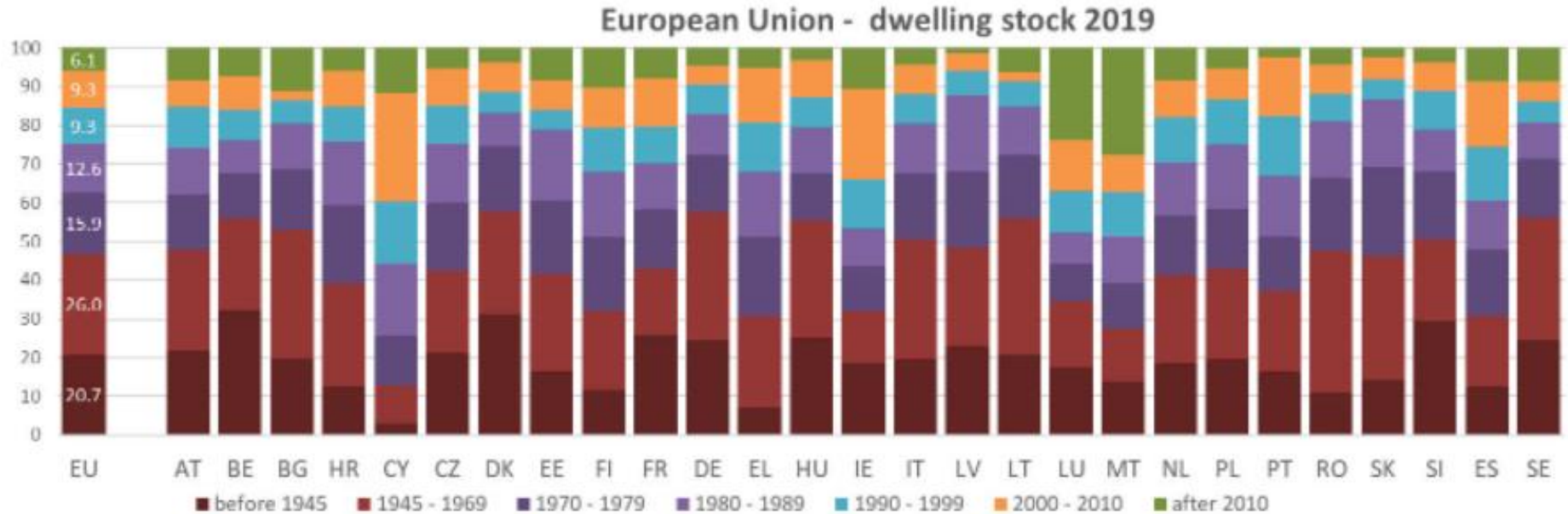


The role of green bonds in the energy transition

Attila Bógyi – OTP Mortgage Bank, head of legal department

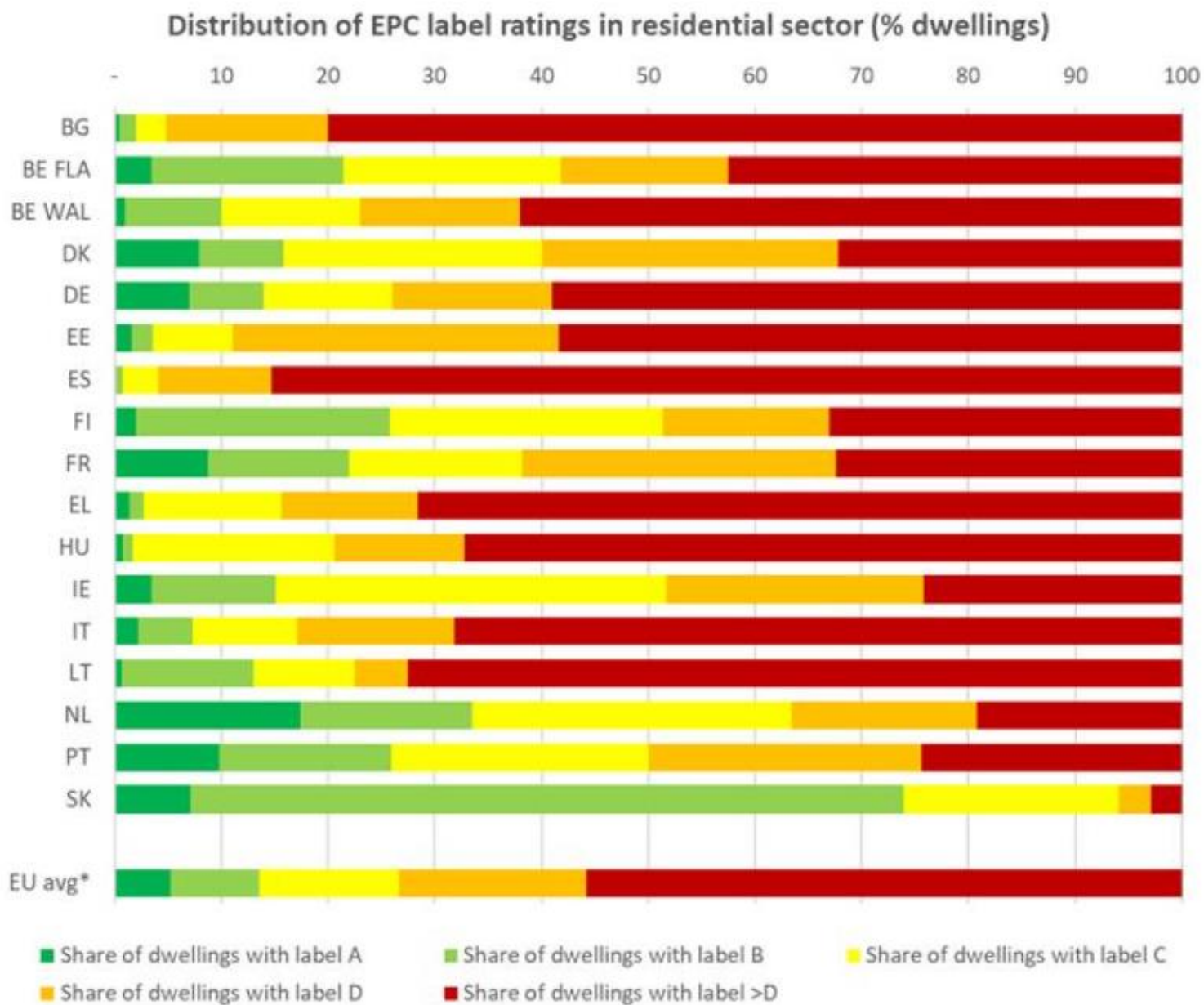
Distribution of European residential real estate stock by age



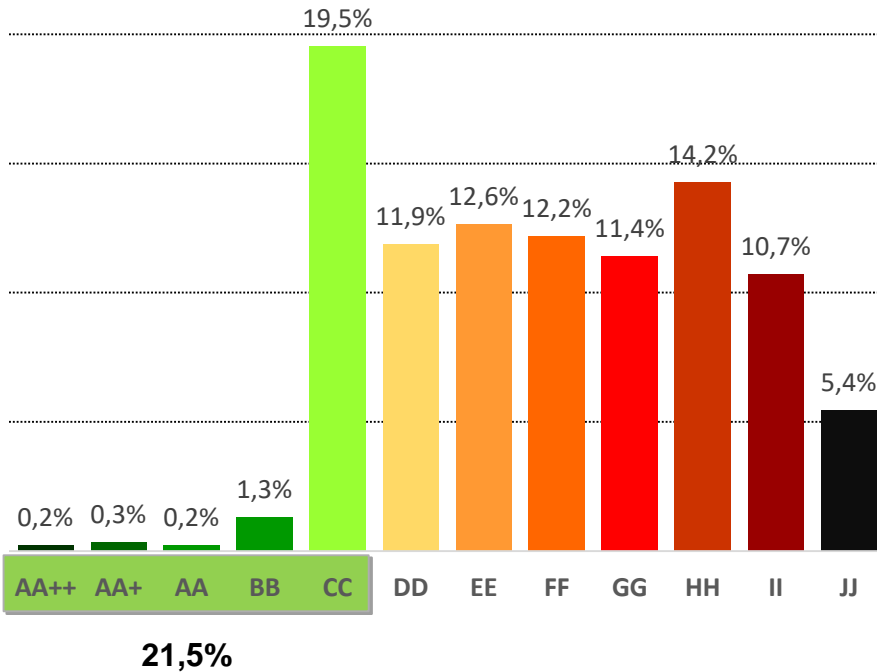
Source: based on Building Stock Observatory and Odyssee database. For Austria also based on Entranze project findings

- Buildings are responsible for approximately
 - 40% of EU energy consumption
 - 36% of the energy-related greenhouse gas emissions
- Buildings are therefore the single largest energy consumer in Europe. Heating, cooling and domestic hot water account for 80% of the energy that we consume.
- At present, about 35% of the EU's buildings are over 50 years old and almost 75% of the building stock is energy inefficient. At the same time, only about 1% of the building stock is renovated each year.

Distribution of European residential real estate stock by EPC rating



Distribution of Hungarian residential building stock



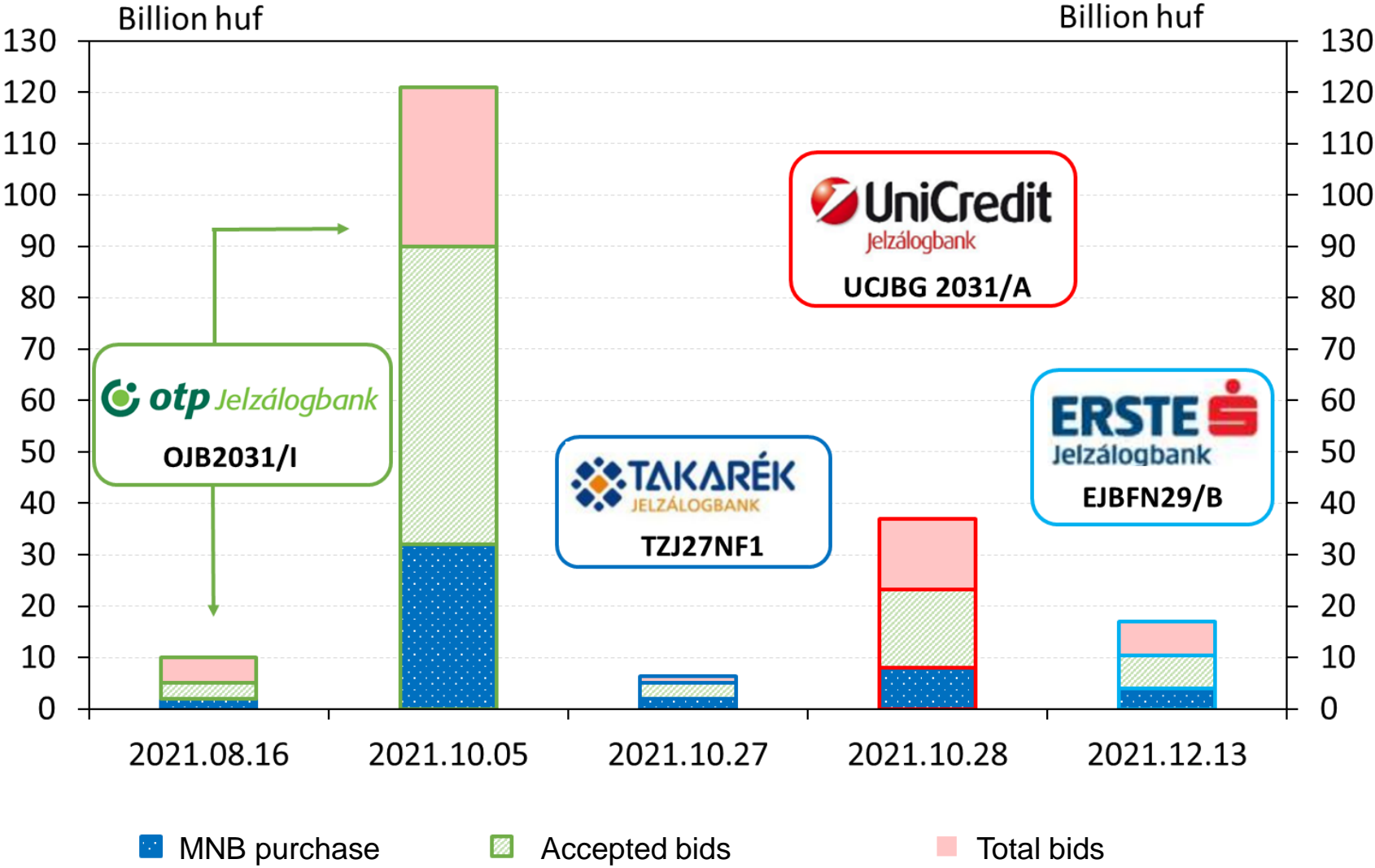
- almost 80% of residential buildings were built before 1990
- an enormous part of the stock needs to be renovated
- only 2.1% of the certificates issued between 2016 and 2019 comprised items that complied with the nearly zero-energy requirement (BB-AA++)
- 19.5% received a 'CC' rating ('upgraded'), while the remaining 78.4% had worse ratings.

For geographical and historic reasons, the energy-efficiency indicators of Hungarian residential buildings are unfavourable.

What can we achieve? The example of „Kádár cubes”



Key details of the 2021 Hungarian Green Mortgage Bond Auctions

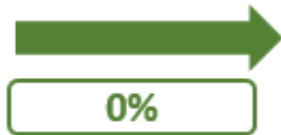


Source: MNB, Bloomberg

Operation and main parameters of the MNB's Green Home Programme



Refinancing



Commercial
banks

Mortgage
loan



Residential
customers

MAIN CONDITIONS OF FGS GREEN HOME PROGRAMME



constructions
or purchases
of new real
estate



min. BB
classification



max. 80
kWh/m²/year
prim. energy
consumption

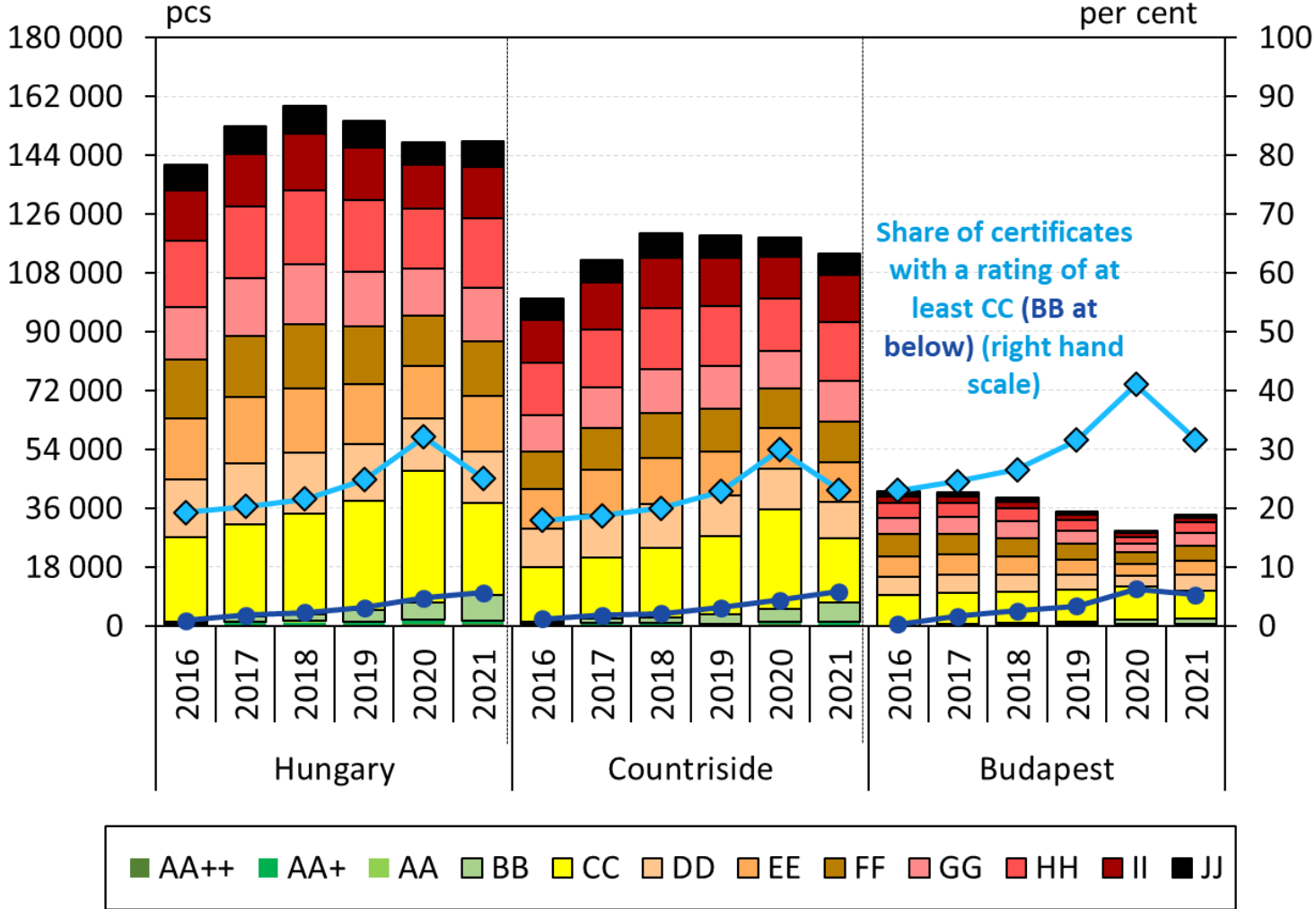


max. HUF 70
million loan
amount



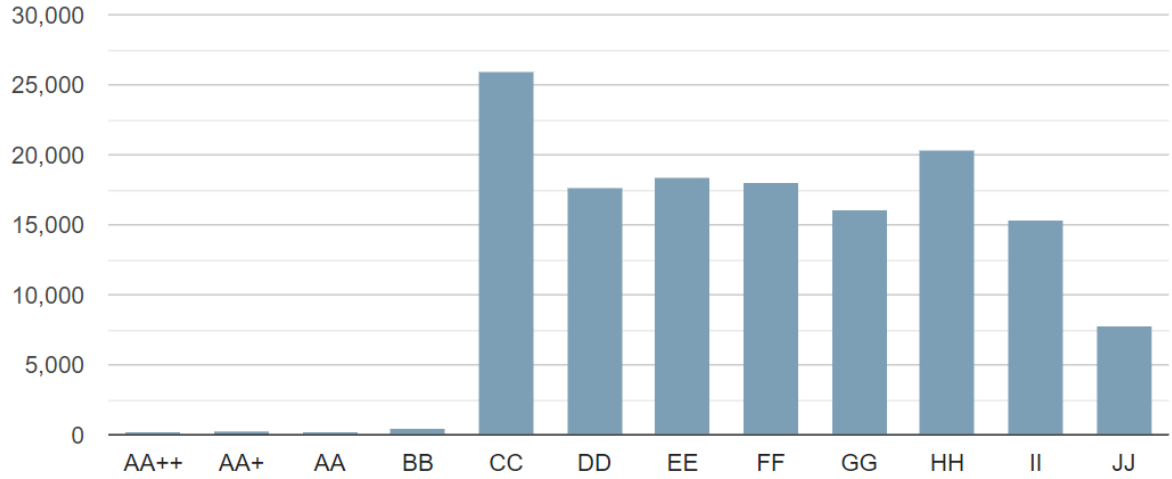
max. 25 year
maturity

Number of energy performance certificates issued for (used and new) residential and accommodation building by category, broken down to Budapest and the countryside

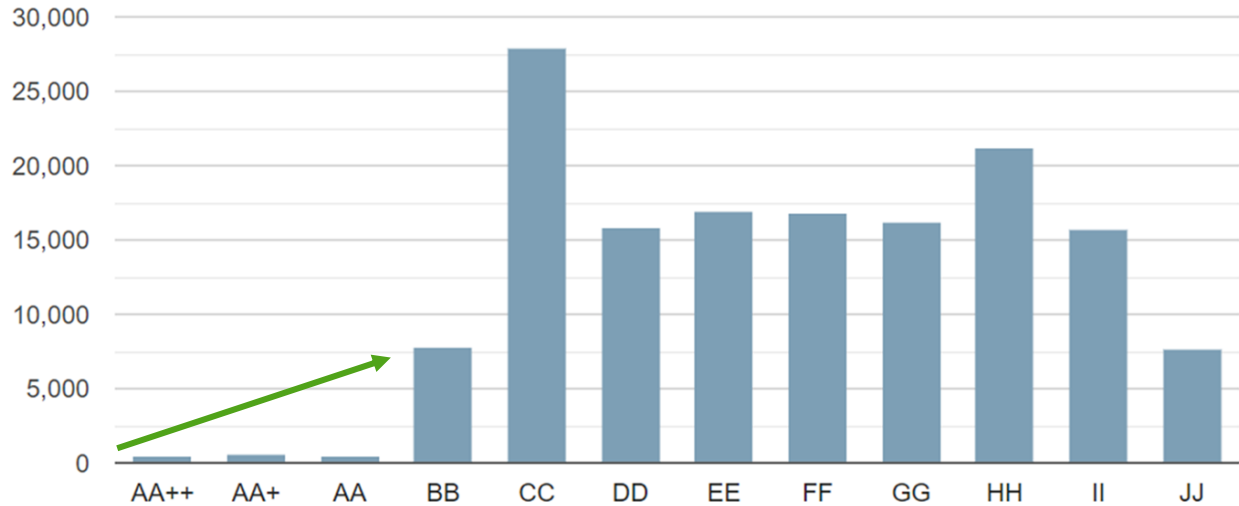


Distribution of EPC label ratings in Hungary

2016



2021



Positive environmental effects of our mortgage bond issuance

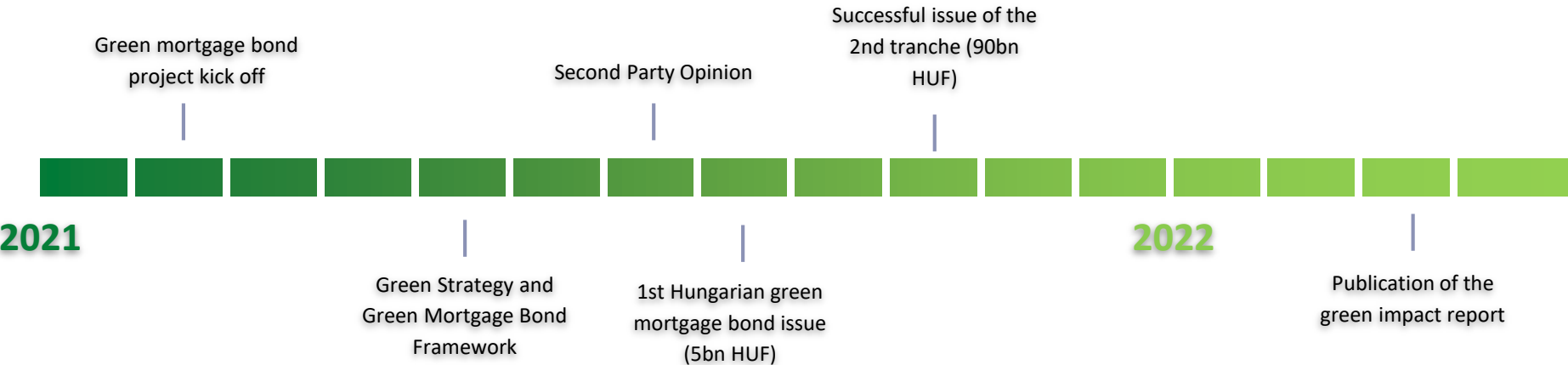
Environmental impact of the green lending activity

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

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	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

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

Timeline and experiences of the first green mortgage bond issue in Hungary



Key takeaways of the project:

1. Great investor interest, significant oversubscription,
2. Data is the fuel of green financing - access to energy data is essential - without adequate data, green funding cannot be successful,
3. Standardization of green frameworks could improve market transparency,
4. In addition to new housing, emphasis should also be placed on the energy modernization of the housing stock

Green Bond Principles

Climate Bonds Standard

The Issuer defines it based on the GBS broader category descriptions.

More general guidelines and recommendations for the issuance process.

Recommendation to involve independent third-party verifier.

ICMA does not have its own certification.

There is no direct connection.

Green project definition

Criteria system

Assurance/Verification

Certification

EU GBS Taxonomy

Stricter eligibility criteria for each selected sectors.

Specific criteria system and detailed process with certain follow-up activities.

It is mandatory to involve an external independent verifier approved by CBI.

The CBI issues the climate bond certificate based on the verifier's report.

It harmonises with the EU GBS 2019 recommendations (not final version yet).



The key elements of our green mortgage bond framework

1

International framework: ICMA Green Bond Principles



2

Eligible loans: retail mortgage loans comprising the Company's own portfolio and refinancing mortgage loans granted to its commercial bank partners,

3

Geographical focus, time limitation: loans secured by mortgage claims on real estate collateral located in the territory of Hungary, whose energy performance certificate was issued after 31 December 2015

4

Loan purpose: residential mortgages for the purpose of the construction or purchase of used or newly refurbished residential homes, and general purpose mortgages for renovating and upgrading existing properties

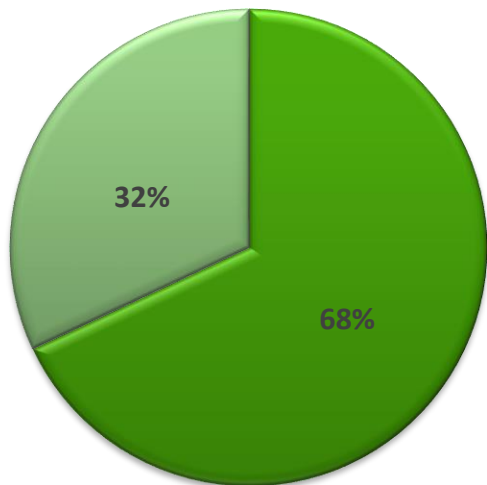
5

Energy characteristics: loans where the property(ies) serving as collateral for the loan meet at least one of the criteria of the following two categories are deemed green loans by OTP Mortgage Bank:

(1) **energy-efficient properties:** buildings falling within the best 15% of Hungary's total stock of buildings based on their energy efficiency rating.

(2) **buildings with significantly improving energy performance:** buildings undergoing refurbishment or upgrading from the loan provided by the Company in order to improve their energy performance.

Distribution of category CC*



- 118 kWh/m²/a or better
- Higher than 118 kWh/m²/a

68% of the CC category is in the top 15%

International examples for determining the best 15% of the housing stock

Green rating of the entire CC-rated stock



AIB in Scotland and Crédit Agricole in Italy include the entire CC-rated building stock in the top 15% of their green buildings, based on the age distribution and energy performance of the property portfolio.



Application of a statistical method



OP Mortgage Bank uses statistical methods to identify the best 15% of its building stock in case of lack of data.



ING also uses the analysis of external databases to identify the top 15% of the building stock.

In Hungary, portfolio estimation using conservative statistical approach can be a solution to eliminate problems due to lack of data.

* Based on the data provided by Lechner Knowledge Center (2016-2019)

Barriers in front of green lending



So what's missing then? Easy access to data and modernisation programs

What we don't really have - EPCs

HITELES ENERGETIKAI TANÚSÍTVÁNY

ÖSSZESÍTŐ LAP HET-

Épület (önálló rendeltetési egység)

Rendeltetés: Lakó- és szállásjellegű
 Cím: 1010 Város
 Utca, házszám, emelet, ajtó
 HRSZ: 1234/A/12
 Az épület védettsége: Nem védett

Megrendelő

Név: Megrendelő neve
 Cím: Megrendelő lakcíme

Energetikai minőség szerinti besorolás: CC

Korszerű

Energetikai adatok

Fűtött alapterület: 69 m²
 Összesített energetikai jellemző:
 -mérésezt érték: 125,05 kWh/m²a
 -követelményérték: 100 kWh/m²a
 -a követelményérték százalékában: 125%

Korszerűsítési javaslat

Korszerűsítési javaslat leírása...

A javaslattal elérhető besorolás:-

Megjegyzés

A tanúsítvány tíz évig hatályos. Ha a tanúsítvány hatálya alatt az épületre irányadó jogszabályban meghatározott követelményérték megváltozik, az épület energetikai minőségi osztályba sorolását ismétellen el kell végezni, ha a tanúsítvány hatálya alatt eladás, vagy befejezés történik. Új tanúsítvány készítésével az előző hatályát veszti.

Tanúsítás módszere: Épületrész, számítással

A tanúsítvány kiállításának oka: ingatlan adásvétel

Tanúsító szakember adatai

Név:
 Cím:
 Telefon:
 Email:

Jogosultsági szám:

Állításmozgó munkarész:
 -kelte:
 -készítő szoftver megnevezése:

Hiteles kiállítás dátuma:

 Aláírás (Fecskét helye)

ORSZÁGOS ÉPÍTÉSÜGYI NYILVÁNTARTÁS, E-TANÚSÍTÁS - ET adattap verzió 2.1.0

https://entan.e-epites.hu

But an extensive public database would help right away...

Szűrőfeltételek - összes tanúsítvány

Település* Közterület neve Hátszám

HRSZ

Ha a település meg van adva akkor kötelező még egy szűrőfeltételt kitölteni.

HET azonosító*

HET azonosító	Település	Cím	HRSZ	Besorolás	Feltöltés
01341673	Budapest	Gárdonyi Géza utca 16.	163383	GG	2021.09.02.
01334862	Budapest	Gárdonyi Géza út 27-33 A C 1 8	12530/16/A/18	CC	2021.08.16.
01334861	Budapest	Gárdonyi Géza út 27-33 A C 1 10	12530/16/A/20	CC	2021.08.16.
01320883	Budapest	Gárdonyi Géza utca 7	163375	EE	2021.07.13.
01292478	Budapest	Gárdonyi Géza utca 18 Fsz 4	155600/0/A/4	II	2021.05.10.
01230877	Budapest	Gárdonyi Géza utca 2 B	75634	CC	2020.12.21.
01207788	Budapest	Gárdonyi Géza utca 2	163390	HH	2020.11.06.
01126697	Budapest	Gárdonyi Géza utca 1/B 1 lakás	75620	JJ	2020.05.27.
01110571	Budapest	Gárdonyi Géza utca 27-33. A. ép. 1 7.	12530/16/A/17	CC	2020.04.16.
01077198	Budapest	Gárdonyi Géza utca 14.	75725	EE	2020.01.29.
01052049	Budapest	Gárdonyi Géza utca 27-33. A. ép. 1 7.	12530/16/A/17	CC	2019.11.27.

No data other than the energy classification are currently available. Making primary energy demand data available would help the sector to reach It's green goals.

- the gradual introduction of minimum energy performance standards to trigger renovation of the worst performing buildings
- a new standard for new buildings and a more ambitious vision for buildings to be zero-emission
- enhanced long-term renovation strategies
- increased reliability, quality and digitalisation of Energy Performance Certificates, with energy performance classes to be based on common criteria
- a definition of deep renovation and the introduction of building renovation passports
- modernisation of buildings and their systems, and better energy system integration (for heating, cooling, ventilation, charging of electric vehicles, renewable energy)

Thank you for your attention!

bogyi.attila@otpbank.hu