The role of green bonds in the energy transition

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• 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

Source: European Commission
Energy characteristics of the Hungarian 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

**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

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

Source: MNB
Distribution of EPC label ratings in Hungary

Source: Lechner Knowledge Center
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.

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Volume of green loans</th>
<th>Part financed by green bonds</th>
<th>Average remaining term</th>
<th>Annual energy consumption avoided</th>
<th>Annual GHG emissions avoided</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HUF billion</td>
<td>HUF billion</td>
<td>year</td>
<td>GWh</td>
<td>TJ</td>
</tr>
<tr>
<td>High energy efficiency</td>
<td>185</td>
<td>95</td>
<td>17</td>
<td>88</td>
<td>318</td>
</tr>
<tr>
<td>Significantly improving energy efficiency</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total green loans</td>
<td>185</td>
<td>95</td>
<td>17</td>
<td>88</td>
<td>318</td>
</tr>
<tr>
<td>Impact of HUF 1 billion financing</td>
<td></td>
<td></td>
<td></td>
<td>0.5</td>
<td>1.7</td>
</tr>
<tr>
<td>Effect of green bonds</td>
<td></td>
<td></td>
<td></td>
<td>45</td>
<td>163</td>
</tr>
</tbody>
</table>

Table 1: OTP Mortgage Bank green loans – estimated annual energy savings
Timeline and experiences of the first green mortgage bond issue in Hungary

2021
- Green mortgage bond project kick off
- Green Strategy and Green Mortgage Bond Framework
- 1st Hungarian green mortgage bond issue (5bn HUF)

2022
- Successful issue of the 2nd tranche (90bn HUF)
- Second Party Opinion
- Publication of the green impact report

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
## Comparison between GBP and CBS

<table>
<thead>
<tr>
<th>Green Bond Principles</th>
<th>Climate Bonds Standard</th>
</tr>
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<tbody>
<tr>
<td>The Issuer defines it based on the GBS broader category descriptions.</td>
<td>Stricter eligibility criteria for each selected sectors.</td>
</tr>
<tr>
<td>More general guidelines and recommendations for the issuance process.</td>
<td>Specific criteria system and detailed process with certain follow-up activities.</td>
</tr>
<tr>
<td>Recommendation to involve independent third-party verifier.</td>
<td>It is mandatory to involve an external independent verifier approved by CBI.</td>
</tr>
<tr>
<td>ICMA does not have its own certification.</td>
<td>The CBI issues the climate bond certificate based on the verifier’s report.</td>
</tr>
<tr>
<td>There is no direct connection.</td>
<td>It harmonises with the EU GBS 2019 recommendations (not final version yet).</td>
</tr>
</tbody>
</table>

Source: KPMG
Green Strategy and Green Mortgage Bond Framework
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.
In Hungary, portfolio estimation using conservative statistical approach can be a solution to eliminate problems due to lack of data.

Distribution of category CC* and international examples for identifying green loans

- **Distribution of category CC***
  - 68% of the CC category is in the top 15%
  - 32% of the CC category is below 68% of the CC category
  - 118 kWh/m²/a or better
  - Higher than 118 kWh/m²/a

- **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.

* Based on the data provided by Lechner Knowledge Center (2016-2019)
Barriers in front of green lending

Growing green loan portfolio

- Green mortgage bond purchase program
- Green Home Program
- Changing legal environment

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

What we don’t really have - EPCs

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

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.
Main points of the ongoing EPBD directive revision

- 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!

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