

# Green Bond Report 2021

This document is an English translation of the Green Bond Report of OTP Mortgage Bank Ltd.  
If there are any differences, the original Hungarian language version prevails

## Executive Summary

OTP Jelzálogbank Zrt. (hereinafter: OTP Mortgage Bank or Company) aims to contribute to the achievement of the UN Sustainable Development Goals<sup>1</sup> 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. Two issuances were made during the year, within the framework of which securities with a total face value of HUF 95 billion were sold. The remaining portfolio at the end of the year was the same.

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

At the end of 2021, OTP Mortgage Bank's retail mortgage loan portfolio comprised 252 thousand transactions, representing a total of HUF 1,514 billion in receivables from customers. The loan portfolio was secured by 254 thousand properties.

At the end of 2021, the number of transactions meeting the criteria set out in OTP Mortgage Bank's Green Bond Framework was 24 thousand representing a total of HUF 185 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 and green bond issuance are summarised below.

- The estimated annual energy consumption of the properties financed by the total customer loan portfolio is 2,220 GWh, which brought about 493 thousand tonnes of carbon dioxide equivalent greenhouse gas (GHG) emissions.
- The total estimated annual energy consumption of energy-efficient properties is 75 GWh, resulting in 16 thousand tonnes of carbon dioxide equivalent greenhouse gas emissions.
- According to OTP Mortgage Bank's portfolio data for the end of 2021, green lending will save 88 GWh of energy consumption and 20 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 10 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 lack of data, and where data is available the reliability of data quality is low, and – in the absence of widespread experience and established good practices – there is no consensus on the share of emissions that financial institutions are responsible for as a result of maintaining the properties they finance. 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 the second-hand housing stock.

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 <sub>2</sub> eq
High energy efficiency	185	95	17	88	318	19,588
Significantly improving energy efficiency	-	-	-	-	-	-
Total green loans	185	95	17	88	318	19,588
Impact of HUF 1 billion financing				0.5	1.7	105.9
Effect of green bonds				45	163	10,059

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, purchase and construction of residential properties and providing general purpose mortgage loans. In 2021, the Company created its Green Strategy<sup>2</sup> and Green Bond Framework<sup>3</sup> with the aim of contributing to the achievement of environmental and climate goals 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 for 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 Principles<sup>4</sup> 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. With the 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 on 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 2021. The aim of the Report is to present the portfolio of green bonds and green loans in circulation in such a way as to fulfil the recommendations set out in the 'Harmonised Framework for Impact Reporting' handbook<sup>5</sup> 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 on the expected environmental impact of green lending activity. The stock figures in the Report are as at 31 December 2021.

The Report was approved by the Company's Green Bond Committee on 12 April 2022.

OTP Mortgage Bank publishes the Report – along with all other documents related to green bonds, including the Green Bond Framework – on its website<sup>6</sup>.

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.otpjzb.hu>)

3 OTP Mortgage Bank Green Bond Framework 2021 (<https://www.otpjzb.hu>)

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

5 ICMA Handbook Harmonised Framework for Impact Reporting (<https://www.icmagroup.org/assets/documents/Sustainable-finance/2021-updates/Handbook-Harmonised-Framework-for-Impact-Reporting-June-2021-100621.pdf>)

6 <https://www.otpjzb.hu>

## Meeting green targets in 2021

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 2021 we carried out the following tasks.

OTP Mortgage Bank has drawn up its Green Strategy and Green Bond Framework. The Company published the documents on its website. In order to ensure compliance with the Green Bond Principles, OTP Mortgage Bank has commissioned Deloitte Könyvvizsgáló és Tanácsadó Kft. to conduct an independent external review providing assurance regarding the Green Bond Framework. The Company's CEO has appointed a designated Chief Sustainability Officer, whose tasks include supporting the implementation of the objectives and principles laid down in the Green Strategy in all areas of the Company's operation.

The identification of green loans in OTP Mortgage Bank's portfolio, as defined in the Green Bond Framework, has commenced. 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 has indicated its intention to participate in the Green Home Programme (ZOP), created by the Magyar Nemzeti Bank (National Bank of Hungary) and its main goal is to stimulate the demand for green houses and apartments and consequently, to stimulate supply as well. The first ZOP loans were disbursed in November 2021.

The Base Prospectus of OTP Mortgage Bank's XVIII. Mortgage Bond Programme has been supplemented with information for investors on green bonds. The Company completed its first two green bond issuances. In 2021, bonds were sold with a total face value of HUF 95 billion. The Company participated in the Green Bond Purchase Programme of the Magyar Nemzeti Bank.

### Green operation and corporate social responsibility

OTP Bank and some of its domestic subsidiaries will achieve net carbon neutrality from 2022 on, using green energy 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, acting as an intermediary for OTP Mortgage Bank, has developed a module on its website<sup>7</sup> 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. During the loan application, the personal

customer documentation already includes information on where customers can become familiar with 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 governance contribution to sustainability is available on the website of OTP's ESG Programme<sup>8</sup> and in its annually published Sustainability Report<sup>9</sup>.

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 reflected 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. Following the issuance of green bonds, the Budapest Stock Exchange awarded OTP Mortgage Bank the 'Mortgage Bond Issuer of the Year Award' at the 2021 Best of BSE Awards.

7 <https://www.otpbank.hu/portal/hu/Lakashitel>  
8 <https://www.otpbank.hu/portal/hu/IR/ESG>  
9 <https://www.otpfenntarthatosag.hu/hu/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. Here were two bond issuances during the year, within the framework of which securities with a total face value of HUF 95 billion were sold. The volume of green bonds issued by the Company shifted according to the following.

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

2021 opening portfolio	HUF 0
Issuance	HUF 95,020,000,000
Maturity	HUF 0
Repurchased mortgage bonds withdrawn from circulation	HUF 0
Currency revaluation effect (in case of denominations other than HUF)	HUF 0
<b>Total turnover</b>	<b>HUF 95,020,000,000</b>
2021 closing portfolio	HUF 95,020,000,000

### Green bond transactions in 2021

**18 August 2021 – issuance: the Company sold green bonds with a face value of HUF 5 billion at an auction.**

Name of series:	OJB2031/1
Series part:	1.
ISIN identifier:	HU0000653456
Type of issue:	auction
Time of auction:	16 August 2021
Financial settlement date:	18 August 2021
Maturity:	22 October 2031
Interest:	fixed, payable annually, 2.50% per annum
Face value issued:	HUF 5,020,000,000

**7 November 2021 – issuance: the Company sold green bonds with a face value of HUF 90 billion at an auction.**

Name of series:	OJB2031/1
Series part:	2.
ISIN identifier:	HU0000653456
Type of issue:	auction
Time of auction:	5 November 2021
Financial settlement date:	7 November 2021
Maturity:	22 October 2031
Interest:	fixed, payable annually, 2.50% per annum
Face value issued:	HUF 90,000,000,000

### Summary data of OTP Mortgage Bank's green bonds in circulation as at 31 December 2021

**Table 3: OTP Mortgage Bank green bonds in circulation**

Series	ISIN identifier	Currency	Face value	Maturity
OJB2031/1	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 with the loan provided by the Company in order to improve their energy performance.**

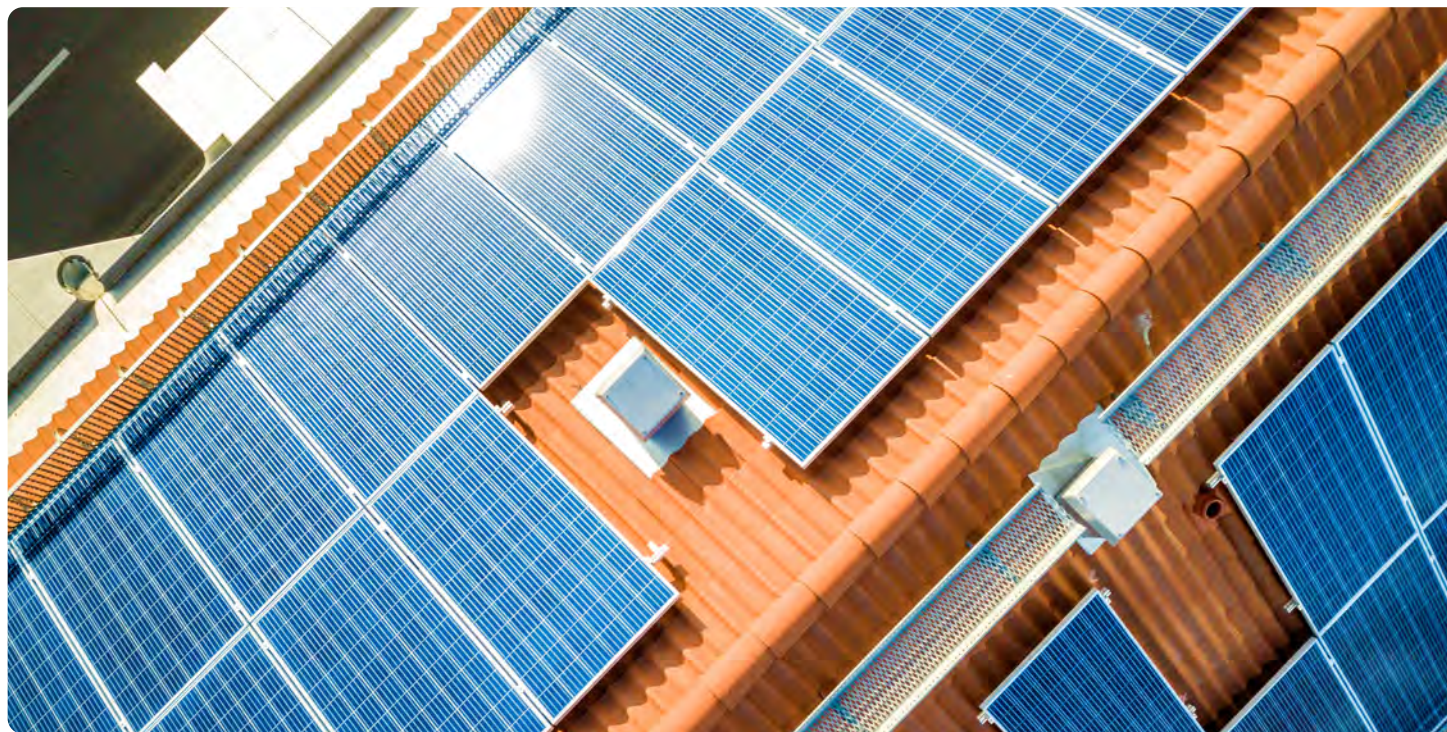
### High energy efficiency real estate

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 as specified in its energy certificate in letters and the scaled value of consolidated energy characteristics. In determining the best 15% of Hungary's real estate stock, OTP Mortgage Bank 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 Centre<sup>10</sup>, 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 Office<sup>11</sup>, 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, ratings data are publicly available, and the data fully matching 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 37% of the mortgaged properties, i.e. a total of 95 thousand properties is known.

Prior to the green bond issuance in 2021, the Company determined which quality rating specified by letters and aggregate energy performance scale (specific energy requirement) meets the criteria for 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/m<sup>2</sup>/year. (The threshold is reviewed annually and prior to the issue of each new green bond.)



10 <https://www.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/m<sup>2</sup>/year. The specific energy requirement of real estates with an energy rating of CC is maximum 130 kWh/m<sup>2</sup>/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 before 2016, are not considered to be green real estates.

There are a total of 20 thousand properties rated CC in the portfolio, and the specific energy requirement is only known for 8% of these. For the remaining part, CC-rated properties are categorised at portfolio level using a 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 a specific energy requirement of 118 kWh/m<sup>2</sup>/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<sup>12</sup> and 2019<sup>13</sup>, 68% of CC-rated properties are in the top 15% of the Hungarian property stock. 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 99% probability the ratio of energy-efficient properties within the CC category with a specific energy requirement better than 118 kWh/m<sup>2</sup>/year (or the current 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/m<sup>2</sup>/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.

### 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, before and after the investment, supports this. Currently, the Company does not have any loan products for which this information is available, and as such, no property with significantly improving energy efficiency has been identified in 2021.

### Definition of green real estate and green loans

Of the retail 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 several loans are linked to one property, no clear matching is possible and 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 the 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.

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.

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

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

## Allocation

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 2021, the Company's retail mortgage loan portfolio comprised 252 thousand transactions, representing a total of HUF 1,514 billion in receivables from customers. The loan portfolio was secured by 254 thousand properties. At the end of 2021, the number of transactions meeting the criteria set out in OTP Mortgage Bank's Green Bond Framework was 24 thousand representing a total of HUF 185 billion in receivables from customers. These transactions are considered to be green loans.

OTP Mortgage Bank used all of the funds from the green bonds it has issued to finance green loans. In the case of both bond issues in 2021, the proceeds were used to finance existing green loans already disbursed, and no so-called promissory notes were issued (where the credit institution uses the proceeds from the green bonds to disburse green loans after the issue).



The portfolio of green loans exceeded the portfolio of green bonds in circulation at all times throughout 2021. Under the Green Bond Framework, in any case where 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 2021, 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 grow. The volume identified as green loans at the end of 2021 represents 12% 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 to identify the given items.

On the demand side, we expect that in case of customers buying 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), created by the Magyar Nemzeti Bank to stimulate the demand for green real estate and consequently to also stimulate supply, will help to further increase the portfolio of green loans. The Company has indicated its intention to participate in the programme and the first OTP ZOP loans were disbursed in November 2021.

### Green Home Programme

Through the Green Home Programme (launched in October 2021), the Magyar Nemzeti Bank provides HUF 200 billion in funding for the construction and purchase of energy-efficient homes. The loan is provided directly by participating banks at a preferential interest rate of maximum 2.5%, fixed for the entire loan term. The Magyar Nemzeti Bank aims to promote the development of the green housing loan market, and thus it finances the construction and purchase of new homes through credit institutions, where the calculated value of aggregate energy performance of the new home does not exceed 90 kWh/m<sup>2</sup>/year for the useful floor area, and the energy requirement is close to zero (at least BB energy rating), in which category at least 25% of the energy is provided by renewable energy sources.



## Characteristics of the green portfolio

At the end of 2021, OTP Mortgage Bank's retail mortgage loan portfolio comprised 252 thousand transactions, representing a total of HUF 1,514 billion in receivables from customers. The portfolio included HUF 3 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 254 thousand properties.

**Table 4: Energy distribution of properties**

Rating by letters specified in the energy performance certificate	Number of properties (thousand properties)
AA++	0.2
AA+	0.4
AA	0.3
BB	3.4
CC, green	18.9
Known, not green	71.5
Not known	159.8
<b>Total</b>	<b>254.4</b>

For some of the loans, there are multiple 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.

**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++	3	0	3
AA+	6	0	6
AA	4	0	4
BB	47	0	47
CC or worse	1,451	1,326	125
<b>Total</b>	<b>1,511</b>	<b>1,326</b>	<b>185</b>

\* Without land development loans

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)
2016 and before	369	359	10
2017	100	89	11
2018	161	141	20
2019	229	193	36
2020	269	223	46
2021	383	320	63
<b>Total</b>	<b>1,511</b>	<b>1,326</b>	<b>185</b>

\* Without land development loans



The majority of known loan-purpose transactions are for second-hand homes, home purchase or renovation. For 25% 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 99.8%, while the remaining 0.2% 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 12%.



## Environmental impact

### Applied methodology – PCAF

OTP Mortgage Bank has estimated its financed emissions based on the methodology<sup>14</sup> developed by the Partnership for Carbon Accounting Financials<sup>15</sup> (PCAF), which is specifically adapted to the characteristics of financial sector companies.

For the estimation of financed CO<sub>2</sub> emissions, the PCAF methodology breaks down the financed portfolios into various segments, and in the case of OTP Mortgage Bank, the relevant segment is Mortgage. The formula for calculating financed emissions consists of two parts. The first part is the so-called attribution factor, which shows the extent of the financed property's emissions that should be counted as financed emissions. The attribution factor is the quotient of the outstanding principal amount of financing and the value of

the property, up to a maximum value of 1. The second part of the formula quantifies the emission of the property. To determine the emission, it is necessary to be aware of the type of heating, the area heated, the ratio of renewable energy used, the calculated value of the aggregate energy characteristics, and based on these factors the greenhouse gas emissions (GHG) can be determined using a conversion factor table compiled from publicly available data. The GHG emissions are also determined by taking into account the average annual GHG emissions from electricity use per home. The emissions must be multiplied by the attribution factor to obtain the CO<sub>2</sub> equivalent of the GHG emissions associated with the financing.

The varying depth of available data makes the identification of emissions related to properties a complex task. As the data available for the transactions in OTP Mortgage Bank's portfolio varies (and so does their reliability), the GHG emissions of the properties financed by the Company have been estimated on a transaction-by-transaction basis, grouped according to the availability of data.

Quantifying the emissions associated with the financed portfolio faces a number of difficulties, including the lack of data, and where data is available, the reliability of data quality is low, and – in the absence of experience and established good practices – there is no consensus on the share of emissions that financial institutions are responsible for in respect of the customers they finance. 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 the second-hand housing stock.

### Data available to perform the calculation

The PCAF recommends that the quality and availability of the 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, so the evaluation is based on an average area, energy consumption and GHG emission data.

Calculations according to the PCAF methodology require data on the value of the property associated with the loan, specific energy requirement, heated area, heating type and the share of renewable energy. Regarding properties related to the loans in OTP Mortgage Bank's retail mortgage loan portfolio, evaluation based on the rating category has been determined. Properties are included in all rating categories except Score 1, however, the vast majority of properties are rated Score 3 and Score 4, for the reasons detailed below.

- Attribution factor: the amount of loans outstanding as of 31 December 2021 and the known value of the properties as of 31 December 2021 were used.
- Instead of the heated area data, the net area of the property is used in the calculations, which was known for 221 thousand properties. In the absence of data, average area data were taken into account.
- Information on the share of renewable energy used was not available. In cases where the energy rating classification specified by letters was known and the property was placed in one of the top four categories, the minimum of these categories, i.e. a renewable energy share of 25% was taken into account.
- The calculated value of the aggregate energy characteristic (specific energy requirement expressed in kWh/m<sup>2</sup>/year) was available for 9 thousand properties. For the 95 thousand properties where the energy rating specified by letters was known, the missing data were estimated

<sup>14</sup> Partnership for Carbon Accounting Financials (<https://www.carbonaccountingfinancials.com>)

<sup>15</sup> PCAF (2020): The Global GHG Accounting and Reporting Standard for the Financial Industry (<https://carbonaccountingfinancials.com/files/downloads/PCAF-Global-GHG-Standard.pdf>)

using the specific energy requirement value equivalent to the mean of the rating category. Where the latter data was not available either, the average annual energy consumption data calculated from data published by the Lechner Knowledge Centre was used.

- Heating type: In 129 thousand cases, data were available for a heating type that could be clearly assigned to a heating category with a clearly identifiable GHG conversion factor (energy-proportionate GHG emissions). Publicly available emission factor data on energy consumption and GHG emissions<sup>16</sup> were used to perform the calculations. GHG emissions for properties with missing heating data were determined using average emissions calculated from the part of the portfolio with known heating data.

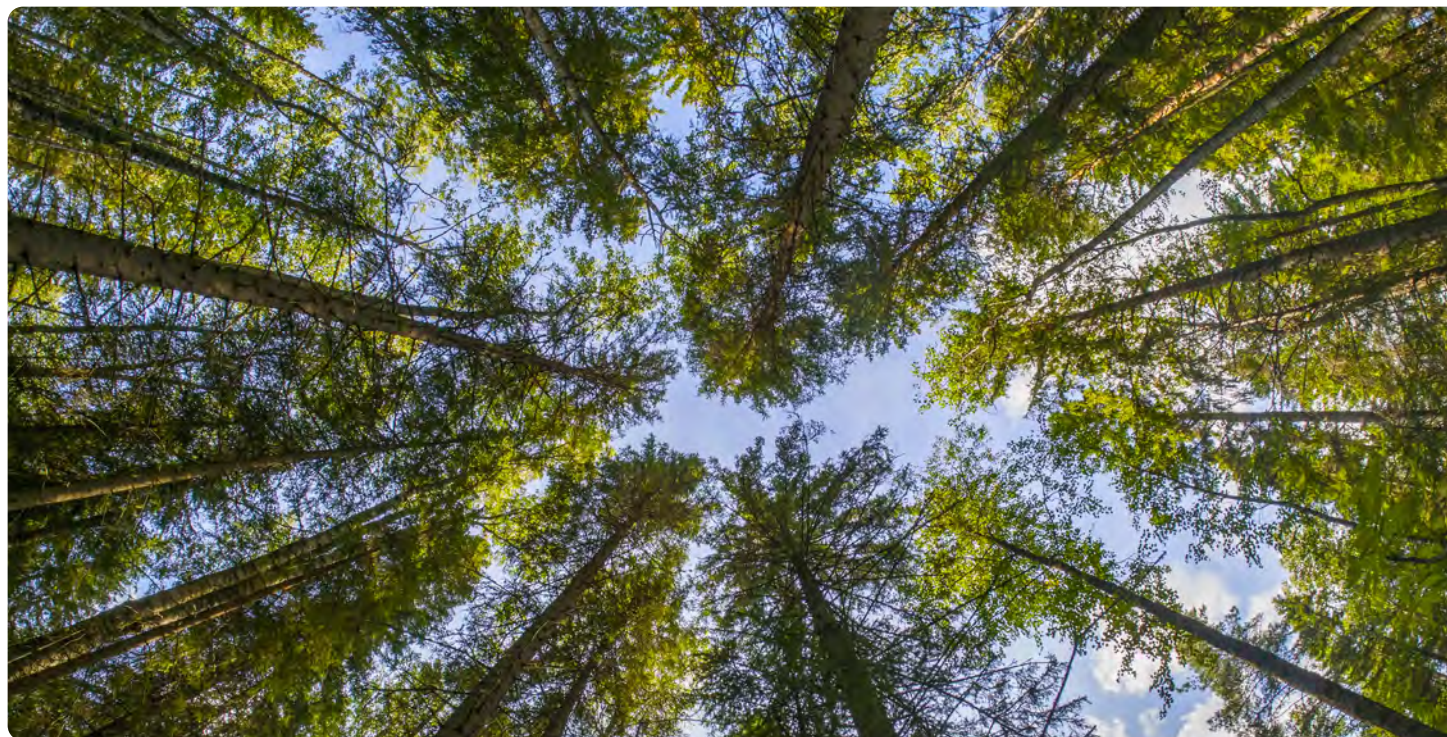
## Total financed and avoided energy consumption and greenhouse gas emissions

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 2021 year-end data and on 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 for heating purposes of the properties financed by the total loan portfolio, totalling 8,828 thousand square metres, is 2,016 GWh, supplemented by 204 GWh of non-heating electrical energy consumption. Overall, energy consumption for heating and other purposes led to 493 thousand tonnes of CO<sub>2</sub> equivalent greenhouse gas (GHG) emissions.

The estimated annual energy consumption for heating purposes of the properties financed by the green loan portfolio, totalling 625 thousand square metres, is 60 GWh, supplemented by 15 GWh of non-heating electrical energy consumption. Overall, energy consumption for heating and other purposes led to 16 thousand tonnes of CO<sub>2</sub> equivalent greenhouse gas (GHG) emissions.

The estimated annual energy consumption for heating purposes of the properties financed by the non-green loan portfolio, totalling 8,204 thousand square metres, is 1,955 GWh, supplemented by 189 GWh of non-heating electrical energy consumption. Overall, energy consumption for heating and other purposes led to 477 thousand tonnes of CO<sub>2</sub> equivalent greenhouse gas (GHG) emissions.



16 Sources of data used for the calculations:

- The Intergovernmental Panel on Climate Change (<https://www.ipcc.ch>);
- Department for Environment Food & Rural Affairs (<https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs>);
- Association of Issuing Bodies: European Residual Mixes - Results of the calculation of Residual Mixes for the calendar year 2020 ([https://www.aib-net.org/sites/default/files/assets/facts/residual-mix/2020/AIB\\_2020\\_Residual\\_Mix\\_Results.pdf](https://www.aib-net.org/sites/default/files/assets/facts/residual-mix/2020/AIB_2020_Residual_Mix_Results.pdf));
- Environmental and Energy Efficiency Operational Programme: EEEOP 2009 call for applications, 5.4.0 Energy Annex (<https://www.palyazat.gov.hu/doc/1583>);
- Decree No. 17/2017 (26.V.) of the Ministry of National Development on the quality requirements for motor fuels (<https://net.jogtar.hu/jogszabaly?docid=a1700017.nfm>);
- Government Decree No. 122/2015. (V.26.) on the implementation of the Energy Efficiency Act (<https://net.jogtar.hu/jogszabaly?docid=a1500122.kor>);
- Regulation No 115 of the Economic Commission for Europe of the United Nations (UN/ECE) Uniform provisions concerning the approval of: I. specific LPG (liquefied petroleum gases) retrofit systems to be installed in motor vehicles for the use of LPG in their propulsion system; – II. specific CNG (compressed natural gas) retrofit systems to be installed in motor vehicles for the use of CNG in their propulsion system ([https://eur-lex.europa.eu/eli/reg/2\\_014/115/oj](https://eur-lex.europa.eu/eli/reg/2_014/115/oj));
- Commission Regulation (EU) 2017/2010 of 9 November 2017 amending Regulation (EC) No 1099/2008 of the European Parliament and of the Council on energy statistics, as regards the updates for the annual and monthly energy statistics (<https://eur-lex.europa.eu/eli/reg/2017/2010/oj>)

**Table 7: Financed energy consumption and GHG emissions**

	Unit of measurement	Total portfolio *	Non-green real estate	Green real estate
Outstanding principal	HUF billion	1,511	1,326	185
Real estate associated with mortgage loans	thousand units	254	231	24
Real estate area	thousand m <sup>2</sup>	26,551	24,101	2,450
Financed area	thousand m <sup>2</sup>	8,828	8,204	625
Weighted average heating energy consumption	kWh/m <sup>2</sup>	228	238	97
Financed heating energy consumption	GWh	2,016	1,955	60
Financed other energy consumption	GWh	204	189	15
<b>Total financed energy consumption</b>	<b>GWh</b>	<b>2,220</b>	<b>2,145</b>	<b>75</b>
	<b>TJ</b>	<b>7,991</b>	<b>7,721</b>	<b>270</b>
<b>Financed annual GHG emissions</b>	<b>t CO<sub>2</sub> eq</b>	<b>493,157</b>	<b>476,830</b>	<b>16,328</b>

\* Without land development loans

**Table 8: Energy consumption and GHG emissions avoided**

	Heating energy consumption		GHG emissions
	thousand m <sup>2</sup>	GWh	TJ
Green real estate	625	60	218
Non-green real estate	8,204	1,955	7,039
Non green real estate, 625 thousand m <sup>2</sup> equivalent	625	149	536
<b>Energy consumption / GHG emissions avoided</b>		<b>88</b>	<b>318</b>
			<b>19,588</b>

**Table 9: Effect of green bonds**

	Avoided energy consumption		Avoided GHG emissions
	HUF billion	GWh	TJ
Green loans	185	88	318
Impact of HUF 1 billion financing	1	0.5	1.7
<b>Green bonds</b>	<b>95</b>	<b>45</b>	<b>163</b>
			<b>10,059</b>

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

- The estimated annual energy consumption for heating of a non-green property equivalent to 625 thousand square metres of financed green property is 149 GWh based on averages, compared to only 60 GWh for green properties, thereby saving 88 GWh of energy consumption per year through green lending.
- For a non-green property equivalent to 625 thousand square metres of financed green property, we estimate that, based on averages, the maintenance of the property led to 32 thousand tonnes of CO<sub>2</sub> equivalent GHG emissions, compared to only 12 thousand tonnes of CO<sub>2</sub> equivalent GHG emissions for green property, which means 20 thousand tonnes less of CO<sub>2</sub> equivalent GHG emissions.

The portfolio of green bonds issued by OTP Mortgage Bank as of 31 December 2021 was HUF 95 billion. This accounted for 51% of the HUF 185 billion principal portfolio of green loans at the end of the year. Accordingly, by issuing green bonds, we estimate that we have avoided 45 GWh of energy consumption and 10,059 tonnes of carbon dioxide equivalent GHG emissions on annual basis.

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