OTP Mortgage Bank considers loans to be green where the associated property has been identified as green.

Where several properties are linked to one loan or where several loans are linked to one property, no obvious matching is possible, thus separate matching rules need to be applied. The matching rules and legal provisions applied in banking practice establish the categorisation of loans by collateral types into groups so that

- where a single property collateral is linked to multiple loans, the value of the property is allocated to loans in the records, and
- the principal amount of loans is assigned to the collateral in proportion to the value of the multiple properties attached to a loan.

A loan secured by multiple property collaterals, where the collaterals include both green and non-green properties, is considered as both a green and a non-green loan in proportion to the value of the properties. The principal amount allocated to green property collaterals is considered to be a green loan, and the portion allocated to non-green property collaterals is considered as a non-green loan, whose sum is equal to the total principal amount of the loan.

¹² Lechner Knowledge Centre (<https://mnb.hu/letoltes/lechner-epc-database.xlsx>)

¹³ Renátó Ritter: Van eszköz a magyarországi ingatlanok energetikai állapotának javítására (<https://www.mnb.hu/l-etoltes/21-03-02-ritter-renato-a-magyarorszag-i-ingatlanallomany-energetikai-allapota.pdf>)

Allocation

OTP Mortgage Bank is responsible for assessing and selecting the loans that comply with the green criteria and for the regular review of the green portfolio.

The body responsible at OTP Mortgage Bank for the valuation and selection of green loans and for the periodical review of the Green Bond Framework is the management meeting acting as the Green Bond Committee. Preparations for the Committee's decisions are supported by the Chief Sustainability Officer, the domains in charge of collateral registration, securities issuance and property appraisal, as well as the legal and compliance domains. With the coordination of the domain in charge of collateral registration, the Green Bond Committee prepares a quarterly report for the Board of Directors, presenting the number of green bonds issued and the volume of eligible green loans.

At the end of 2022, the Company's retail mortgage loan portfolio comprised 248 thousand transactions, representing a total of HUF 1,639 billion in receivables from customers. The loan portfolio was secured by 247 thousand properties. At the end of 2022, the number of transactions meeting the criteria set out in OTP Mortgage Bank's Green Bond Framework was 33 thousand, representing a total of HUF 336 billion in receivables from customers. These transactions are considered to be green loans.

OTP Mortgage Bank used all the funds from the green bonds it has issued to finance green loans. No promissory notes (where the credit institution uses the proceeds from the green bonds to disburse green loans after the issue) were issued.

The portfolio of green loans exceeded the portfolio of green bonds in circulation throughout 2022. Under the Green Bond Framework, whenever the portfolio of green loans is lower than the portfolio of green bonds in circulation, such as in the case of a green bond issue with a promissory note, uncommitted green funds are required to be invested in government securities or green securities. No such investment was made in 2022, and there was no need for the temporary use of proceeds from green funds.

All green loans and green bonds are denominated in HUF, thus no foreign currency conversion was performed during the allocation.

In the future, we expect the volume of green loans in OTP Mortgage Bank's portfolio to continue to increase. The volume identified as green loans at the end of 2022 represents 20% of the total portfolio, with a significant volume of loans disbursed before 2016, typically without the energy certification required for categorisation. Incorporating the document request into the lending process helps identify the given items.

On the demand side, we expect that when customers buy a property, the energy performance of the building will be given more consideration in their decision making. Contributing to environmental protection and sustainable development will become an increasingly important consideration for both borrowers and investors.

The Green Home Programme (ZOP), established by the Magyar Nemzeti Bank to boost the demand for green real estate and consequently to also stimulate supply, helped to increase the

portfolio of green loans. The Company was actively involved in the programme and the first OTP ZOP loans were disbursed in November 2021. The Magyar Nemzeti Bank expanded the programme, which was originally announced with a HUF 200 billion limit amount, by an additional HUF 100 billion in spring 2022, while at the same time imposing stricter energy-related conditions. OTP Bank treated participation in the programme as a priority, ultimately accepting a total of more than HUF 175 billion in customer applications.



Characteristics of the green portfolio

At the end of 2022, OTP Mortgage Bank's retail mortgage loan portfolio comprised 248 thousand transactions, representing a total of HUF 1,639 billion in receivables from customers. The portfolio included HUF 2 billion of land development – agricultural – loans which cannot be assessed in terms of environmental impact (energy consumption and GHG emissions). The loan portfolio was secured by 247 thousand properties.

Table 4: Energy distribution of properties

Rating in letters specified in the energy performance certificate	Number of properties (thousand properties)
AA++	0.3
AA+	0.8
AA	0.5
BB	7.9
CC, green	20.0
Known, not green	77.6
Not known	139.6
Total	246.7

For some of the loans, there are several real estate collaterals linked to the transaction, often with different or unknown energy ratings. Table 5 presents the principal amount of loans by property collateral with the lowest energy-rating.

Loans with green property collateral, but not specifically disbursed for the purpose of building, purchasing or improving the energy efficiency of the property (e.g. general purpose mortgage loans) are not considered green loans, meaning even the group of the highest AA++ energy-rated property collateral includes non-green principal.

Table 5: Breakdown of customer loans by lowest-rated property collateral

Energy distribution of real estate collateral	Total portfolio (HUF billion)	Non-green principal amount (HUF billion)	Green principal amount (HUF billion)
AA++	7.7	0.7	7.0
AA+	19.7	0.2	19.5
AA	11.0	0.3	10.7
BB	154.2	4.0	150.2
CC or worse	1,446.3	1,297.9	148.4
Total	1,638.9	1,303.1	335.8

The breakdown of the loan portfolio by year of disbursement is shown in Table 6, with the portfolio of green loans increasing year on year.

Table 6: Breakdown of customer loans by year of disbursement

Year of disbursement of the first instalment	Total portfolio (HUF billion)	Non-green principal amount (HUF billion)	Green principal amount (HUF billion)
2017 and preceding years	370.7	354.1	16.5
2018	133.6	116.9	16.7
2019	203.0	170.2	32.7
2020	242.4	197.9	44.5
2021	353.5	263.2	90.3
2022	335.9	200.8	135.0
Total	1,638.9	1,303.1	335.8



The majority of known loan-purpose transactions are for the purchase of used flats or for home purchase or renovation. For 74% of the loan portfolio, there is definite information that the customer took out the loan to buy or build a new property.

Most of OTP Mortgage Bank's loans are granted for a term of 20 years or longer. Lending is ongoing, meaning that loans that are being phased out of the portfolio are constantly replaced by new loans. The end of the life-cycle of the dynamically changing portfolio cannot be determined.

Within the total retail loan portfolio of OTP Mortgage Bank, the share of consumer mortgage loans is 99.9%, while the remaining 0.1% are land development – agricultural – loans, which OTP Mortgage Bank has stopped disbursing. Land development loans cannot be assessed in terms of their environmental impact (energy consumption and GHG emissions). Land development loans are not included among the collaterals of mortgage bonds issued by OTP Mortgage Bank, land development loans are not identified as green loans and as such, the volume identified as green loans by OTP Mortgage Bank within its customer portfolio is entirely made up of consumer mortgage loans. The share of green loans in retail mortgage loans is 20%.



Environmental impact

Applied methodology – PCAF

The estimation of energy consumption and greenhouse gas emissions related to retail mortgage loans provided by OTP Mortgage Bank was carried out using the methodology of the Partnership for Carbon Accounting Financials¹⁴. The methodology has estimation guidelines for seven asset classes, one of which (Mortgages) is specifically designed to quantify energy consumption and greenhouse gas emissions associated with retail mortgage loans.

The basic formula for determining financed emissions is the attribution factor multiplied by building emissions. The attribution factor is the ratio of the outstanding amount owed by the customer at the end of the year to the property value determined at the time of loan contract conclusion, with a theoretical maximum of 100%.

Emissions from the use of buildings (greenhouse gases and energy consumed) are determined using the same methodology, in all cases based on data published by the PCAF published data regarding calculations on Hungarian properties. In the PCAF database available on the PCAF website¹⁵, each energy rating class has specific calculated emission data per area unit by building type (house, apartment), thus the emission value is the product of the heated area and this specific emission data.

In cases where not all the main parameters defined by the PCAF (energy rating, building type, heated area) are available, the PCAF database provides estimates based on the national average of the missing parameters. Based on the large volume of own data available, the average values of the missing data for OTP Mortgage Bank's real estate portfolio have been calculated. By substituting the

averages of the missing data for the own portfolio into the PCAF calculation described above, emissions higher than the PCAF estimates were determined and used as a conservative approach. For properties where the energy rating was not available, the national average was used, based on the statistics published by the Lechner Knowledge Centre on energy certificates issued between 2016 and 2022.

In the previous year's report, calculations for the estimation of financed emissions in 2021 were also based on PCAF methodological principles, but with a methodology more influenced by own estimates, as the PCAF benchmark database was not available at the time and, therefore, the comparability of emission data in the two reports is limited.

Data available for calculations

The PCAF recommends that the quality and availability of data used in the calculations should be assessed. The rating is based on a five-point scale, with Score 1 being the best rating, where comprehensive energy consumption and accurate GHG emission data are available, while at the other end of the scale, for Score 5 only the location, type and the number of properties are known and, as such, it is necessary to rely on estimates to a greater extent for the evaluation.

Calculations under the PCAF methodology require the following data: the energy rating of the property, the heated area of the property and the type of property. For properties related to the loans in OTP Mortgage Bank's retail mortgage loan portfolio, evaluation based on the rating category has been determined on the basis of data available. Properties are included in all rating categories except for Score 1 and Score 2, however, the vast majority of properties are rated with Score 3 (43%) and Score 4 (56%).

¹⁴ PCAF (<https://carbonaccountingfinancials.com/>)

¹⁵ <https://carbonaccountingfinancials.com/en/financing-towards-net-zero-buildings>

Total financed and avoided energy consumption and greenhouse gas emissions

The calculations of energy consumption and GHG emissions related to OTP Mortgage Bank's mortgage loan portfolio and energy consumption and GHG emissions avoided through green loans are based on 2022 year-end data and over a one-year time horizon.

The calculations for the energy consumption of properties take into account the attribution factor in order to quantify financing by the credit institution, which is the quotient of the outstanding principal amount of financing and the value of the property.

The estimated annual energy consumption of the properties financed by the total loan portfolio, totalling 6,855 thousand square metres, is 1,605 GWh. Overall, energy consumption resulted in 313 thousand tonnes of CO₂ equivalent greenhouse gas (GHG) emissions.

The estimated annual energy consumption of the properties financed by the green loan portfolio, totalling 751 thousand square metres, is 34 GWh. Overall, energy consumption resulted in 14 thousand tonnes of CO₂ equivalent greenhouse gas (GHG) emissions.

The estimated annual energy consumption of the properties financed by the non-green loan portfolio, totalling 6,104 thousand square metres, is 1,571 GWh. Overall, energy consumption brought about 299 thousand tonnes of CO₂ equivalent greenhouse gas (GHG) emissions.



Table 7: Financed energy consumption and GHG emissions

	Unit of measurement	Total portfolio	Non-green real estate	Green real estate
Principal receivable from customers	HUF billion	1,639	1,303	336
Real estate associated with mortgage loans	thousand units	247	216	30
Financed area	thousand m ²	6,855	6,104	751
Weighted average energy consumption	kWh/m ²	234	257	46
Total financed energy consumption	GWh	1,605	1,571	34
	TJ	5,779	5,655	124
Financed annual GHG emissions	t CO ₂ eq	313,072	299,335	13,737

Table 8: Energy consumption and GHG emissions avoided

	thousand m ²	Energy consumption		GHG emissions
		GWh	TJ	t CO ₂ eq
Green real estate	751	34	124	13,737
Non-green real estate	6,104	1,571	5,655	299,335
Non-green real estate, 919 thousand m ² equivalent	751	193	696	36,817
Energy consumption / GHG emissions avoided		159	572	23,080

Table 9: Effect of green bonds

	HUF billion	Avoided energy consumption		Avoided GHG emissions
		GWh	TJ	t CO ₂ eq
Green loans	336	159	572	23,080
Impact of HUF 1 billion financing	1	0.5	1.7	68.7
Green bonds	95	45	162	6,531

The energy consumption avoided by providing green loans can be determined as the average energy consumption and GHG emissions per square metre of green or non-green financed property.

- The estimated annual energy consumption of a non-green property equivalent to 751 thousand square metres of financed green property is 193 GWh based on averages, compared to only 34 GWh for green properties, thereby saving 159 GWh of energy consumption per year through green lending.
- For a non-green property equivalent to 751 thousand square metres of financed green property, we estimate that, based on averages, the maintenance of the property led to 37 thousand tonnes of CO₂ equivalent GHG emissions, compared to only 14 thousand tonnes of CO₂ equivalent GHG emissions for green property, which means 23 thousand tonnes less of CO₂ equivalent GHG emissions.

The portfolio of green bonds issued by OTP Mortgage Bank as at 31 December 2022 was HUF 95 billion. This accounted for 28% of the HUF 336 billion principal portfolio of green loans at the end of the year. Accordingly, by issuing green bonds, our calculation shows that we have avoided 45 GWh of energy consumption and 7 thousand tonnes of carbon dioxide equivalent greenhouse gas (GHG) emissions.

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