

Barclays Green Bonds Investor Report

March 2021



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Introduction

Banks play a key role in connecting the providers and users of capital. Barclays recognises this role in serving society, and our success as a business has always been inextricably linked to the progress of the people, communities and businesses that we serve. As society's expectations of businesses continue to evolve, we aim to stay ahead of those expectations.

As a global financial institution, the way we prioritise and mobilise financial resources and the manner in which we do business ensures we can help to shape a cleaner, fairer future, which leaves no one behind. We believe that we can, and should, make a positive difference for society – globally and locally. We do that through the choices we make about how we run our business, and through the commitments we make proactively to support others in our communities to achieve their goals.

We understand that our success is judged not only by commercial performance, but also by how we act sustainably and responsibly, for the common good and the long term. Our ambition is to be a net zero bank by 2050, including a commitment to align all our financing activities with the goals of the Paris Climate Agreement.

To find out more about Barclays' ambition to be net zero, please visit home.barclays/netzero

Barclays Green Bonds Highlights

In 2017, Barclays issued its inaugural Green Bond (the **2017 Green Bond**) under the September 2017 version of the Barclays Green Bond Framework (**the Framework**), allocating proceeds towards Eligible Mortgage Assets (EMAs). In 2020, in addition to announcing our ambition to be a net zero bank earlier in the year, Barclays issued the second Barclays Green Bond (the **2020 Green Bond**, and together with the 2017 Green Bond, **the Barclays Green Bonds**) under the updated December 2019 version of the Framework. Proceeds from the 2020 Green Bond have been allocated to EMAs in England and Wales. Close to 80% of funds raised from the 2020 Green Bond have been allocated to refinance Barclays' Green Home Mortgage products, which are offered to customers at a discount provided their property meets certain energy efficiency thresholds.

The Green Home Mortgage product was launched in 2018, developed with the aid of the 2017 Green Bond. The product rewards eligible customers with a 5bp to 10bp discount versus other traditional mortgage products. We are pleased to support this product with the 2020 Green Bond issuance by focussing the allocation of the proceeds towards the product.

This investor report is published annually to meet our reporting commitments as outlined in the Framework, which was updated in December 2019 to include Eligible Loan Assets and Eligible Real Estate Assets that meet the eligibility criteria set out by the International Capital Markets Association (**ICMA**). This investor report contains details of the allocated portfolio of EMAs and a quantitative environmental impact assessment for the 2017 Green Bond and the 2020 Green Bond.

For further information on Barclays' ESG commitments, visit our ESG resource hub at home.barclays/society/esg-resource-hub

Barclays Green Bond Framework Summary – Eligible Mortgage Assets

For further details on the Framework, please visit home.barclays/investor-relations/fixed-income-investors/funding-and-liquidity/green-bonds/

The Framework¹

Use of Proceeds

- Proceeds may be allocated towards financing and/or refinancing mortgages on energy efficient residential properties in England and Wales based on Energy Performance Certificate (EPC) data. These mortgages are originated within three years prior to the date of the relevant Barclays Green Bond issuance and meet the top 15% carbon intensity threshold in terms of estimated emissions performance
- A formula was derived taking into account the current emissions performance of households, the UK government's linear target of 'close to zero' emissions by 2050 and the mid-point of a potential green bond maturity needing to coincide with the top 15% of lowest carbon intensive properties, resulting in the following formula for the maximum carbon intensity output:
 - $y = -0.8235x + 1688.24$ (for the 2017 Green Bond)
 - $y = -0.8333x + 1708.03$ (for the 2020 Green Bond)
- Where x = year of mid-point bond maturity and y = carbon intensity of the property, measured in $\text{kgCO}_2/\text{m}^2/\text{year}$

Process Evaluation and Selection

- All Barclays residential mortgages are cross matched on a monthly basis against the latest publically available EPC data release to determine eligibility
- This is achieved by mapping Barclays mortgage property names/numbers, street names and postcodes against the properties with the EPC dataset
- Once properties in the EPC dataset have been matched to properties in Barclays' residential mortgage book, additional filtering is undertaken to take into account target carbon intensity levels and encumbrance
- EMAs will then be randomly selected to produce the allocated portfolio of EMAs

Management of Proceeds

- Barclays monitors the allocation of proceeds on a monthly basis and records each EMA allocated to a Barclays Green Bond issuance to ensure that it is not used by Barclays as collateral in other transactions
- EMAs may be added or removed from the portfolio as necessary (for example, if they mature/are redeemed or if they cease to meet relevant eligibility criteria)

¹ The Framework summary covers both the September 2017 version of the Framework and the December 2019 version of the Framework

Reporting

- Barclays will publish a Green Bond Investor Report annually for each Barclays Green Bond. This will be made available on the Barclays Investor Relations website

External Review

- The Carbon Trust have provided a second party opinion to confirm that the Framework meets the ICMA Green Bond Principles
- In order to ensure compliance with the Framework, the Carbon Trust will perform annual verification testing to check the viability of Barclays' cross matching process and asset selection criteria

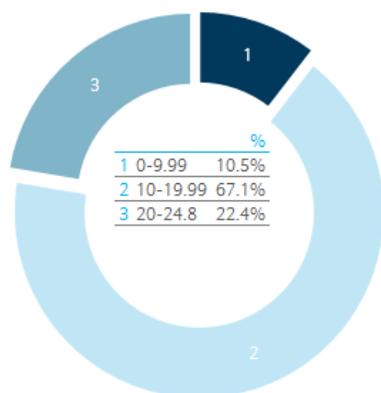
Summary and Quantitative Environmental Impact Assessment as at 31st December 2020

Summary

	2017 Green Bond	2020 Green Bond
Issuer	Barclays PLC	Barclays PLC
Settlement Date	14 th Nov 2017	3 rd Nov 2020
Currency	EUR	GBP
Notional	€500m	£400m
Tenor	6-year non-call 5-year	6-year non-call 5-year
ISIN	XS1716820029	XS2251641267
Call Date	14 th Nov 2022	3 rd Nov 2025
Maturity Date	14 th Nov 2023	3 rd Nov 2026
Use of Proceeds	EMAs	EMAs
GBP equivalent of issuance proceeds	£440m	£400m
FX rate as at pricing date	1.1345 EUR/GBP	N/A
Size of Allocated EMAs	£442.3m	£400.2m
<i>Of which proceeds allocated to Green Home Mortgages</i>	-	£318.1m
Bond Proceeds allocated	100%	100%
Carbon Intensity max threshold	24.8 kgCO ₂ /m ² /year	22.5 kgCO ₂ /m ² /year
Finance or Refinance	100% Refinance	100% Refinance
Reporting Date	31 st Dec 2020	31 st Dec 2020

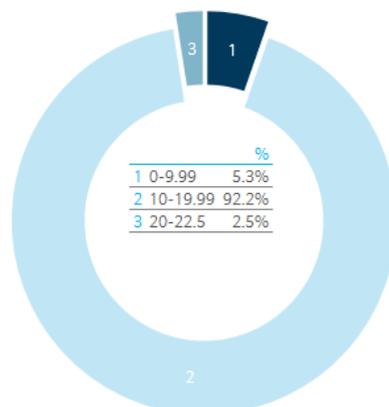
Carbon Intensity of EMA Portfolio (kgCO₂/m²/year)

2017 Green Bond



All EMA properties in the allocated portfolio have an estimated 24.8 kgCO₂/m²/year or less.

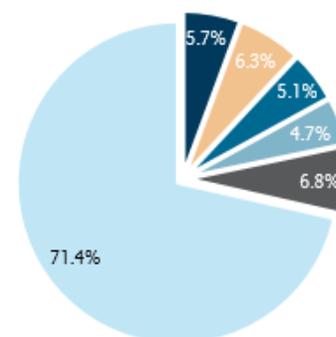
2020 Green Bond



All EMA properties in the allocated portfolio have an estimated 22.5 kgCO₂/m²/year or less.

Seasoning of Loans

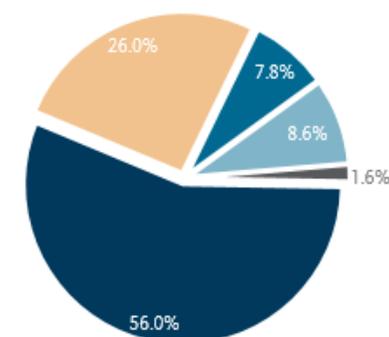
2017 Green Bond



Months

- 0-12
- 12-18
- 18-24
- 24-30
- 30-36
- 36-40+

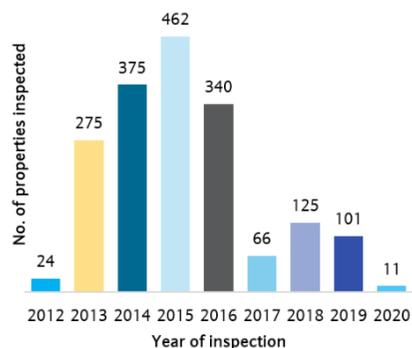
2020 Green Bond



All loans in both portfolios have been originated within 3 years of the Settlement date.

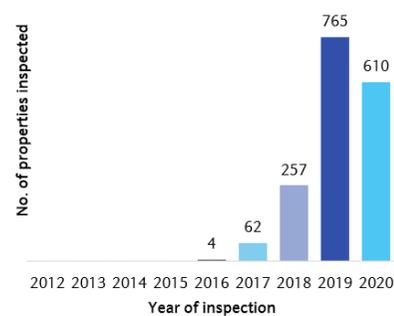
Year of EPC inspection

2017 Green Bond



c.62% of all EMA properties have had their most recent EPC inspection from 2015 onwards.

2020 Green Bond



c.96% of all EMA properties have had their most recent EPC inspection from 2018 onwards.

Geographic Distribution of EMAs

2017 Green Bond²

Region	Percentage (%)
South East	33.00%
Greater London	25.41%
East Anglia	7.87%
South West	7.59%
West Midlands	5.68%
East Midlands	5.34%
North West	5.23%
Yorks And Humberside	4.10%
North	2.30%
Wales	1.91%
Eastern England	1.46%
North East	0.11%

2020 Green Bond

Region	Percentage (%)
South East	26.62%
South West	13.96%
Eastern England	13.90%
Yorks And Humberside	12.37%
North West	9.13%
East Midlands	7.01%
North East	5.71%
Greater London	5.07%
West Midlands	4.77%
Wales	1.47%

² The geographical distribution of the EMA portfolio for the 2017 and 2020 Green Bonds has been presented on the basis of number of properties rather than loan balance (as is within the Barclays ESG Report 2020 available at home.barclays/society/esg-resource-hub)

Carbon Reporting as at 31st December 2020: Results and Methodology

The following calculations have been checked and verified by Carbon Trust as part of the Green Bond Assurance Statement dated 24th February 2021³. The report conforms to the Climate Bonds Initiative criteria.

This report shows the results and methodology for estimating potential avoided carbon emissions versus the national EPC average for the properties included in the 2017 Green Bond and the 2020 Green Bond portfolios.

	2017 Green Bond		2020 Green Bond	
	Nominal Value (£)	Number of Properties	Nominal Value (£)	Number of Properties
Proceeds allocated to:				
Buy-to-let mortgages	£157.4m	633	£5.1m	17
Owner Occupied mortgages	£284.9m	1,146	£395.1m	1,681
EMA portfolio assets as at 31st Dec 2020	£442.3m	1,779	£400.2m	1,698
Of which proceeds allocated to Green Home Mortgages	-	-	£318.1m	1,364

2017 Green Bond

As of 31st December 2020, Barclays' allocated EMA portfolio contained 1,779 mortgage loans for residential properties with a nominal value of £442.3m⁴.

2020 Green Bond

As at 31st December 2020, Barclays' allocated EMA portfolio contained 1,698 mortgage loans for residential properties with a nominal value of £400.2m.

All calculations are based on loan data as of 31st December 2020 and on the most recent EPC data release for England and Wales⁵.

³ The Green Bond Assurance Statement is published alongside this investor report, both are available at home.barclays/investor-relations/fixed-income-investors/funding-and-liquidity/green-bonds/

⁴ Equivalent to €501.8m (using FX rate at pricing date)

⁵ The latest EPC dataset was released in January 2021 containing all lodgements up until 20th September 2020

1. Comparison of average estimated carbon intensity against a domestic baseline

This first calculation compares the average estimated carbon intensity of the allocated portfolio of EMAs for each Barclays Green Bond against a comparable domestic baseline. The baseline used in this report is the average estimated carbon intensity of all properties in the most recent EPC dataset, which is used as a projection for the national average of carbon intensity for properties in England and Wales⁶. We note that, the estimated avoided carbon emissions (versus the national EPC average) are sensitive to the choice of the baseline dataset. For example, the avoided carbon emissions versus the national EPC average may decrease over time as UK housing energy efficiency improves.

The EPC dataset contains duplicate addresses due to single properties having multiple EPC certificates recorded over time. These duplicate entries were not considered in order to mitigate ambiguity regarding which EPC record to associate with the properties. EPC information marked as 'Invalid' on the dataset has also been removed from our internal database, as these contain potentially erroneous values for carbon intensity.

The EPC data release contains EPC records for c.19.5 million properties in England and Wales as of January 2021, whilst the total number of domestic properties in England and Wales is much higher. As a result, this report only considers the national average carbon intensity based on EPC data, and subsequent calculations are benchmarked against this average. Due to the granular nature of the underlying portfolio, it is impossible to provide line by line carbon impact and calculations are shown at a portfolio level.

Estimated Carbon Intensity

	EPC Dataset	2017 Green Bond Portfolio	2020 Green Bond Portfolio
Total KgCO ₂ /m ² /year	929,162,972	27,751	24,629
Total number of properties	19,507,852	1,779	1,698
Average KgCO ₂ /m ² /year	47.63	15.60	14.50

2017 Green Bond

The average carbon intensity for the allocated portfolio of EMAs for the 2017 Green Bond is 15.60 KgCO₂/m²/year, which is c.67% lower than the EPC dataset average of 47.63 KgCO₂/m²/year, and c.37% lower than the top 15% of lowest carbon intensive properties at 24.8 KgCO₂/m²/year⁷.

2020 Green Bond

The average carbon intensity for the allocated portfolio of EMAs for the 2020 Green Bond is 14.50 KgCO₂/m²/year, which is c.70% lower than the EPC dataset average of 47.63 KgCO₂/m²/year, and c.42% lower than the top 15% of lowest carbon intensive properties at 22.5 KgCO₂/m²/year.

⁶ The appropriate field within the EPC dataset that contains estimated carbon intensity figures for each property is: CO₂ EMISS CURR PER FLOOR AREA (CO₂ emissions per square metre floor area per year in Kg/m²)

⁷ The calculation of top 15% of lowest carbon intensive properties is a point in time assessment. The carbon intensity threshold will be fixed for the term of the issuance. As there have been more frequent EPC dataset releases from 2017 to 2020 and more properties added to the database, including new builds, the top 15% threshold has decreased from 24.8kgCO₂/m²/year in the 2017 Green Bond to 22.5 KgCO₂/m²/year for the 2020 Green Bond.

2. Annual estimated KgCO₂ avoidance of allocated EMA portfolio

The second calculation estimates the annual carbon emission avoidance of the overall portfolio of EMAs. This calculation includes the following inputs:

- a. Average estimated carbon intensity of allocated EMA portfolio (in KgCO₂/m²)
- b. Average estimated carbon intensity of EPC dataset (in KgCO₂/m²)
- c. Total floor area of EMA portfolio properties (in m²)

The formula for calculating the estimated carbon avoidance using these inputs is:

$$\text{Annual KgCO}_2 = (a - b) * (c)$$

Estimated Carbon Avoidance

	2017 Green Bond Portfolio	2020 Green Bond Portfolio
a.	15.60	14.50
b.	47.63	47.63
c.	196,315	172,017
Estimated annual avoidance versus national EPC average	6,288,168 KgCO ₂ ⁸ 6,931 US tCO ₂	5,698,092 KgCO ₂ 6,281 US tCO ₂

⁸ Conversion: $Kg = \frac{US_t}{0.0011023}$

3. Estimated carbon emissions avoided per every €1m / £1m of proceeds allocated

The third calculation is an estimation of how many tons of CO₂ have been avoided. This is calculated as follows for each Barclays Green Bond:

- €1m of the 2017 Green Bond proceeds allocated
- £1m of the 2020 Green Bond proceeds allocated

The formula for this calculation is shown below:

$$\text{CO}_2 \text{ avoidance per } \text{€1m} / \text{£1m invested} = (a * b) / (c)$$

Where:

- a. €1m (2017 Green Bond) / £1m (2020 Green Bond)
- b. Estimated annual avoidance versus national EPC average
- c. Issuance proceeds

Estimated Carbon Avoidance per €1m / £1m proceeds

	2017 Green Bond Portfolio (€1m)	2020 Green Bond Portfolio (£1m)
Estimated annual avoidance versus national EPC average (US tCO ₂)	6,931	6,281
Issuance proceeds	€500m	£400m
Annual CO ₂ avoidance per €1m / £1m invested versus national EPC average (US tCO ₂)	13.86	15.70

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