



DREES &
SOMMER

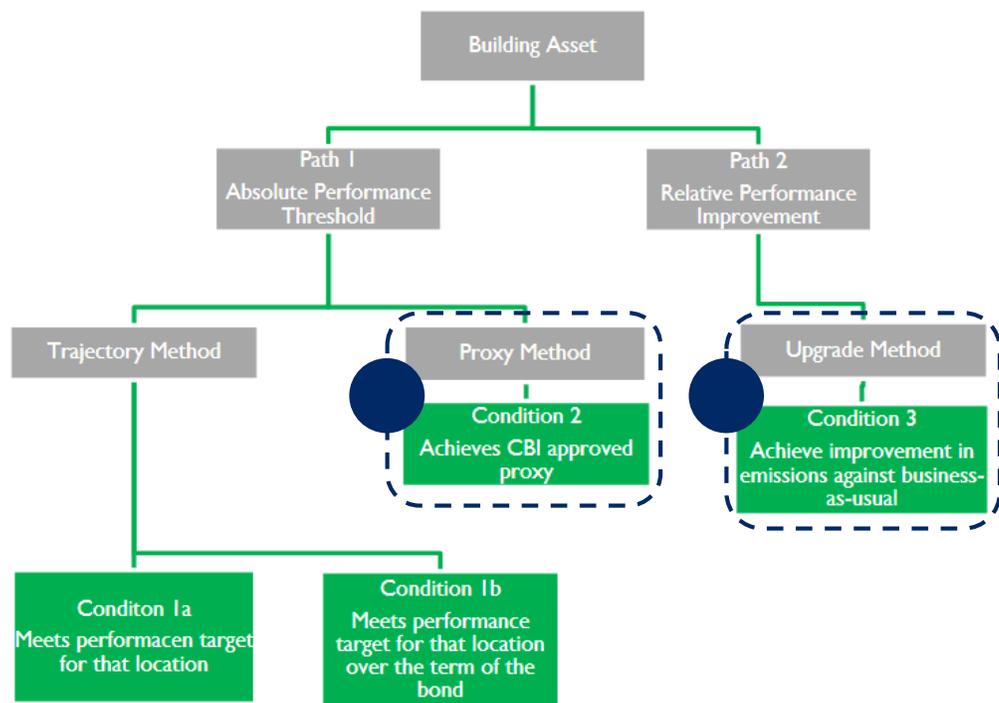
PKO-BH – GREEN COVERED BOND

ASSESSMENT METHODOLOGY (MINOR UPDATE)

05.05.2020 – Hopf | Tschätsch

PKO – GREEN COVERED BOND

Eligibility for Green Covered Bond



Climate Bonds Initiative – Low Carbon Buildings

Low Carbon Buildings (Commercial and Residential)

Green Bond asset is within the **Top 15%** of its local market



Residential Property Climate Bonds

Certification methodology

Low Carbon Buildings Technical Working Group

Version 1.0

Climate Bonds Initiative

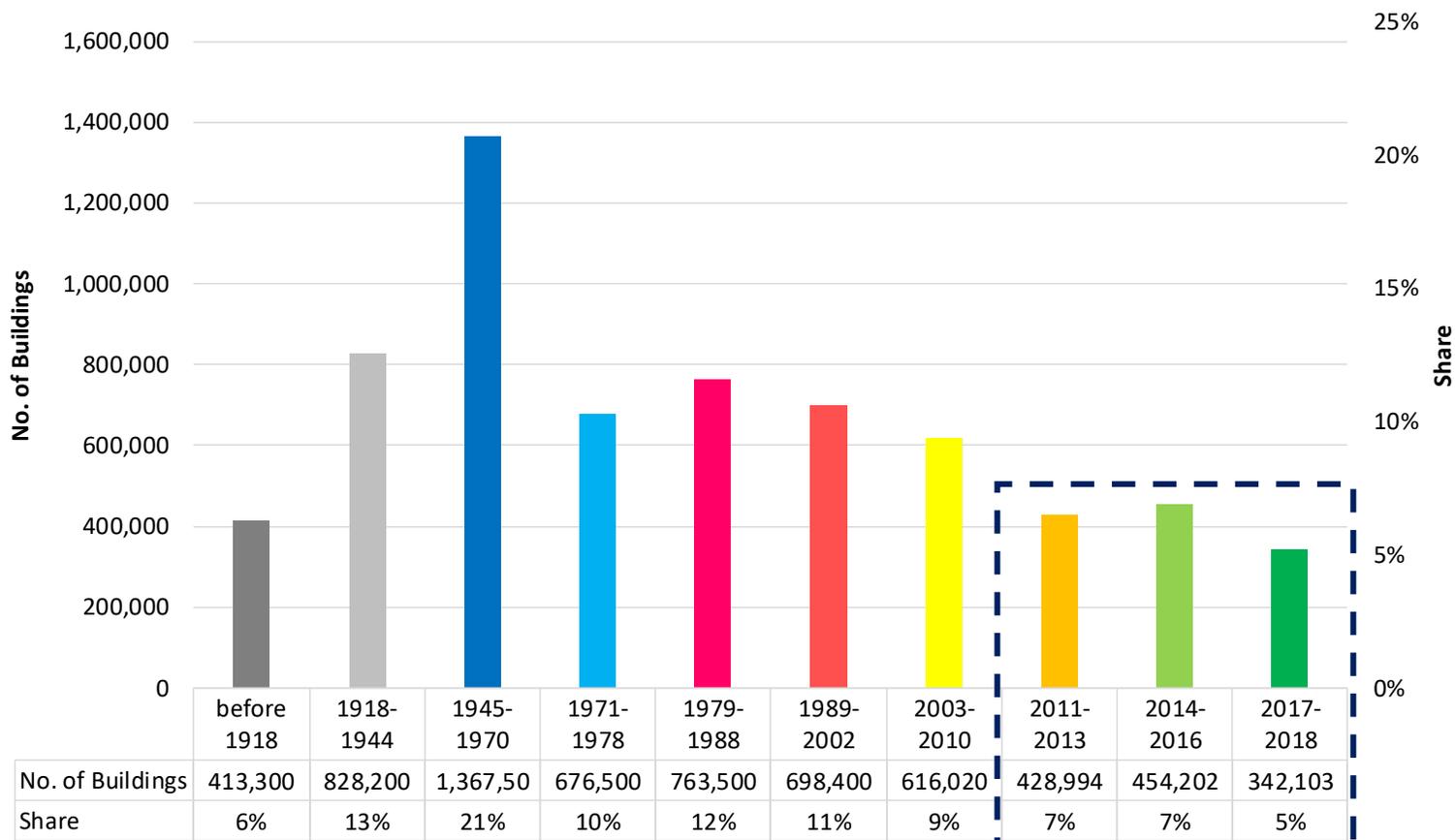
Method 1: Benchmarking against local market carbon performance

Method 2: Relative stringency of energy labels and rating tools

- Identification of a Database,
- Confirmation of sufficient sample size,
- Confirmation of representative Database,
- Determination of Minimum Criteria for Climate Bonds Certification.

PKO – GREEN COVERED BOND

Poland’s residential building stock



Drees & Sommer figure based on NEEAP 2017, TABULA/NAPE 2012, BPIE 2016, Central Statistical Office 2013, with extrapolated data from Statistics Poland 2018,

Information and data is based on:

- Ministry of Energy, National Energy Efficiency Action Plan for Poland, NEEAP 2017
- Central Statistical Office, Statistics Poland,
- Buildings Performance Institute Europe (BPIE),
- TABULA/NAPE.

Poland’s National Energy Efficiency Action Plan from 2017 states that by 2011 there were

- ≈ 6 million residential buildings
- ≈ 13.7 million residential dwellings

Data from 2011-2018 are extrapolated/added from Statistics Poland and do include new residential construction.

Number of buildings, which were demolished were not available or not accessible.

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Poland’s building energy codes

| Name | Abbreviation | Year |
|-----------------------------|--------------|-----------|
| PN-57/B-02405 | PN-57 | 1957-1964 |
| PN-64/B-03404 | PN-64 | 1964-1974 |
| PN-74/B-034042 | PN-74 | 1974-1982 |
| PN-82/B-02020 | PN-82 | 1982-1991 |
| PN-91/B-02020 | PN-91 | 1991-2002 |
| Dz. U. 2002 nr.75 poz.690 | TC 2002 | 2002-2008 |
| Dz. U. 2008 nr.201 poz.1238 | TC 2009 | 2009-2013 |
| Dz. U. 2013 poz. 926 | TC 2014 | 2014-2016 |
| Dz. U. 2013 poz. 926 | TC 2017 | 2017-2020 |
| Dz. U. 2013 poz. 926 | TC 2021 | from 2021 |

Drees & Sommer figure based on NEEAP 2017, TABULA/NAPE 2012, BPIE 2016 and ISAP 2019

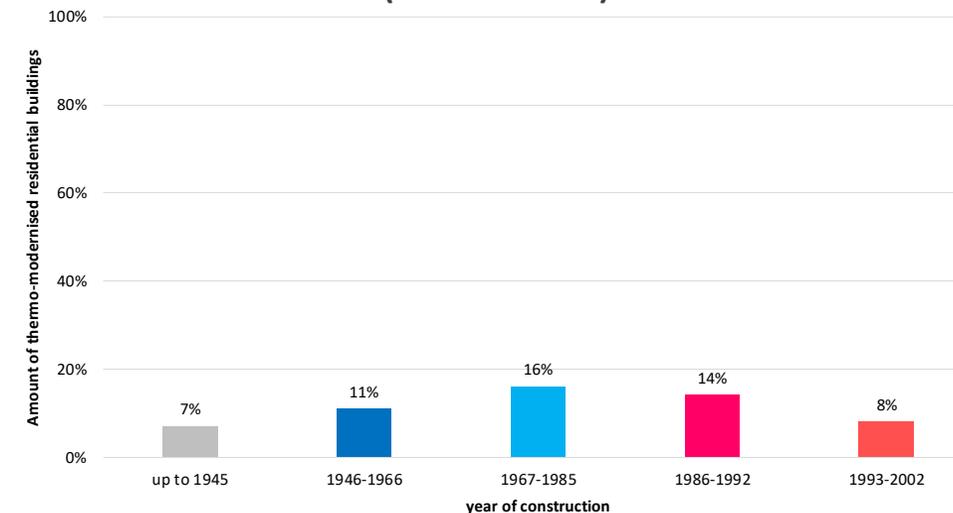
Building energy codes in Poland

Several building energy codes, which set **goals** and **requirements**:

- Non-renewable primary energy demand for heating, ventilation, cooling and domestic hot water in kWh/(m²year),
- Building constructions’ heat transfer coefficient (walls, roofs, ceilings, windows),
- Minimum thermal insulation thickness for distribution pipes and components,
- Additional requirements

low rate of **thermo-modernized** buildings

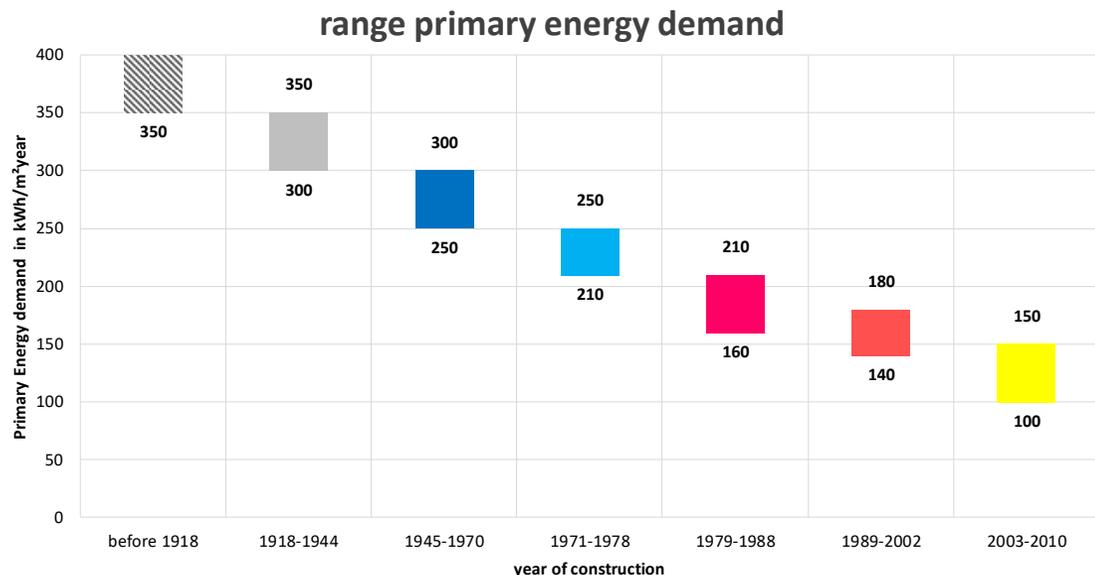
Portion of renovation / retrofits for residential buildings
(TABULA 2012)



Drees & Sommer figure based on TABULA/NAPE 2012

PKO – GREEN COVERED BOND

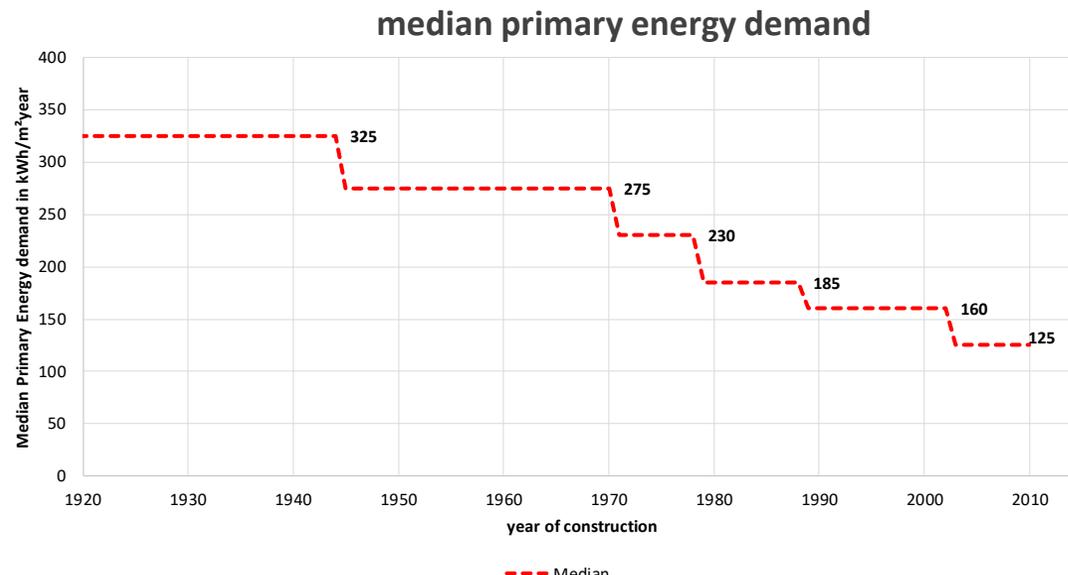
Primary energy demand based on years of constructions



Drees & Sommer figure based on NEEAP 2017, TABULA/NAPE 2012, BPIE 2016

“[...]annual primary energy use for the **heating** system, **hot water** supply, **cooling**, installed lighting systems (except residential buildings), with the addition of application of **auxiliary energy for systems**, taking into account the coefficients of **non-renewable primary energy** for the **processing** and **delivery** of an energy carrier or energy for technical systems– calculated on the basis of components of final energy requirement”
Polish energy performance certificate

For **residential buildings**, installed **lighting systems** are **excluded** from the scope.



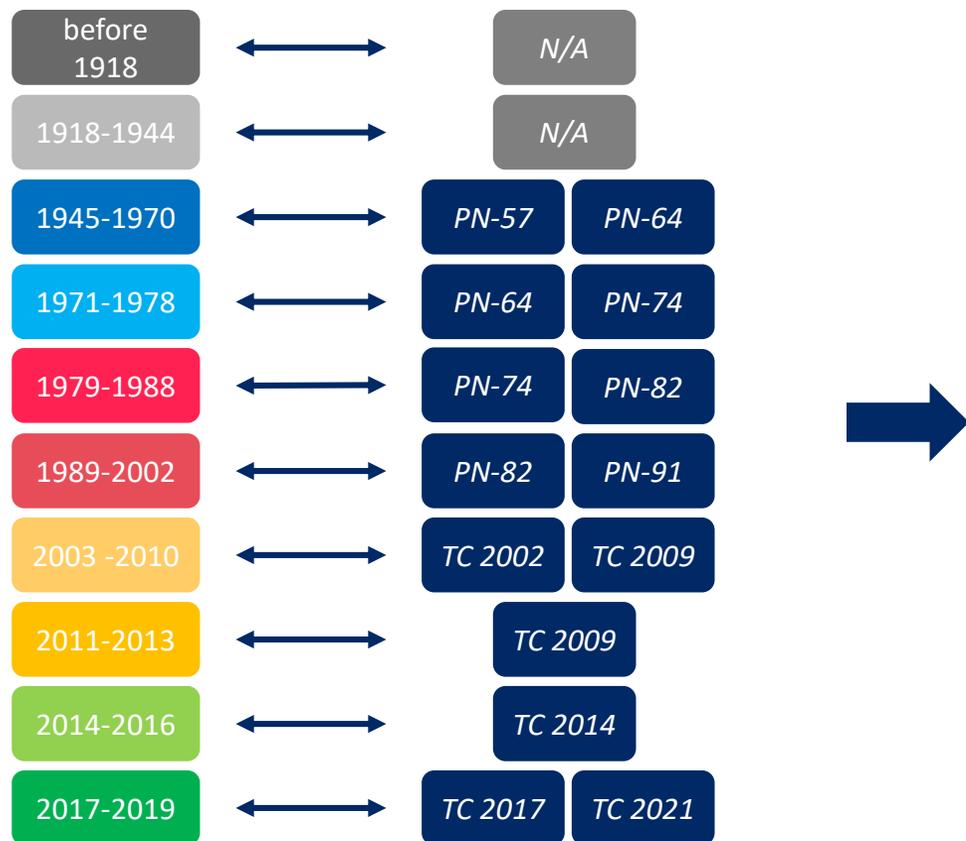
Drees & Sommer calculation based on NEEAP 2017, TABULA/NAPE 2012, BPIE 2016

| Building code | Primary Energy Demand in kWh/m²/year | |
|---------------|--------------------------------------|-----|
| | SFH | MFH |
| TC 2014 | 120 | 105 |
| TC 2017 | 95 | 85 |
| TC 2021 | 70 | 65 |

Certificates of buildings' energy performance. Gdynia, May 2018

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Matching applicable codes to clustered years of construction periods

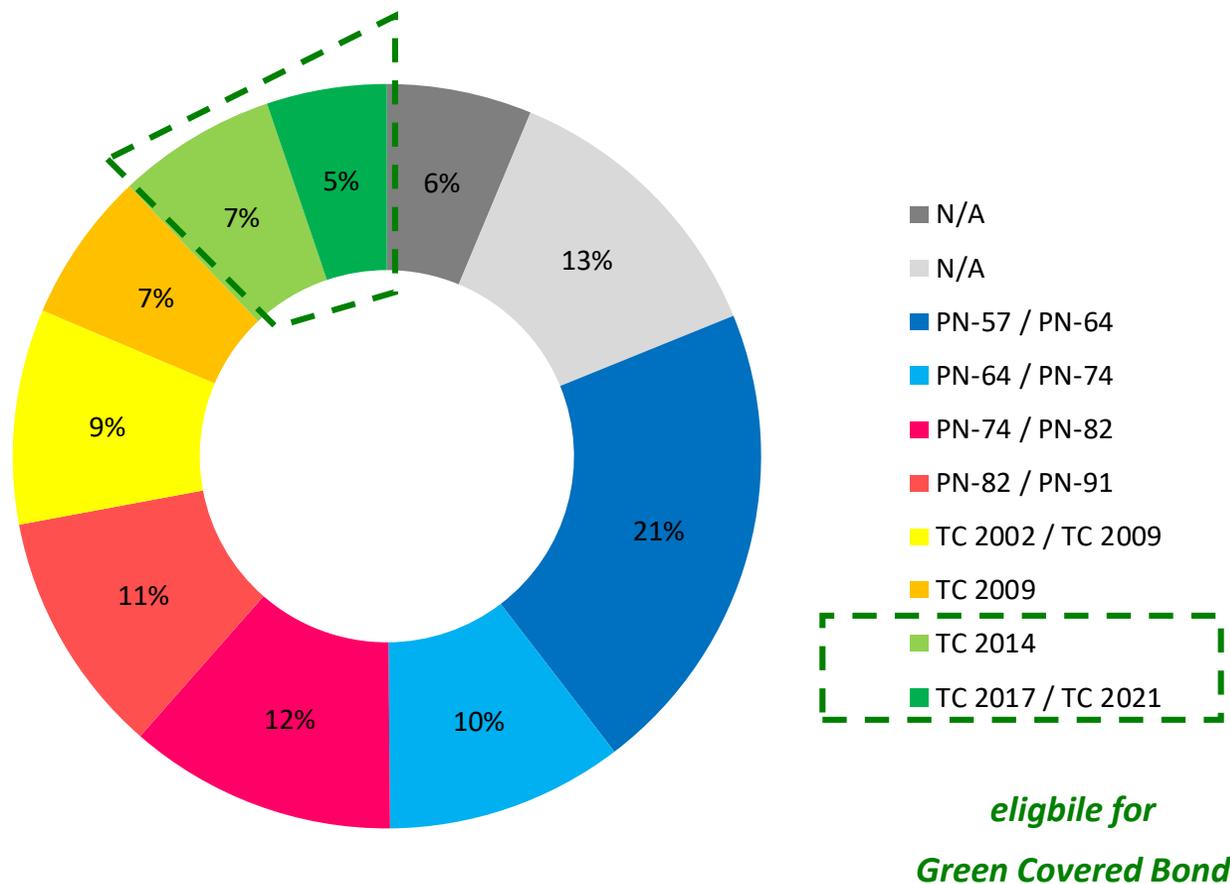


| Year of construction | Number of Buildings | Portion | Referenced code |
|----------------------|---------------------|-------------|---|
| before 1918 | 413,300 | 6% | N/A |
| 1918-1944 | 828,200 | 13% | N/A |
| 1945-1970 | 1,367,500 | 21% | PN-57 (1957-1969) PN-64 (1964-1973) |
| 1971-1978 | 676,500 | 10% | PN-64 (1964-1973) PN-74 (1974-1981) |
| 1979-1988 | 763,500 | 12% | PN-74 (1974-1981) PN-82 (1982-1990) |
| 1989-2002 | 698,400 | 11% | PN-82 (1982-1990) PN-91 (1991-2001) |
| 2003-2010 | 616,020 | 9% | TC 2002 (2002-2008) TC 2009 (2009-2013) |
| 2011-2013 | 428,994 | 7% | TC 2009 (2009-2013) |
| 2014-2016 | 454,202 | 7% | TC 2014 (2014-2016) |
| 2017-2019 | 342,103 | 5% | TC 2017 (2017-2020) TC 2021 (2021-.....) |
| Total | 6,588,719 | 100% | 17.01.2019 |

Data from 2011-2018 are extrapolated/added from Statistics Poland and do include new residential construction.

PKO – GREEN COVERED BOND

Establishing the Top 15% assets (residential buildings)



Green Bond asset is within the **Top 15%** of its local market, when:

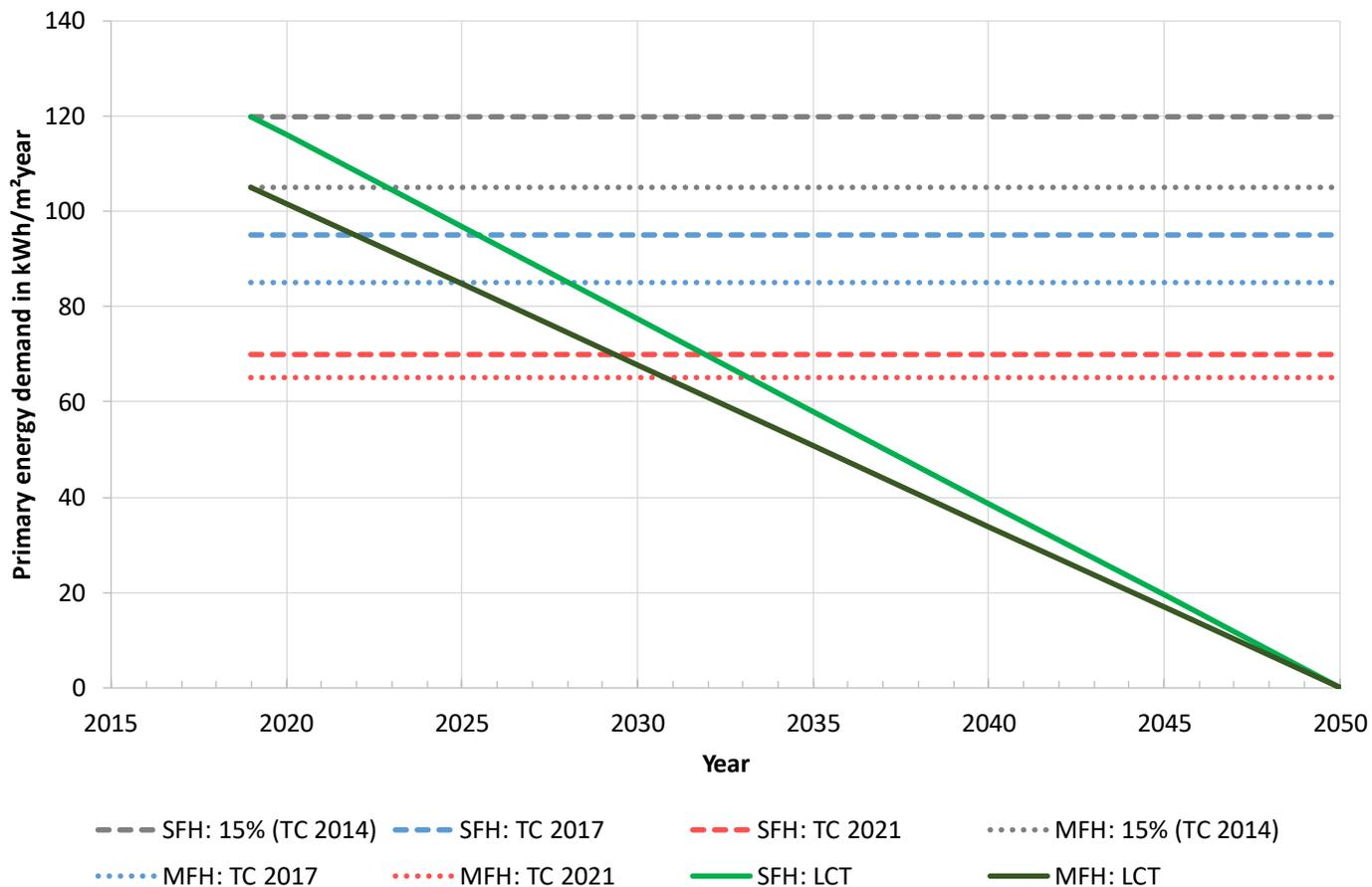
Technical Condition is TC 2014 or newer

TC 2009 positions the assets within the top **12%** to **19%** of the local market.

Since not all buildings with TC 2009 would be eligible within the Top 15%, the technical condition **TC 2009** does **not qualify** an asset to be eligible for the Green Covered Bond

PKO – GREEN COVERED BOND

Future primary energy demand requirement – Low carbon trajectories (LCTs)



A **low carbon trajectory (LCT)** connects:

- the basis requirements of TC 2014 (SFH: PE ≤ 120 | MFH: PE ≤ 105 kWh/m²year) as the start in the year **2019**

towards

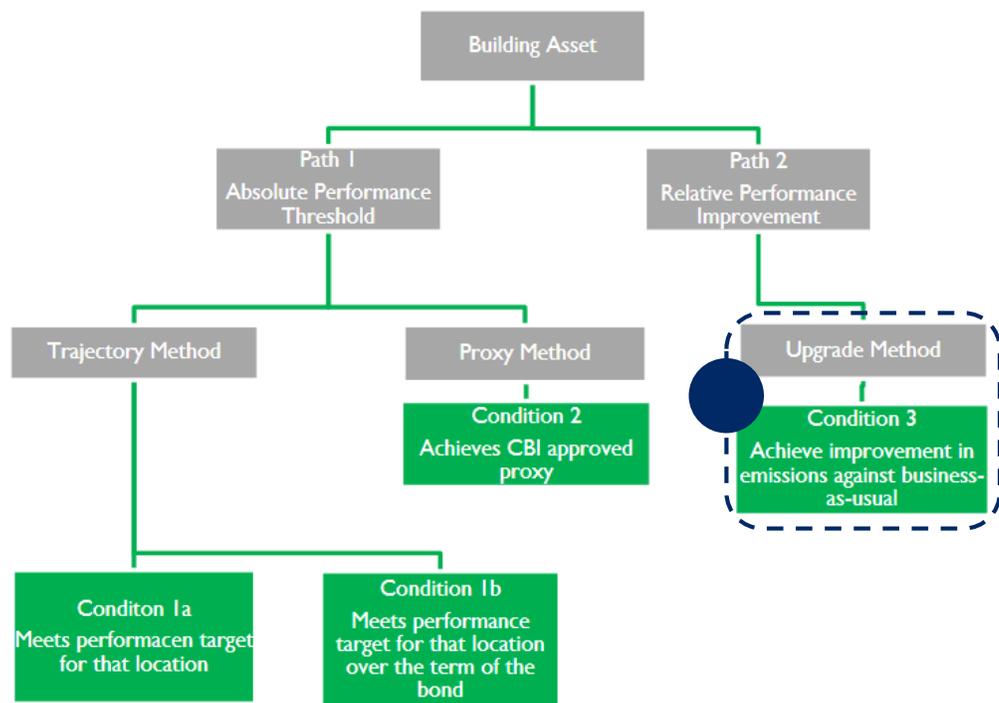
- the **Zero-Emission-Goal** in **2050** with zero non-renewable primary energy.

The **low carbon trajectories** for **single-** and **multifamily** houses serve as the **15th percentile** baseline for the local polish residential market.

SFH = Single Family House
 MFH = Multi-Family House
 TC = Technical Condition
 LCT = Low carbon trajectory

PKO – GREEN COVERED BOND

Eligibility for Green Covered Bond



Climate Bonds Initiative – Low Carbon Buildings



Property Upgrade Climate Bonds

Certification methodology

Low Carbon Buildings Technical Working Group

Version 1.0

Climate Bonds Initiative

Property **Upgrade** include assets which undergo or have undergone

- major renovation,
- refurbishment,
- thermo-modernization,
- or energy efficiency upgrade

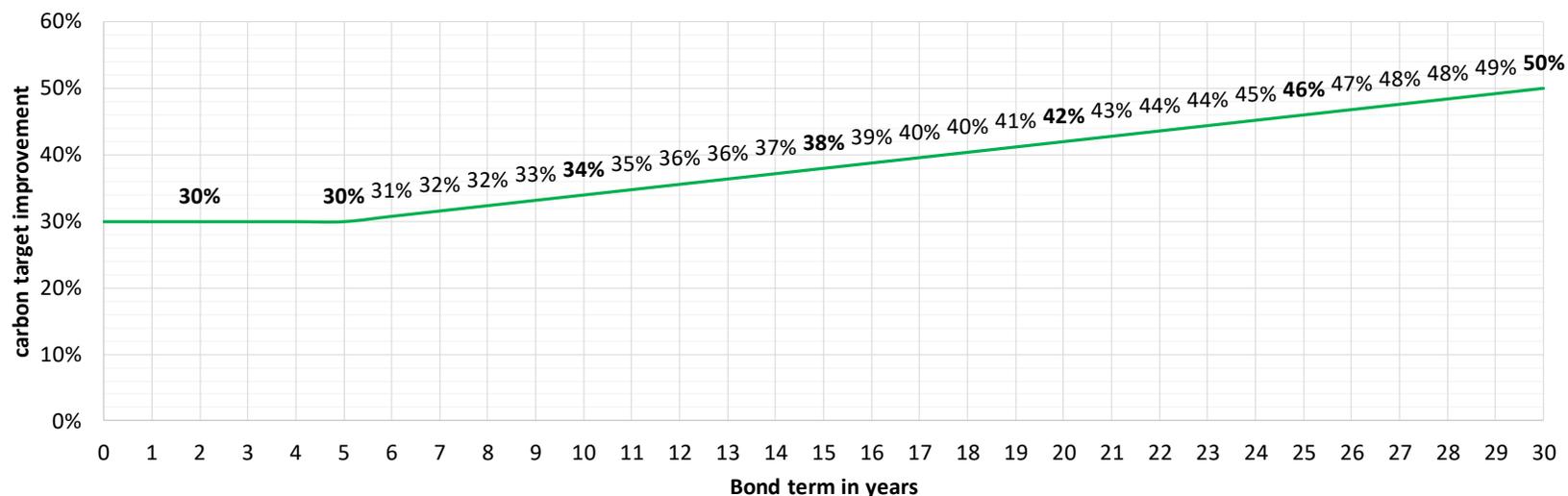
Green Covered Bond assets require **improvements** which result in reductions of **30% or more** in:

- carbon emissions,
- or non-renewable primary energy

based on green bond duration

PKO – GREEN COVERED BOND

Eligibility for Green Covered Bond



Drees & Sommer figure based on CBI's property upgrade guidance

Green Covered Bond assets require **improvements** which result in reductions of **30% or more** in:

- carbon emissions,
- or-non-renewable primary energy

based on green bond duration.

Example: Single Family House

Before upgrade:

Year of construction = 1992

Technical condition = PN 91

Primary Energy Demand = 160 kWh/m²/year

After upgrade:

Year of renovation = 2019

Technical condition = TC 2017

Primary Energy Demand = 95 kWh/m²/year

Improvement: ≈ 40%

Eligibility for **Green Covered Bond:**



PKO-BH – GREEN COVERED BOND

| PKO-BH Green Covered Bond criteria | | Poland | |
|------------------------------------|--|---|--|
| | <i>The object fulfills one of the following criteria:</i> | Single-Family House | Multi-Family House |
| 1) | Primary energy consumption <i>complies with low carbon trajectory based on year of issuance, duration of bond</i> | PE ≤ 120 kWh/m ² year Year of bond issuance and duration | PE ≤ 105 kWh/m ² year Year of bond issuance and duration |
| 2) | Energy Performance Certificate (EPC) available and Primary Energy demand (PE) is less than or equal <i>and complies with low carbon trajectory based on year of issuance, duration of bond</i> | EPC available and PE ≤ 120 kWh/m ² year Year of bond issuance and duration | EPC available and PE ≤ 105 kWh/m ² year Year of bond issuance and duration |
| 3) | Energy standard or newer <i>based on year of bond issuance</i> | <u>Year of bond issuance = 2020 – 2025:</u> TC 2017 with a linear decreasing bond term (mid point) of 6 years in 2020 and 1 year in 2025 <u>Year of bond issuance = 2026 – 2032:</u> TC 2021 with a linear decreasing bond term (mid point) of 7 years in 2026 and 1 year in 2032 | <u>Year of bond issuance = 2020 – 2025:</u> TC 2017 with a linear decreasing bond term (mid point) of 6 years in 2020 and 1 year in 2025 <u>Year of bond issuance = 2026 – 2031:</u> TC 2021 with a linear decreasing bond term (mid point) of 6 years in 2026 and 1 year in 2031 |
| 4) | Year of construction is equal or newer <i>based on year of bond issuance</i> | <u>Year of bond issuance = 2020-2025:</u> Year of construction = 2017 or newer with a linear decreasing bond term (mid point) of 6 years in 2020 and 1 year in 2025 <u>Year of bond issuance = 2026-2032:</u> Year of construction = 2021 or newer with a linear decreasing bond term of 7 years in 2026 and 1 year in 2032 | <u>Year of bond issuance = 2020 – 2025:</u> Year of construction = 2017 or newer with a linear decreasing bond term (mid point) of 6 years in 2020 and 1 year in 2025 <u>Year of bond issuance = 2026 – 2031:</u> Year of construction = 2021 or newer with a linear decreasing bond term of 6 years in 2026 and 1 year in 2031 |
| 5) | Property upgrade <i>with reduction in carbon emissions</i> | Major renovation with an improvement in the CO2 emissions figure from EPC from before and after the retrofit, based on tenor of bond, which meet the requirement of Technical Note 2014 (issued after July 2015). Minimum improvement in carbon emissions ≥ 30% . Term 1-5 years: 30% improvement Term 5-30 years: 30%-50% linear improvement Term ≥ 30 years : 50% improvement | |

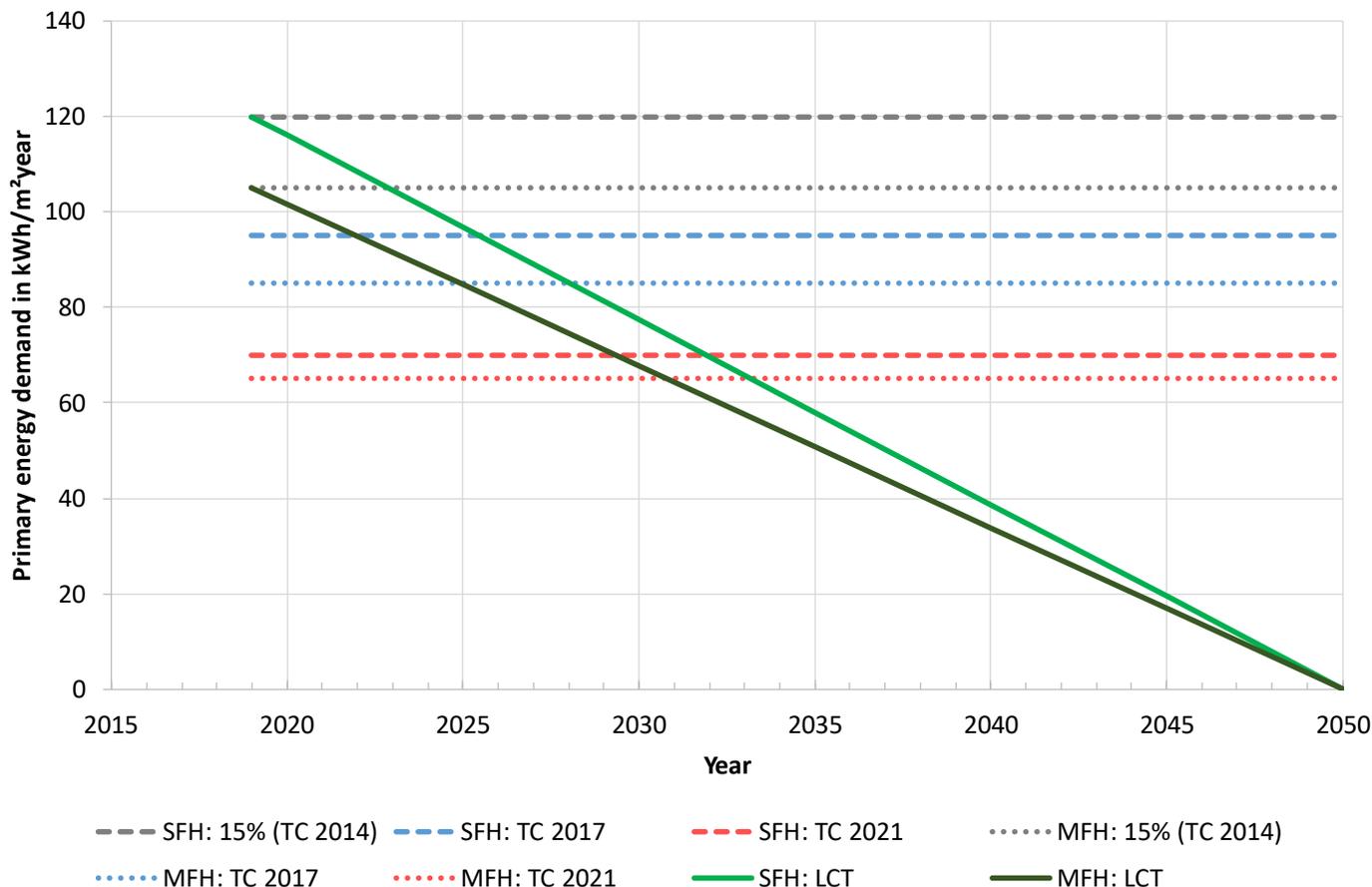
PKO-BH – GREEN COVERED BOND – CBI-CERTIFIED CRITERIA

| PKO-BH Green Covered Bond criteria complying with Climate Bonds Initiative standard | |  | Poland |
|---|--|--|---|
| | <i>The object fulfills one of the following criteria:</i> | | |
| | | Single-Family House | Multi-Family House |
| 3) | Energy standard or newer <i>based on year of bond issuance</i> | <p><u>Year of bond issuance = 2020 – 2025:</u> TC 2017 with a linear decreasing bond term (mid point) of 6 years in 2020 and 1 year in 2025</p> <p><u>Year of bond issuance = 2026 – 2032:</u> TC 2021 with a linear decreasing bond term (mid point) of 7 years in 2026 and 1 year in 2032</p> | <p><u>Year of bond issuance = 2020 – 2025:</u> TC 2017 with a linear decreasing bond term (mid point) of 6 years in 2020 and 1 year in 2025</p> <p><u>Year of bond issuance = 2026 – 2031:</u> TC 2021 with a linear decreasing bond term (mid point) of 6 years in 2026 and 1 year in 2031</p> |
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| 5) | Property upgrade <i>with reduction in carbon emissions</i> | <p>Major renovation with an improvement in the CO2 emissions figure from EPC from before and after the retrofit, based on tenor of bond, which meet the requirement of Technical Note 2014 (issued after July 2015). Minimum improvement in carbon emissions ≥ 30% . Term 1-5 years: 30% improvement Term 5-30 years: 30%-50% linear improvement Term ≥ 30 years : 50% improvement</p> | |

Residential criteria are based on Climate Bonds Initiative’s Low carbon certification methodology. Criteria are valid for assets located in the Republic of Poland. Criteria and Thresholds are subject to change.

PKO – GREEN COVERED BOND

Low carbon trajectories (LCTs) – Multi-Family and Single Family House



The **low carbon trajectories** for **single-** and **multifamily houses** serve as the **15th percentile** baseline for the market based on the technical condition standard **TC 2014**.

Example:

| | |
|-------------------|---------------------|
| Usage: | Single Family House |
| Duration of Bond: | 15 years |
| Issuance of Bond: | 2020 |
| End of Bond: | 2035 |

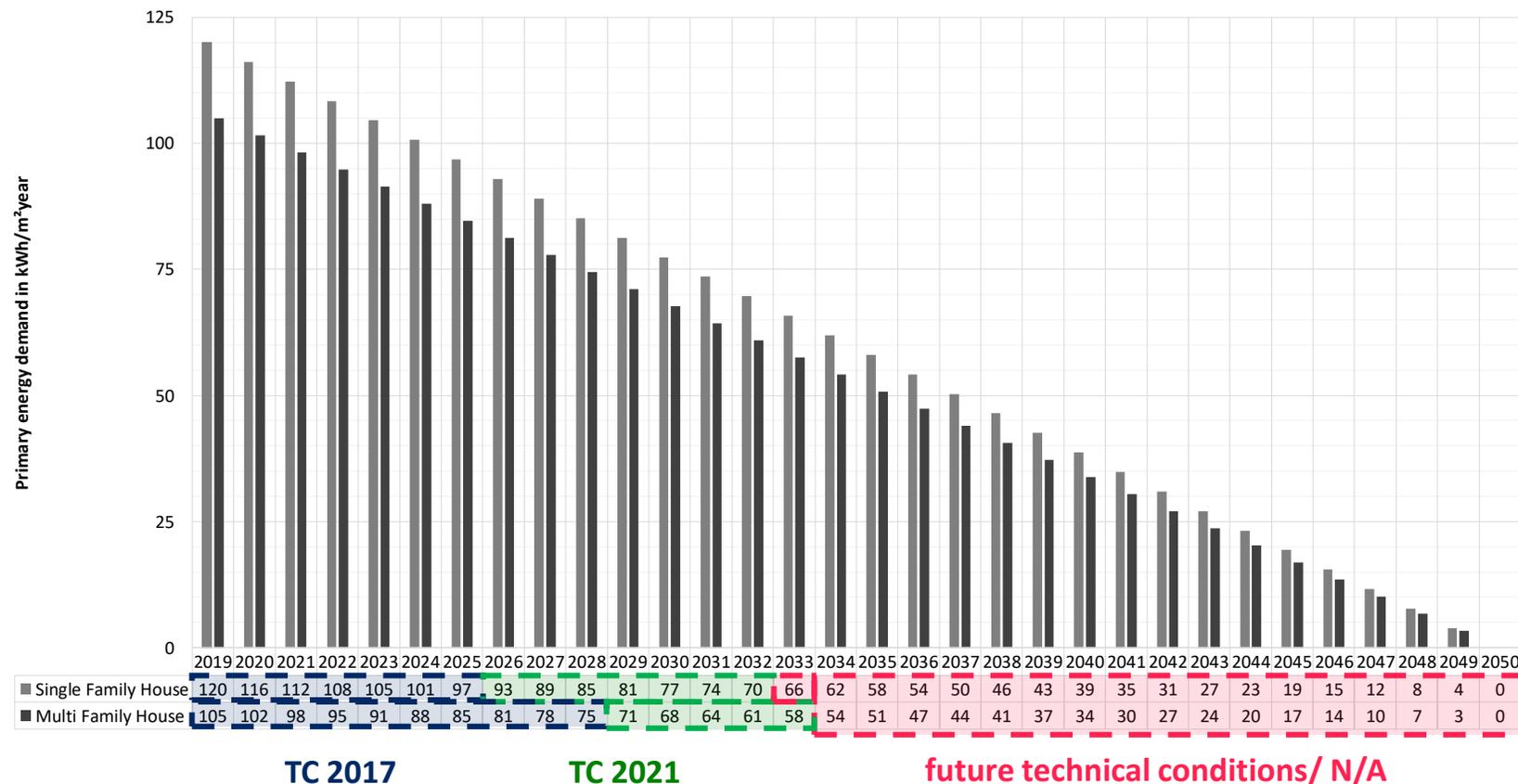
Applying the low carbon trajectory:

| | |
|-----------------------------|---------------------------------|
| Primary Energy Demand 2020: | 116 kWh/m ² year |
| Primary Energy Demand 2035: | 58 kWh/m ² year |
| Median over 15 years: | 87 kWh/m²year |

Therefore, the assets is required to have the technical condition **TC 2014** and does have an **primary energy demand** less or qual than **87 kWh/m²year**.

PKO – GREEN COVERED BOND

Low carbon trajectory – referenced primary energy demand



PKO – GREEN COVERED BOND

Example– Multi Family House

PKO-BH’s Green Covered Bond Criteria

| PKO-BH Green Covered Bond criteria | | Poland | |
|--|---|--|--|
| The object fulfills one of the following criteria: | | Single-Family House | Multi-Family House |
| 1) | Primary energy consumption complies with low carbon trajectory based on year of issuance, duration of bond | PE ≤ 120 kWh/m ² year Year of bond issuance and duration | PE ≤ 105 kWh/m ² year Year of bond issuance and duration |
| 2) | Energy Performance Certificate (EPC) available and Primary Energy demand (PE) is less than or equal and complies with low carbon trajectory based on year of issuance, duration of bond | EPC available and PE ≤ 120 kWh/m ² year Year of bond issuance and duration | EPC available and PE ≤ 105 kWh/m ² year Year of bond issuance and duration |
| 3) | Energy standard or newer based on year of bond issuance | Year of bond issuance = 2020 – 2025: TC 2017 with a linear decreasing bond term of 6 years in 2020 and 1 year in 2025 Year of bond issuance = 2026 – 2032: TC 2021 with a linear decreasing bond term of 7 years in 2026 and 1 year in 2032 | Year of bond issuance = 2020 – 2028: TC 2017 with a linear decreasing bond term of 9 years in 2020 and 1 year in 2028 Year of bond issuance = 2029 – 2033: TC 2021 with a linear decreasing bond term of 5 years in 2029 and 1 year in 2033 |
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Example

| | |
|---------------------------------|-----------------------------------|
| Usage: | Multi Family House |
| Condition: | Finished |
| Voivodeship: | Mazowieckie |
| County: | Warszawa |
| Zip: | 01-373 |
| Street: | Jana Olbrachta |
| No. of Building: | 120 |
| Year of Construction: | 2016 |
| Building Energy Code: | TC 2014 |
| Energy Performance Certificate: | PE = 93.6 kWh/m ² year |
| Year of Bond issuance: | 2019 |
| Duration of Bond: | 3 years |

PKO – GREEN COVERED BOND

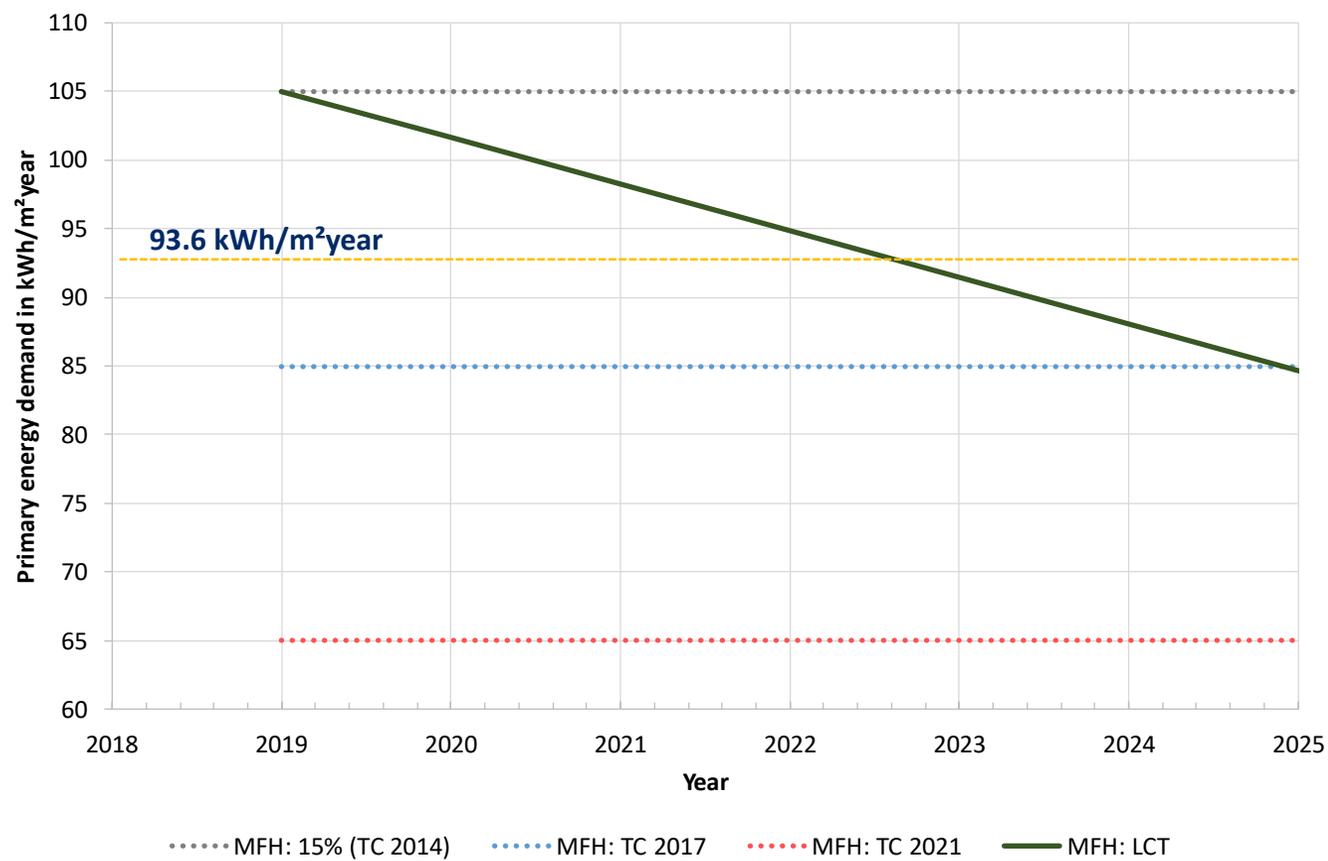
Example Multi-Family House

| | <i>PKO Green Covered Bond criteria</i> | <i>Poland</i> | |
|----|--|--|---|
| | <i>The object fulfills one of the following criteria:</i> | Multi-Family House | ✓ |
| 1) | <i>Primary energy consumption complies with low carbon trajectory based on year of issuance, duration of bond</i> | PE ≤ 105 kWh/m ² year Year of bond issuance and duration | ✗ |
| 2) | <i>Energy Performance Certificate (EPC) available and Primary Energy demand (PE) is less than or equal and complies with low carbon trajectory based on year of issuance, duration of bond</i> | EPC available and PE ≤ 105 kWh/m ² year Year of bond issuance and duration | ? |
| 3) | <i>Energy standard or newer based on year of bond issuance</i> | Year of bond issuance = 2020 – 2028: TC 2017 with a linear decreasing bond term of 9 years in 2020 and 1 year in 2028 Year of bond issuance = 2029 – 2033: TC 2021 with a linear decreasing bond term of 5 years in 2029 and 1 year in 2033 | ? |
| 4) | <i>Year of construction is equal or newer based on year of bond issuance</i> | Year of bond issuance = 2020 – 2028: Year of construction = 2017 or newer with a linear decreasing bond term of 9 years in 2020 and 1 year in 2028 Year of bond issuance = 2029 – 2033: Year of construction = 2021 or newer with a linear decreasing bond term of 5 years in 2029 and 1 year in 2033 | ✗ |

| | |
|---------------------------------|---|
| Usage: | Multi Family House |
| Condition: | Finished |
| Voivodeship: | Mazowieckie |
| County: | Warszawa |
| Zip: | 01-373 |
| Street: | Jana Olbrachta |
| No. of Building: | 120 |
| Year of Construction: | 2016 |
| Building Energy Code: | TC 2014 |
| Energy Performance Certificate: | PE = 93.6 kWh/m ² year (Demand) |
| Year of Bond issuance: | 2019 |
| Duration of Bond: | 3 years |

PKO – GREEN COVERED BOND

Low Carbon Trajectory (LCT) – Multi Family House



Usage: Multi Family Home
Street: Jana Olbrachta, 120
Building Energy Code: TC 2014
Energy Performance Certificate: PE = 93.6 kWh/m²year

Green Bond:

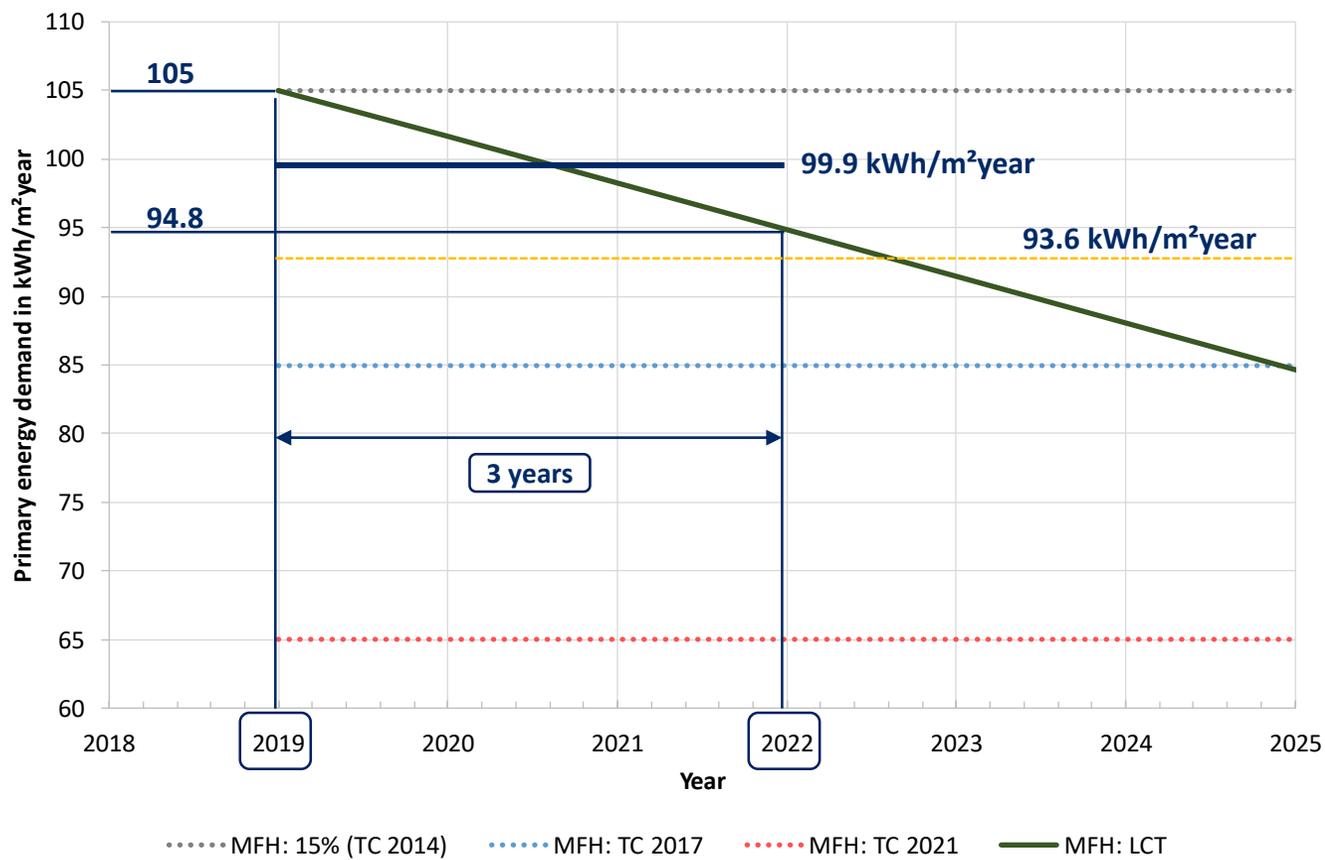
Start 2019,
End 2022,
Duration 3 years

93.6 kWh/m²year < 105 kWh/m²year (TC 2014)



PKO – GREEN COVERED BOND

Low Carbon Trajectory (LCT) – Multi Family House



Example

Usage: Multi Family Home
 Street: Jana Olbrachta, 120
 Building Energy Code: TC 2014
 Energy Performance Certificate: PE = 93.6 kWh/m²year

Green Bond:

Start 2019,
 End 2022,
 Duration 3 years

Low Carbon Trajectory (LCT):

Start 2019 max. PE = 105 kWh/m²year
 End 2022 max. PE = 94.8 kWh/m²year
 Duration 3 years max. PE = (105+94.8)/2 = 99.9 kWh/m²year

→ The asset is allowed to have a max. PE of 99.9 kWh/m²year or less to be compliant for the Green Bond.

93.6 kWh/m²year < 99.9 kWh/m²year



PKO – GREEN COVERED BOND

Example Multi-Family House

eligible for
Green Covered Bond 

| | PKO Green Covered Bond criteria | Poland | |
|----|--|--|---|
| | <i>The object fulfills one of the following criteria:</i> | Multi-Family House |  |
| 1) | <i>Primary energy consumption complies with low carbon trajectory based on year of issuance, duration of bond</i> | PE ≤ 105 kWh/m ² year Year of bond issuance and duration |  |
| 2) | <i>Energy Performance Certificate (EPC) available and Primary Energy demand (PE) is less than or equal and complies with low carbon trajectory based on year of issuance, duration of bond</i> | EPC available and PE ≤ 105 kWh/m ² year Year of bond issuance and duration |  |
| 3) | <i>Energy standard or newer based on year of bond issuance</i> | Year of bond issuance = 2020 – 2028: TC 2017 with a linear decreasing bond term of 9 years in 2020 and 1 year in 2028 Year of bond issuance = 2029 – 2033: TC 2021 with a linear decreasing bond term of 5 years in 2029 and 1 year in 2033 |  |
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Example

| | |
|---------------------------------|-----------------------------------|
| Usage: | Multi Family Home |
| Voivodeship: | Mazowieckie |
| County: | Warszawa |
| Zip: | 01-373 |
| Street: | Jana Olbrachta |
| No. of Building: | 120 |
| Year of Construction: | 2016 |
| Building Energy Code: | TC 2014 |
| Energy Performance Certificate: | PE = 93.6 kWh/m ² year |
| Year of Bond issuance: | 2019 |
| Duration of Bond: | 3 years |

PKO – GREEN COVERED BOND

Example – Single Family House

PKO-BH's Green Covered Bond Criteria

| | PKO-BH Green Covered Bond criteria | Poland | |
|----|---|--|--|
| | | Single-Family House | Multi-Family House |
| | The object fulfills one of the following criteria: | | |
| 1) | Primary energy consumption complies with low carbon trajectory based on year of issuance, duration of bond | PE ≤ 120 kWh/m ² year Year of bond issuance and duration | PE ≤ 105 kWh/m ² year Year of bond issuance and duration |
| 2) | Energy Performance Certificate (EPC) available and Primary Energy demand (PE) is less than or equal and complies with low carbon trajectory based on year of issuance, duration of bond | EPC available and PE ≤ 120 kWh/m ² year Year of bond issuance and duration | EPC available and PE ≤ 105 kWh/m ² year Year of bond issuance and duration |
| 3) | Energy standard or newer based on year of bond issuance | Year of bond issuance = 2020 – 2025: TC 2017 with a linear decreasing bond term of 6 years in 2020 and 1 year in 2025 Year of bond issuance = 2026 – 2032: TC 2021 with a linear decreasing bond term of 7 years in 2026 and 1 year in 2032 | Year of bond issuance = 2020 – 2028: TC 2017 with a linear decreasing bond term of 9 years in 2020 and 1 year in 2028 Year of bond issuance = 2029 – 2033: TC 2021 with a linear decreasing bond term of 5 years in 2029 and 1 year in 2033 |
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| | |
|---------------------------------|-----------------------------------|
| Usage: | Single Family Home |
| Voivodeship: | Dolnośląskie |
| County: | Trzebnicki |
| Zip: | 55-100 |
| City: | Brochocin |
| No. of Building: | 40 |
| Year of Construction: | 2012 |
| Building Energy Code: | TC 2021 |
| Energy Performance Certificate: | PE = 53.9 kWh/m ² year |
| Year of Bond issuance: | 2020 |
| Duration of Bond: | 5 years |

PKO – GREEN COVERED BOND

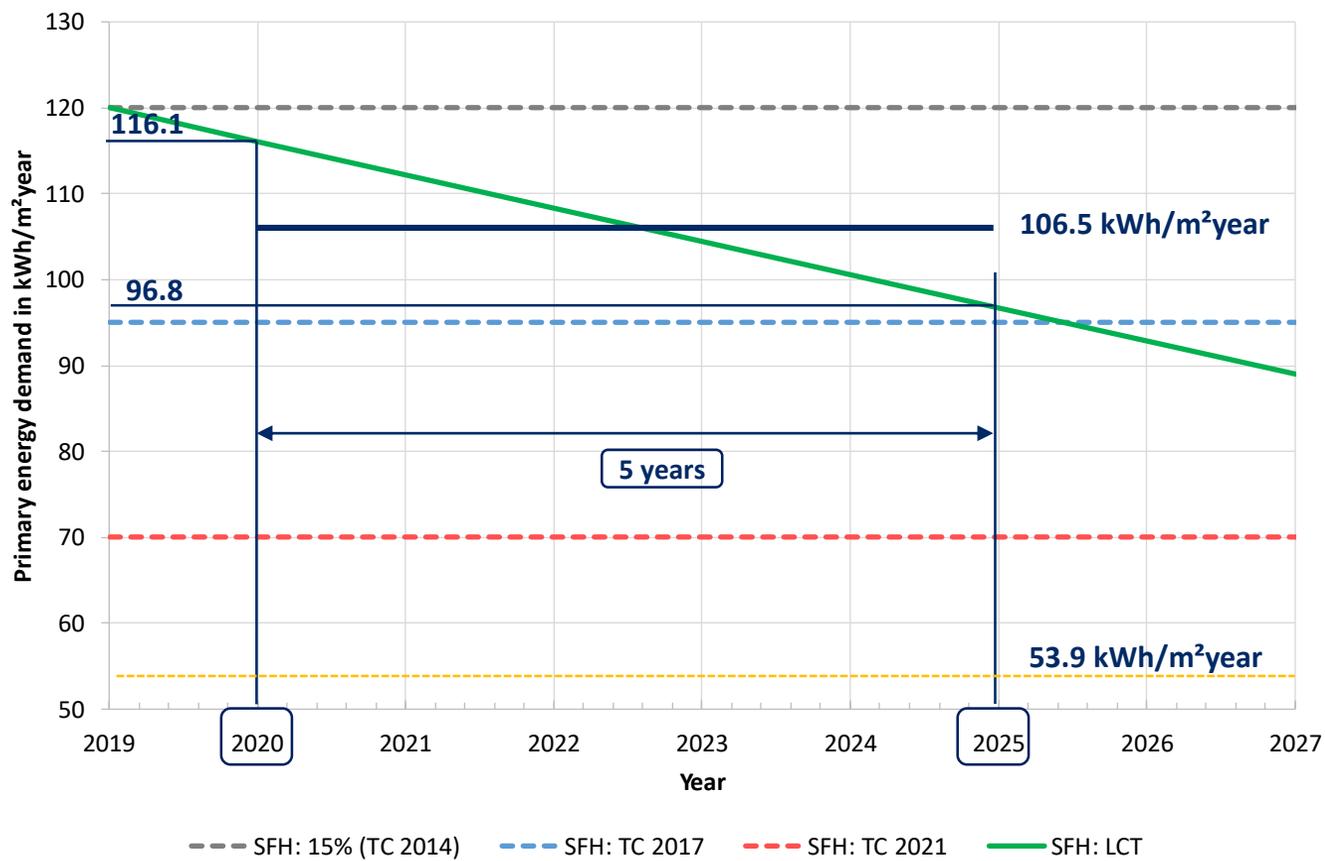
Example – Single-Family House

| | <i>PKO Green Covered Bond criteria</i> | <i>Poland</i> | |
|----|--|--|---|
| | <i>The object fulfills one of the following criteria:</i> | Single-Family House | ✓ |
| 1) | <i>Primary energy consumption complies with low carbon trajectory based on year of issuance, duration of bond</i> | PE ≤ 120 kWh/m ² year Year of bond issuance and duration | ✗ |
| 2) | <i>Energy Performance Certificate (EPC) available and Primary Energy demand (PE) is less than or equal and complies with low carbon trajectory based on year of issuance, duration of bond</i> | EPC available and PE ≤ 120 kWh/m ² year Year of bond issuance and duration | ? |
| 3) | <i>Energy standard or newer based on year of bond issuance</i> | Year of bond issuance = 2020 – 2025: TC 2017 with a linear decreasing bond term of 6 years in 2020 and 1 year in 2025 Year of bond issuance = 2026 – 2032: TC 2021 with a linear decreasing bond term of 7 years in 2026 and 1 year in 2032 | ✓ |
| 5) | <i>Year of construction is equal or newer based on year of bond issuance</i> | Year of bond issuance = 2020-2025: Year of construction = 2017 or newer with a linear decreasing bond term of 6 years in 2020 and 1 year in 2025 Year of bond issuance between 2026-2032: Year of construction = 2021 or newer with a linear decreasing bond term of 7 years in 2026 and 1 year in 2032 | ✗ |

| | |
|---------------------------------|-----------------------------------|
| Usage: | Single-Family Home |
| Voivodeship: | Dolnośląskie |
| County: | Trzebnicki |
| Zip: | 55-100 |
| City: | Brochocin |
| No. of Building: | 40 |
| Year of Construction: | 2012 |
| Building Energy Code: | TC 2021 |
| Energy Performance Certificate: | PE = 53.9 kWh/m ² year |
| Year of Bond issuance: | 2020 |
| Duration of Bond: | 5 years |

PKO – GREEN COVERED BOND

Low Carbon Trajectory (LCT) – Single-Family House



Example

Usage: Single-Family House
 Building Energy Code: TC 2021
 Energy Performance Certificate: PE = 53.9 kWh/m²year

Green Bond:

Start 2020, PE = 116.1 kWh/m²year
 End 2025, PE = 96.8 kWh/m²year
 Duration 5 years PE = $(116.1 + 96.8) / 2 = 106.5$ kWh/m²year

→ The asset is allowed to have a max. PE of 106.5 kWh/m²year or less to be compliant for the Green Bond.

53.9 kWh/m²year < 106.5 kWh/m²year



Examples with Start 2020 and SFH:

- 3 years: 110.3 kWh/m²year
- 5 years: 106.5 kWh/m²year
- 7 years: 102.6 kWh/m²year
- 10 years: 96.8 kWh/m²year

PKO – GREEN COVERED BOND

Example – Single-Family House

eligible for
Green Covered Bond 

| | PKO Green Covered Bond criteria | Poland | |
|----|--|--|---|
| | <i>The object fulfills one of the following criteria:</i> | Single-Family House |  |
| 1) | <i>Primary energy consumption complies with low carbon trajectory based on year of issuance, duration of bond</i> | PE ≤ 120 kWh/m ² year Year of bond issuance and duration |  |
| 2) | <i>Energy Performance Certificate (EPC) available and Primary Energy demand (PE) is less than or equal and complies with low carbon trajectory based on year of issuance, duration of bond</i> | EPC available and PE ≤ 120 kWh/m ² year Year of bond issuance and duration |  |
| 3) | <i>Energy standard or newer based on year of bond issuance</i> | Year of bond issuance = 2020 – 2025: TC 2017 with a linear decreasing bond term of 6 years in 2020 and 1 year in 2025 Year of bond issuance = 2026 – 2032: TC 2021 with a linear decreasing bond term of 7 years in 2026 and 1 year in 2032 |  |
| 4) | <i>Year of construction is equal or newer based on year of bond issuance</i> | Year of bond issuance = 2020-2025: Year of construction = 2017 or newer with a linear decreasing bond term of 6 years in 2020 and 1 year in 2025 Year of bond issuance between 2026-2032: Year of construction = 2021 or newer with a linear decreasing bond term of 7 years in 2026 and 1 year in 2032 |  |

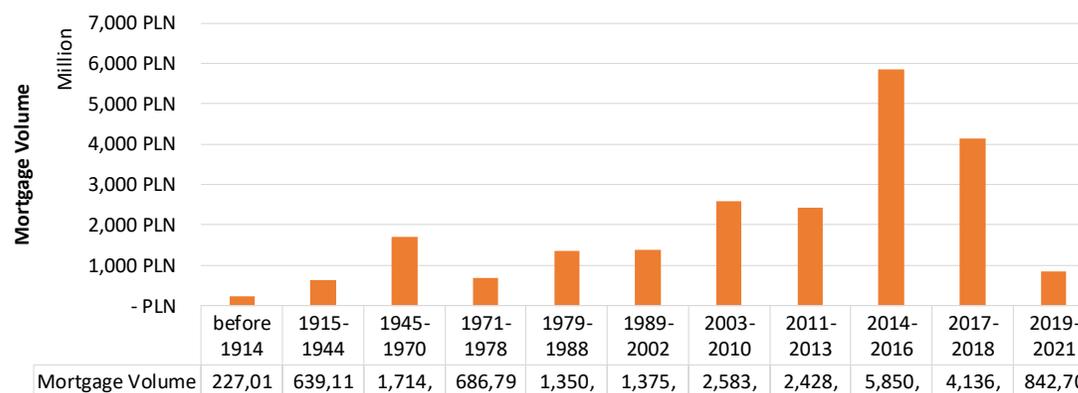
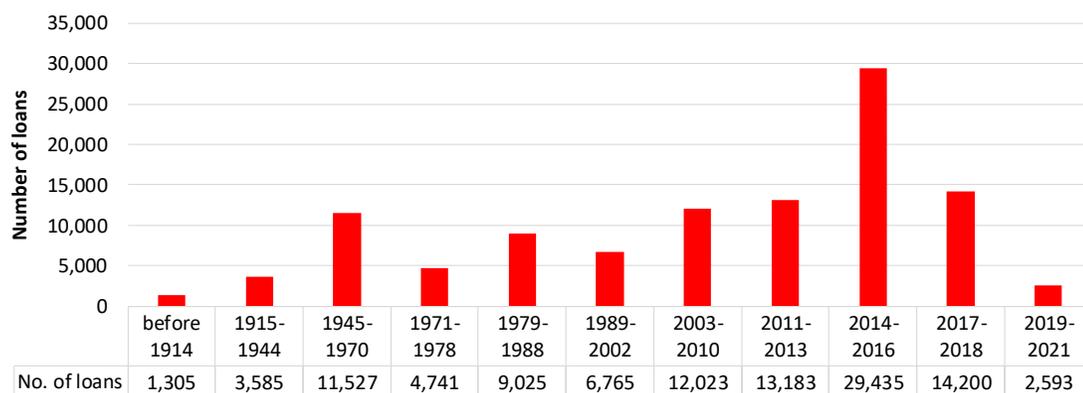
Usage: Single Family House
 Voivodeship: Dolnośląskie
 County: Trzebnicki
 Zip: 55-100
 City: Brochocin
 No. of Building: 40
 Year of Construction: 2012
 Building Energy Code: TC 2021
 Energy Performance Certificate: PE = 53.9 kWh/m²year
 Year of Bond issuance: 2020
 Duration of Bond: 5 years

PKO – GREEN COVERED BOND

Portfolio Screening

| Residential Buildings | Amount | Portion | Mortgage Volume | Portion |
|--------------------------------|---------|---------|--------------------|---------|
| Apartment in Multi-Family Home | 65 841 | 61% | 11 711 808 405 PLN | 54% |
| Single Family Home | 42 541 | 39% | 10 122 370 956 PLN | 46% |
| Total | 108 382 | 100% | 21 834 179 361 PLN | 100% |
| Energy Performance Certificate | 1 320 | 1% | 296 687 126 PLN | 1% |

Which assets are eligible for
Green Covered Bond?



PKO – GREEN COVERED BOND

Portfolio Screening – Is an asset eligible for Green Bond?

PKO-BH – Portfolio data (excerpt): total ≈ 108 thousand residential buildings

| PKO - BH - Portfolio | | | | | | |
|--|----------------------|--------------------------------|------------------------------|-----------------------|-----------------|-------------------|
| Building use | Year of construction | Building area (net floor area) | Standard level (mod = estim) | Primary Energy Demand | EPC-certificate | Mortgage - volume |
| residential - apartment in multi family home | 2018 | 48.48 | 2017 mod | | NO | 1,000.00 |
| residential - apartment in multi family home | 1970 | 37.4 | beyond the norm mod | | NO | 1,037.28 |
| residential - apartment in multi family home | 2012 | 72.8 | beyond the norm mod | | NO | 1,045.81 |
| residential - single family home | 2009 | 216.01 | beyond the norm mod | | NO | 1,052.29 |
| residential - apartment in multi family home | 2011 | 50.4 | beyond the norm mod | | NO | 1,139.60 |
| residential - apartment in multi family home | 2013 | 85.5 | beyond the norm mod | | NO | 1,155.53 |
| residential - single family home | 1996 | 113.6 | beyond the norm mod | | NO | 1,163.69 |
| residential - single family home | 2015 | 163.32 | 2014 mod | | NO | 1,165.85 |
| residential - apartment in multi family home | 2013 | 54.38 | beyond the norm mod | | NO | 1,189.64 |
| residential - single family home | 2010 | 112.1 | beyond the norm mod | | NO | 1,191.67 |
| residential - apartment in multi family home | 2005 | 66.6 | beyond the norm mod | | NO | 1,218.55 |
| residential - apartment in multi family home | 2012 | 117.49 | beyond the norm mod | | | |
| residential - apartment in multi family home | 1960 | 49.34 | beyond the norm mod | | | |
| residential - apartment in multi family home | 2014 | 72.9 | beyond the norm mod | | | |
| residential - apartment in multi family home | 2008 | 73 | beyond the norm mod | | | |
| residential - apartment in multi family home | 1980 | 35.6 | beyond the norm mod | | | |
| residential - apartment in multi family home | 2010 | 69.1 | beyond the norm mod | | | |
| residential - apartment in multi family home | 1953 | 44.9 | beyond the norm mod | | | |
| residential - apartment in multi family home | 2015 | 57.98 | beyond the norm mod | | | |
| residential - apartment in multi family home | 2015 | 64.45 | beyond the norm mod | | NO | 1,352.10 |
| residential - apartment in multi family home | 2015 | 49.3 | beyond the norm mod | | NO | 1,363.93 |
| residential - apartment in multi family home | 2013 | 62.01 | beyond the norm mod | | NO | 1,374.88 |
| residential - single family home | 2003 | 112 | beyond the norm mod | | NO | 1,457.25 |
| residential - apartment in multi family home | 2013 | 57.05 | beyond the norm mod | | NO | 1,487.40 |
| residential - apartment in multi family home | 1980 | 53.6 | beyond the norm mod | | NO | 1,504.52 |
| residential - apartment in multi family home | 2011 | 62.7 | beyond the norm mod | | NO | 1,510.14 |
| residential - apartment in multi family home | 2014 | 37.2 | beyond the norm mod | | NO | 1,558.46 |
| residential - single family home | 1994 | 216 | beyond the norm mod | | NO | 1,575.17 |
| residential - apartment in multi family home | 2004 | 55.1 | beyond the norm mod | | NO | 1,608.63 |
| residential - apartment in multi family home | 1971 | 57.05 | beyond the norm mod | | NO | 1,628.51 |
| residential - single family home | 2015 | 130.96 | beyond the norm mod | | NO | 1,649.28 |
| residential - apartment in multi family home | 1992 | 51.5 | beyond the norm mod | | NO | 1,747.86 |
| residential - apartment in multi family home | 1986 | 47.84 | beyond the norm mod | | NO | 1,784.90 |

see Portfolio Screening and Impact Reporting in Green Carbon Bond report by Drees & Sommer

Asset evaluation

| Green Covered Bond - Evaluation | |
|---------------------------------|------------------------|
| Asset in Green Bond? | Green Covered Bond |
| Yes | MFH Renovation TC 2017 |

Green Covered Bond
PKO Bank S.p.A. - Methodology

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