



Barclays Green Bond Investor Report

February 2020

Introduction

Climate change represents one of the greatest challenges faced by the world today. Banks have an important role to play in ensuring that the world's energy needs are met while helping to limit the threat that climate change poses to people and to the natural environment.

Banks have a direct environmental and social impact through their operational footprint, as well as indirectly in the way that they mobilise capital, advise clients and develop products. Our aim is to help facilitate the transition to less carbon intensive sources of energy, while supporting economic development and growth in society by helping to ensure the world's energy needs are met responsibly. We will continue to keep our approach under review in support of that ambition.

We are focused on three areas of activity at Barclays:

1. Financing the growth of renewable energy sources and proactively supporting the development of businesses aiming to solve the world's environmental challenges;
2. Taking a responsible and sustainable approach to the necessary financing of sources of energy that are more carbon intensive or those with higher environmental impact; and
3. Reducing the carbon footprint of our own operations and supply chain throughout the world.

In 2019 Barclays set an 80% reduction target for our combined scope 1 & 2¹ emissions by 2025, aligned with the Science Based Target methodology. We also committed to procure 100% renewable electricity for all operational needs by 2030 with an interim goal of 90% by 2025. At the end of 2019 we had achieved a 53% emissions reduction and were procuring 60% of our electricity through renewable means.

The Barclays Energy and Climate Change Statement and other environmental, social and governance position statements are available to download at <https://home.barclays/citizenship/statements-and-policy-positions>

¹ Scope 1: Direct combustion of fuels, and company owned vehicles (from UK only).
Scope 2: Purchased electricity (location based) and steam for own use.

Within our Green Bond Framework, dated November 2017, we have committed to publish an investor report on an annual basis. This Green Bond investor report contains details of the allocated portfolio of Eligible Mortgage Assets (EMAs), as well as a quantitative environmental impact assessment for our inaugural issuance.

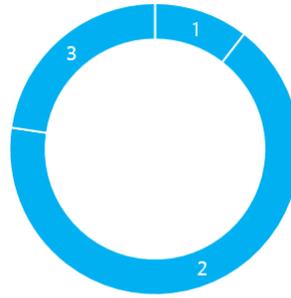
Green Bond Framework Summary

Section	Summary
 <p data-bbox="375 768 586 800">Use of Proceeds</p>	<ul data-bbox="686 373 1372 1178" style="list-style-type: none"> • Allocate an equivalent amount of funding which represents the proceeds from Barclays Green Bonds to finance and refinance mortgages on energy efficient residential properties that are in the top 15% of the lowest carbon intensive properties based on Energy Performance Certificate (EPC) data • 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 the lowest carbon intensive properties. This resulted in the following formula for the maximum carbon intensity output: $y = -0.8235x + 1688.24$ • Where x = year of mid-point bond maturity and y = carbon intensity of the property, measured in KgCO₂/m²/year
 <p data-bbox="375 1293 570 1409">Process Evaluation and Selection</p>	<ul data-bbox="686 1230 1372 1472" style="list-style-type: none"> • The top 15% of the lowest carbon intensive properties in Barclays residential mortgage portfolio will be mapped against the latest EPC data and filtered, removing any encumbered mortgages that are already used in other transactions
 <p data-bbox="375 1549 586 1619">Management of Proceeds</p>	<ul data-bbox="686 1507 1372 1661" style="list-style-type: none"> • The size of the allocated portfolio of EMAs will be monitored on a monthly basis • Any redeemed or ineligible assets will be replaced by EMAs
 <p data-bbox="375 1759 505 1791">Reporting</p>	<ul data-bbox="686 1696 1317 1850" style="list-style-type: none"> • Barclays will publish an annual investor report • A suitably qualified assurance provider will perform verification testing and provide an assurance report each year

Green Bond Details

Issuer	Barclays PLC
Settlement Date	14/11/2017
Currency	Euro
Notional	500,000,000
Tenor	6-year, non-call 5-year
ISIN	XS1716820029
Call Date	14/11/2022
Maturity Date	14/11/2023

Carbon Intensity of Eligible Mortgage Asset Portfolio (KgCO₂/m²/year)



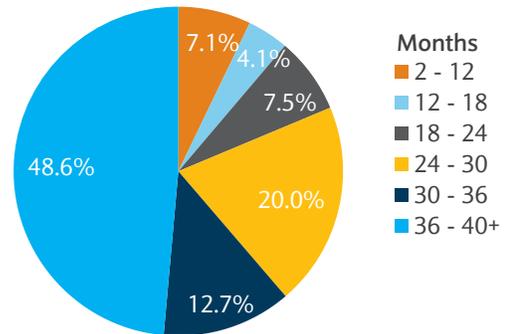
		%
1	0 - 9.99	10.5%
2	10 - 19.99	66.9%
3	20 - 24.8	22.6%

All EMA properties in the allocated portfolio have an estimated 24.8 KgCO₂/m²/year or less.

Use of Proceeds

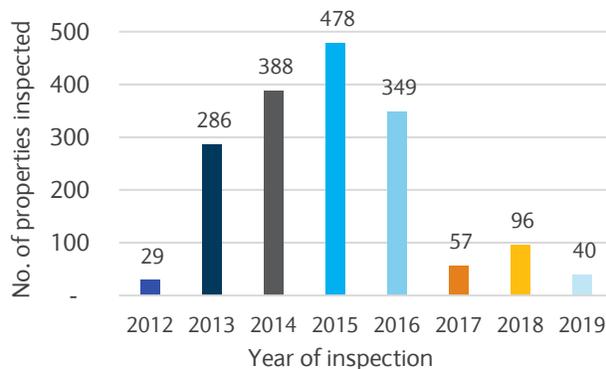
Reporting Date	31/12/2019
GBP equivalent of Issuance Proceeds	£440,772,785
FX rate as at pricing date (6/11/2017)	1.1345 EUR/GBP
Size of Allocated Eligible Mortgage Assets	£442,481,513
Bond Proceeds allocated	100%
Carbon Intensity max threshold	24.8 KgCO ₂ /m ² /year
Finance/Refinance	100% Refinance

Seasoning of Loans



All loans in the portfolio have been originated within 3 years of the settlement date.

Year of EPC Inspection



c.60% of all EMA properties have had their most recent EPC inspection from 2015 onwards.

Geographical Distribution of EMAs



Region	%
East Anglia	8.8%
East Midlands	5.2%
Greater London	25.5%
North	2.5%
North West	4.9%
South East	33.9%
South West	7.5%
Wales	2.0%
West Midlands	5.6%
Yorks And Humberside	4.1%

Barclays Green Bond Quantitative Environmental Impact Assessment

Carbon Reporting as at 31st December 2019: Results and Methodology

As at 31st December 2019, Barclays' allocated EMA portfolio contained 1,723 mortgage loans for residential properties with a nominal value of £442,481,512.97². This report shows our results and methodology for estimating potential avoided carbon emissions (versus national EPC average) for these properties.

	Nominal Value (£m)	Number of Properties
Proceeds allocated to Buy-to-Let mortgages	£158,860,675	647
Proceeds allocated to Residential mortgages	£283,620,838	1076
EMA portfolio Assets as at 31st December 2019	£442,481,513	1,723

The calculations have been checked and verified by Carbon Trust as part of their CBI Post Issuance Verification Report dated 4th February 2020³. All calculations are based on loan data as of 31st December 2019 and on the most recent EPC dataset release for England and Wales (October 2019).

² Equivalent to €501,995,276.46 using FX rate at pricing date

³ Carbon Trust Assurance Report has been published on the 'Green Bonds' section of Barclays Investor Relations website (<https://home.barclays/investor-relations/fixed-income-investors/funding-and-liquidity/green-bonds/>)

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 against a comparable domestic baseline. The comparable domestic baseline used in this report is the average estimated carbon intensity of all properties in the most recent EPC dataset⁴ as at October 2019, which has been used as a projection for the national average of carbon intensity for properties in England and Wales.

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 the appropriate 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. Finally, the estimated avoided carbon emissions (versus national EPC average) are sensitive to the choice of baseline dataset. For example, the avoided carbon emissions versus the national EPC average may decrease over time as UK housing energy efficiency improves. The MHCLG⁵ EPC data release contains EPC records for c.18 million properties in England and Wales as at October 2019, whilst the total number of domestic properties in England and Wales is much higher (25.8m domestic properties with a Council Tax band as at 30th September 2019). As a result, this report only considers the national average carbon intensity based on EPC data, and subsequent calculations are benchmarked against this average.

	Allocated EMA Portfolio	EPC Dataset (October 2019)
Total KgCO ₂ /m ² /year of properties	26,949.60	885,502,710.14
Total Number of properties	1,723	18,403,047
Average KgCO₂/m²/year (Total KgCO₂/m²/year of properties/ Total number of properties)	15.64	48.12

The average carbon intensity for Barclays’ allocated EMA portfolio of 15.64 KgCO₂/m²/year is c.67% lower than the EPC dataset average of 48.12 KgCO₂/m²/year, and c.37% lower than the top 15% of lowest carbon intensive properties at 24.8 KgCO₂/m²/year.

⁴ The appropriate field within the EPC dataset that contains estimated carbon intensity figures for each property is: CO₂EMISS CURR PER FLOOR AREA (CO₂ emissions per square metre floor area per year in Kg/m²)

⁵ Ministry of Housing, Communities & Local Government

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 shown below:

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

Where:

$$a = 15.64$$

$$b = 48.12$$

$$c = 193,272$$

Estimated Annual avoidance versus national EPC average = 6,277,474.56 KgCO₂ or 6,919.66 US tCO₂⁶.

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

The third calculation is an estimation of how many tons of CO₂ have been avoided per €1m of Barclays Green Bond proceeds allocated. The formula for this calculation is shown below:

$$\text{CO}_2 \text{ Avoidance per } \text{€1m invested} = \frac{(a * b)}{c}$$

Where:

$$a = \text{€1,000,000}$$

$$b = 6,919.66 \text{ US tCO}_2$$

$$c = \text{€500,000,000}$$

Annual CO₂ Avoidance per €1m invested versus national EPC average = 13.84 US tCO₂.

⁶ Conversion: $\text{Kg} = \frac{\text{US t}}{0.0011023}$

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