



# **AIB Green Bond Impact Assessment Methodology**

*For eligible green commercial loans in Ireland and the  
UK*

**April 2020**



The Carbon Trust's mission is to accelerate the move to a sustainable, low carbon economy. It is a world leading expert on carbon reduction and clean technology. As a not-for-dividend group, it advises governments and leading companies around the world, reinvesting profits into its low carbon mission.



AIB is a financial services group operating predominantly in the Republic of Ireland and the UK. They provide a comprehensive range of services to personal, business and corporate customers in their target markets and have leading market shares in banking products in the Republic of Ireland.

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# Abbreviations

**AIB Impact tool** developed by the Carbon Trust to calculate the impact and avoided emissions of the AIB green commercial buildings included in the eligible asset pool for the green bond

**Avoided carbon emissions** the avoided carbon emissions of the underlying properties when comparing them against a baseline of the average property (by sector and geography), on an annual basis. The avoided emissions are a result of these properties being more efficient and less carbon intensive than the average property (by sector and geography)

**Baseline** the average energy and carbon intensity of properties by sector and geography, informed by the SEAI and EPC datasets

**BER (Building Energy Rating)** an indication of the energy performance of residential or commercial premises (represented as kWh/m<sup>2</sup>/year) in Ireland

**Eligible Green Project Portfolio** eligible green bond use of proceeds as outlined in the Framework

**EPC (Energy Performance Certificate)** mandatory to issue for newly constructed, sold or rented commercial and residential properties in the UK. The certificates provide an indication of the energy performance of buildings

**Framework** AIB's green bond framework outlines its green bond processes and procedures for (1) Use of Proceeds, (2) Process for Project Evaluation and Selection, (3) Management of Proceeds, and (4) Reporting

**Green Commercial Loans** a category of the eligible the green bond portfolio as defined in the Framework

**SEAI BER Research tool** developed by the SEAI and provides a database of BER certificates for all domestic properties in Ireland (that have been assessed)

**SEAI non-domestic database** a database provided by SEAI containing the BER certificate data of non-domestic properties in Ireland (that have been assessed)

# 1. Introduction

Aligned with its sustainability strategy, Allied Irish Banks (“AIB”) is intending to issue green bonds to finance and / or refinance loans that meet the requirements as described in the AIB Green Bond Framework (“**Framework**”)<sup>1</sup>. The objective of the Framework, and subsequent green bonds issued from it, is to fund projects or assets that mitigate climate change by reducing emissions, protect ecosystems or otherwise have a positive environmental impact. The Framework has been aligned to the ICMA Green Bond Principles, and has received a Second Party Opinion from Sustainalytics.

The ICMA Green Bond Principles are a set of voluntary guidelines that recommend transparency and disclosure and promote integrity in the development of the green bond market by clarifying the approach for issuing a green bond. The Framework therefore has four key components:

1. Use of Proceeds
2. Process for Project Evaluation and Selection
3. Management of Proceeds
4. Reporting

For each green bond issued, AIB asserts that it will adopt (1) Use of Proceeds, (2) Process for Project Evaluation and Selection, (3) Management of Proceeds, (4) Reporting, as set out in the Framework.

AIB, at its discretion but in accordance with the Green Bond Principles, will allocate the net proceeds of the Green Bonds to an eligible loan portfolio of new and existing green loans (“Eligible Green Project Portfolio”). The Eligible Green Project Portfolio are to be financed and/or refinanced in whole or in part by an allocation of the bond proceeds.

The Eligible Green Project Portfolio includes “Green Commercial Buildings”, the criteria for which are set out below<sup>1</sup>:

- Green Commercial Buildings in Ireland
  - a. New or existing commercial buildings, belonging to the top 15% low carbon buildings in the local context. This will be demonstrated by a Building Energy Rating (BER) label of “B3” and better.
  - b. New or existing commercial buildings that have been built from 2020 and later as well as commercial buildings purchased or leased from 2015 by a public body.
  - c. Refurbished commercial buildings with at least a 30% improvement in energy efficiency: When such an improvement is derived from BER labels, a minimum floor of a “C3” BER label will be implemented.
- Green Commercial Buildings in the UK:
  - a. New or existing commercial buildings in the UK, belonging to the top 15% low carbon buildings in the local context (i.e. England & Wales, Scotland and Northern Ireland):

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<sup>1</sup> <https://aib.ie/investorrelations/debt-investor/green-bonds/green-bond-framework>

- In England and Wales, this will be demonstrated by an Energy Performance Certificate (EPC) with label “A” and “B”
  - In Scotland, this will be demonstrated by an EPC with label “A, B and C”
- b. Refurbished commercial buildings with at least a 30% improvement in energy efficiency: When such an improvement is derived from EPC labels, a minimum floor will be implemented for the considered building. The floor will be one step below the lowest defined threshold to be part of the top 15% in the local context (i.e. a “C” label in England and Wales).
- Green Commercial Buildings in Ireland and the UK:
  - a. New, existing or refurbished commercial buildings which received at least one or more of the following classifications:
    - BREEAM ‘Excellent’ or higher
    - LEED ‘Gold’ or higher
    - DGNB ‘Gold’ or higher
    - Any other equivalent or higher level of certification

AIB would like to report on the avoided emissions impact of the Green Commercial Building loans financed and/or refinanced from the proceeds of the green bond(s) on an annual basis. Avoided emissions in this analysis are defined as the avoided carbon emissions of the underlying properties when comparing them against a baseline:

- of the average commercial property category (e.g. retail property) in Ireland, on an annual basis
- of the average commercial property category (e.g. student accommodation) in the UK, on an annual basis
- of the average domestic property (for housing real estate developments) in Ireland, on an annual basis.

At the time of methodology development, the eligible UK commercial properties included only student accommodation properties, while properties in Ireland were split between various types of commercial developments. The avoided emissions are a result of these properties being more efficient and less carbon intensive than the average respective property type in Ireland or the UK.

The Carbon Trust has therefore been commissioned to develop a methodology and tool to allow AIB to calculate the annual avoided emissions impact of the current Green Commercial Building asset pool within the Eligible Green Project Portfolio.

## 2. Methodology

### 2.1 Baseline development and data analysis

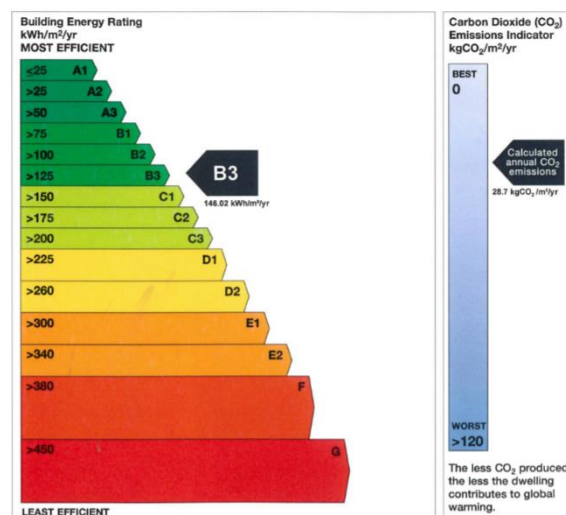
In order to calculate the impact of the pool of Green Commercial Buildings, it is necessary to understand the annual carbon footprint of each property and compare it against a baseline, to understand its incremental impact. The boundary of the carbon emissions assessment includes the carbon emissions associated with the electricity and fossil fuel (eg. oil, natural gas) use in the property on an annual basis.

As AIB does not currently have access to the actual energy consumption and carbon emissions of each property this requires assumptions to be made. For Irish commercial and domestic properties, Building Energy Rating (BER) certificates have been identified as the most appropriate proxy to estimating these figures. For properties located in the UK, the Energy Performance Certificates (EPC) have been selected as a relevant proxy.

The identified baseline is the annual carbon emissions of the average commercial property, in the relevant geography and sector. This aligns with the approach used in the green bond market for assessing the impact of green bonds that are financing/ refinancing residential and commercial properties. The specific approaches for respective baseline calculations and proxy data are given below.

#### 2.1.1 Properties in Ireland: Building Energy Ratings (BER)

BER certificates in Ireland provide an indication of the in-use energy performance of residential and commercial premises (represented as kWh/m<sup>2</sup>/year). The certificate rates each building on a scale of A-G with A being the most energy efficient and G the least energy efficient. Each building which is put forward for sale or lease requires a BER certificate.



**Figure 1** Illustration of a BER certificate indicating A-G scale and the building rating of B3 in this instance. The BER certificate also provides information on the kWh/m<sup>2</sup>/yr and kgCO<sub>2</sub>/m<sup>2</sup>/yr <sup>(2)</sup>

<sup>2</sup> BER certificate received from AIB on 04/02/20 and used here for illustration purposes only

A BER indicates the energy performance of a dwelling based on the energy use for space and hot water heating, ventilation and lighting. BER certificates also provide information on the total emissions of the property in kgCO<sub>2</sub>/m<sup>2</sup>/yr, which is determined by the source of energy supply such as electricity, natural gas etc. Actual performance will depend on how the occupants operate the dwelling and there is often a performance gap.

BER ratings and calculations are based on the major characteristics of a property including building orientation, insulation levels, type, efficiencies and operation of heating, cooling, DHW and lighting systems. Occupancy patterns are also included in the calculation of a BER and these are modelled based on notional building use assumptions. However, actual energy consumption of the property may vary significantly, depending on occupancy patterns, systems controls and operations and may differ significantly from assumptions made in a BER calculation. Despite the stated limitations, BER data is considered to be a good relative indicator of projected energy consumption and carbon emissions, and is the best proxy to use given that AIB do not have access to the actual energy consumption and carbon emissions of their pool of Commercial Buildings.

Not all the BER certificate data is available in AIB's systems to be extracted. At present, only the BER category (A1, A2 etc.) is extractable, therefore the methodology is designed to cope with this limitation, but also utilise the building specific BER energy and carbon intensities when they become available.

### **2.1.1.1 Domestic property developments in Ireland**

#### **Baseline**

The Sustainable Energy Authority of Ireland (SEAI) has developed the National BER Research Tool<sup>3</sup> which provides access to the BER certificate data for all domestic properties in Ireland (that have been through the BER assessment process). The database provides BER certificate data and information for approximately 890,843 domestic properties in Ireland and consists of properties built between 1753 to 2020.<sup>4</sup> This database represents approximately 50% of all domestic properties when comparing against the 2011 Census of Population.

The data provided in the BER Research Tool is used to establish the baseline (country average) in energy use (kWh/m<sup>2</sup>/yr) and carbon emissions (kgCO<sub>2</sub>/m<sup>2</sup>/yr) for domestic properties in Ireland.

SEAI states in the User Information Guide of the BER tool that it manages a quality assurance system for the BER database, however, it takes no responsibility for undetected errors in the data set. Therefore, the Carbon Trust has performed a supplementary analysis of the BER database. BERs that, to the best of our knowledge, are considered unrealistic have been excluded for inclusion in the BER analysis. Specifically, BER values of a) zero or less and b) 500kWh/m<sup>2</sup>/yr or more, have been excluded.

The Carbon Trust assumes that there are no duplicates in the SEAI database, as has been verbally confirmed by representatives at SEAI. It is understood that if a property has been through multiple BER assessments, the latest (newest) BER certificate data is presented in the database. Therefore, all properties, excluding the outliers mentioned in the previous paragraph, have been considered in the analysis.

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<sup>3</sup> <https://ndber.seai.ie/BERResearchTool/ber/search.aspx>

<sup>4</sup> The latest update of the SEAI database was used in the AIB impact tool dated 20/02/2020



The average BER of all properties in Ireland, which have a BER certificate and are included in the latest available data in BER Research Tool (excluding the outliers mentioned above) is estimated to be 222.0 kWh/m<sup>2</sup>/year. The average CO<sub>2</sub> emissions intensity for the same properties is estimated at 51.0 kgCO<sub>2</sub>/m<sup>2</sup>/year.

As discussed in a previous report by AIB<sup>5</sup>, the distribution of properties in the BER Research Tool is likely skewed slightly towards more efficient properties. This is expected given that BER ratings are only required for new, sold or rented properties, and the tool represents 50% of all properties. On discussion with AIB, we decided not to correct for this in the methodology when calculating the baseline as it would have required further assumptions to be made in the methodology. This is a conservative approach and in practice the average carbon intensity in Ireland is likely to be slightly higher than the baseline used in this analysis.

It is unclear as to when the BER Research Tool will be updated by SEAI and to what extent this will affect the BER benchmarks. The Carbon Trust suggests that AIB undertakes a review of the AIB impact tool and updates the SEAI input on an annual basis.

### ***AIB data gaps***

Where the AIB only has the BER category (e.g. A1, A2) on file for each domestic property development, the SEAI National BER research tool has been used to estimate the carbon and energy intensity for those properties.

To do this, the average intensities for the properties contained in the SEAI BER Research Tool have been calculated for each BER category. Where the intensities are missing for properties within the pool of Green Commercial Buildings, the estimated intensities are matched to each property using the property's BER category.

#### ***2.1.1.2 Commercial property developments in Ireland***

##### ***Baseline***

For non-domestic (commercial) BER data, the SEAI does not have freely accessible data to download, so the Carbon Trust contacted the SEAI for a download of all non-domestic BER data records. This was provided to the Carbon Trust on 28/02/2020.

The database provided contains BER certificate data and information for approximately 58,664 non-domestic properties in Ireland.

The data provided in the non-domestic BER database has been used to establish the baseline (country average) in energy use (kWh/m<sup>2</sup>/yr) and carbon emissions (kgCO<sub>2</sub>/m<sup>2</sup>/yr) for each specific category/sector of commercial properties in Ireland.

SEAI states in the User Information Guide of the domestic BER tool that it manages a quality assurance system for the BER database, however, it takes no responsibility for undetected errors in the data set. It is assumed to be the same for the non-domestic dataset. Therefore, the Carbon Trust has performed a supplementary analysis of the BER database which has identified outliers in the dataset, which present very high energy intensity figures. The top 1% has therefore been screened out of the analysis to ensure that the baseline figures are more realistic.

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<sup>5</sup> <https://aib.ie/content/dam/aib/investorrelations/docs/debt-investors/green-bonds/residential-buildings-in-ireland-top-15-percent.pdf>

The raw SEAI dataset contains 46 different sector types. This presents a few key challenges. Firstly, that the sample size to inform the baseline for certain sector types is very small, and therefore heavily skewed towards more efficient properties. Secondly, a few of the sector types are similar and overlapping in places. To correct for this, we followed the approach used by the Central Statistics Office in Ireland<sup>6</sup>, and categorised the sectors into 13 broader sector groups.

As with the domestic SEAI data set, the Carbon Trust assumes that there are no duplicates in the SEAI database, as has been verbally confirmed by representatives at SEAI. It is understood that if a property has been through multiple BER assessments, the latest (newest) BER certificate data is presented in the database. Therefore, all properties, excluding the outliers mentioned in the previous paragraph, have been considered in the analysis.

The average BER and CO2 intensity of each specific commercial property sector in Ireland, which have a BER certificate and are included in the latest available data in BER Research Tool (excluding the outliers mentioned above) are presented below:

Sector	Baseline carbon intensity (CO2/m2/yr)	Baseline energy intensity (kWh/m2/yr)
Office	151.6	652.1
Hospitals and primary health care	139.9	602.1
Nursing residential homes and hostels	116.2	515.7
Schools and colleges	66.1	289.3

As with the domestic dataset, it is unclear as to when the BER database will be updated by SEAI and to what extent this will affect the BER benchmarks. The Carbon Trust suggests that AIB undertakes an annual review of the AIB impact tool and reaches out to SEAI to see if they have an updated database available.

### **Data gaps**

Where the AIB only has the BER category (e.g. A1, A2) on file for each of the properties, the SEAI non-domestic database was used to estimate the carbon and energy intensity for those properties. Average carbon intensity values were calculated for each BER and building broad sector group and used as their carbon footprint proxies. If these values were not available, or unrealistic (i.e. negative values) the average for each BER category across the whole data set is used.

Where a building does not have a BER category assigned, the minimum required to comply with building standards in that year was applied.

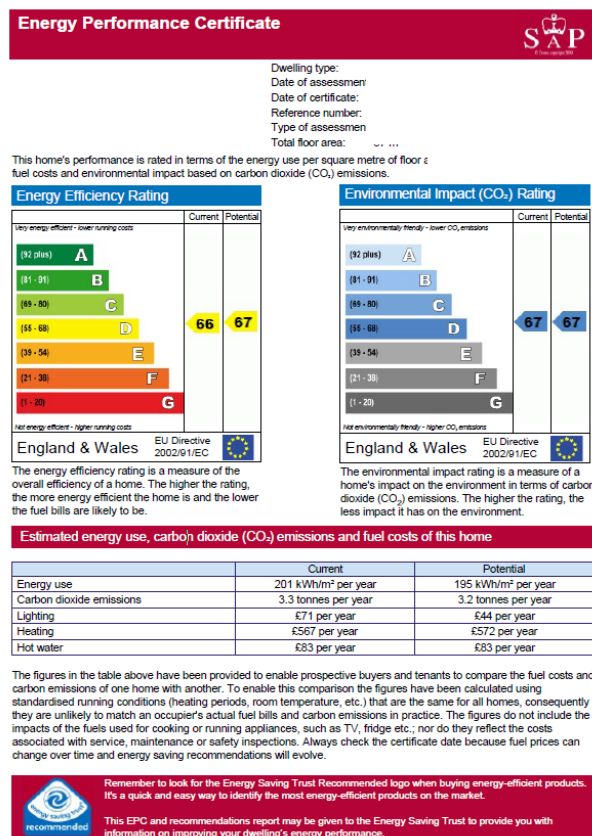
## **2.1.2 UK Commercial Properties: Energy Performance Certificates (EPC)**

EPCs are mandatory to issue for newly constructed, sold or rented commercial and residential properties in England and Wales. The certificates provide an indication of the energy performance of buildings (represented as kWh/m<sup>2</sup>/year). The certificate rates each building on a scale of A-G with A being the most energy efficient and G the least energy efficient. Additionally, EPCs display the environmental impact of the property (kgCO<sub>2</sub>/m<sup>2</sup>/year), and suggested technological improvements to the building's energy efficiency. Further details on how EPCs are produced can be found on the Ofgem website<sup>7</sup>.

<sup>6</sup> <https://www.cso.ie/en/releasesandpublications/er/ndber/non-domesticbuildingenergyratingsq22019/>

<sup>7</sup> <https://www.ofgem.gov.uk/key-term-explained/energy-performance-certificate-epc>

EPC rating is a product of a software calculation based on the key characteristics of a property, such as building orientation, insulation levels, type, efficiencies and operation of heating, cooling, and lighting systems, which are appraised by a qualified assessor during an audit. Occupancy patterns are also considered in the calculation of an EPC and these are calculated on the basis of a notional family with a standard occupancy pattern. However, actual energy consumption of the dwelling may vary significantly (the energy performance gap), depending on occupancy patterns, systems controls and operations and may differ significantly from the notional assumptions made during EPC calculations. Despite the stated limitations, EPC data is considered to be a good relative indicator of projected energy consumption and carbon emissions, and is the best proxy to use given that AIB do not have access to the actual energy consumption and carbon emissions of their pool of UK Green Commercial



Building loans.

**Figure 2: Illustration of an EPC certificate indicating A-G scale and the building rate of D in this instance. The EPC certificate also provides information on the kWh/m<sup>2</sup>/yr and kgCO<sub>2</sub>/m<sup>2</sup>/yr <sup>(8)</sup>**

### 2.1.2.1 UK University Accommodation Properties

#### Baseline

The UK Ministry of Housing, Communities & Local Government (MHCLG) provides an open database of both commercial and domestic EPC certificates in England and Wales. There are currently no precise figures for database coverage of the total commercial building stock in England and Wales. However, it includes EPCs from all buildings constructed, sold or let since 2008, except if the property owners actively opted out of public information sharing. Therefore, the database is the most complete set of updated data on property energy and carbon performance available.

<sup>8</sup> Anonymized example EPC from the public EPC register

The published commercial data includes more than 800,000 EPCs, of which 3679 properties fall into ‘ Residential Institutions – Universities and Colleges’ category, which includes halls of residences and other university facilities. This category corresponds to the type of assets currently present in AIB’s UK portfolio, and was therefore used to determine the baseline figure for average CO<sub>2</sub> emissions of that building category.

The original data set has been screened for erroneous values, and filtered to include only unique values. Practically that involves removing duplicate values for EPCs issued during multiple property transactions over time to keep the most recent emissions intensity figure per building. The bottom 1% (least efficient) carbon efficiency values have also been filtered out, because of extremes outliers present in the dataset (e.g. over 1000 kgCO<sub>2</sub>/m<sup>2</sup>/year for a number of properties). Subsequently, an average of BUILDING\_EMISSIONS variable has been calculated, resulting in a figure of 66.4 kgCO<sub>2</sub>/m<sup>2</sup>/year.

The EPC database for universities does not contain energy performance figures, so this has not been calculated for this property type.

The EPC database is regularly updated by the UK Ministry of Housing, Communities & Local Government, and therefore the Carbon Trust suggests that AIB updates the baseline data on an annual basis.

For completeness, other baseline options were considered, such as using sector data from the, Chartered Institution of Building Services Engineers (CIBSE), who publish various energy and carbon intensity benchmark data for the UK via the CIBSE online benchmarking tool<sup>9</sup>. These benchmarks consider data from Display Energy Certificates, which analyse real energy use of premises, however for university accommodation the data was last updated in 2012 and therefore may not be representative of current performance. Following a review of other baseline options, it was concluded that EPC data represented the best source of data for calculating the baseline.

### **Data gaps**

Where AIB only has the EPC category (e.g. A, F) on file for each UK commercial property, the England and Wales EPC register has been used to estimate the carbon intensity for those properties, the database does not include energy intensity figures. Four of eighteen properties could be directly matched to their certificates using the postcode and address information, and therefore exact property specific carbon emission values were extracted. The remaining (14) buildings had readily available EPC bands, i.e. A-G labels without specific energy consumption and carbon emission values. In such case category averages from the general UK sample have been used as their carbon footprint proxies.

AIB currently has 1 university accommodation asset in Scotland. The Energy Savings Trust provides the Scottish Energy Register<sup>10</sup>, however at present, it is possible only to extract individual EPCs based on property postcode, and no analysis on the full sample is possible. Therefore, UK baseline values are used when calculating emissions avoided for Scottish properties. Should the Scottish database be made available publicly in the future, it could be used to inform a separate baseline calculation for AIB commercial university properties in Scotland.

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<sup>9</sup> <https://www.cibse.org/knowledge/energy-benchmarking-tool-beta-version>

<sup>10</sup> <https://www.scottishepcregister.org.uk/>

## 2.2 Impact calculation

The section describes the calculations required to calculate the impact of commercial properties within AIB's pool of Commercial Buildings, and reflect the availability of data.

**Step 1:** Determining the baseline carbon intensity (CO<sub>2</sub>/m<sup>2</sup>/yr):

$$\frac{\sum \text{Carbon Intensity of properties in the relevant baseline category}}{\text{Number of properties in the relevant baseline category}}$$

Relevant baseline categories, depending on the property location are:

- 1) Specific building category within the UK EPC database (e.g. *C2 - Residential Institutions – Universities and Colleges*) in case of UK property calculation,
- 2) Specific building category within the Irish BER database (e.g. *Warehouses*) in case of an impact calculation for a property located in Ireland

In step 1, as per baseline selection guidelines described in 1.1.1.1 and 1.1.2.1 the data used in the analysis does not include the identified outliers.

**Step 2:** Calculating the carbon impact (avoided CO<sub>2</sub>/year) of properties in AIB eligible commercial portfolio, against the baseline scenario.

$$\sum_{\text{Portfolio properties}} -(\text{Carbon Intensity of a property} - \text{Baseline Carbon Intensity}) \times \text{Floor area of a property}$$

*Carbon intensity: CO<sub>2</sub>/m<sup>2</sup>/year*

*Floor area: m<sup>2</sup>*

In step 2, relevant carbon intensity baselines should be used, selected by location and type of building. The carbon intensity of each portfolio dwelling with either be derived from the BER/EPC certificate of the property, or derived from the average carbon intensity for relevant category and energy performance band.

## 2.3 Attribution calculation

As per the guidance of the Partnership for Carbon Accounting Financials (PCAF), and in line with impact reporting in the market, it is recommended that AIB *also* report their attribution given that they will not be funding or financing 100% of the project costs. Instead, the accounted for avoided emissions should be proportional to the amount financed and total project costs<sup>11</sup>. The following calculations are provided below:

### 2.3.1 Bilateral loans attribution factor calculation

$$\sum \frac{\text{Outstanding loan value for project}}{\text{Total project costs (if available)}}$$

If the total project cost is not available, a 100% attribution should be applied.

### 2.3.2 Syndicate loans attribution factor calculation

**Step 1 to calculate syndicate loan proportion**

$$\sum \frac{\text{Outstanding loan value for project}}{\text{Total syndicate loan value}}$$

**Step 2 to calculate attribution factor per property**

$$\sum \text{Syndicate loan proportion} * \frac{\text{Total syndicate loan value}}{\text{Total project value (if available)}}$$

If the total project value is not available, the syndicate loan proportion should be used as the attribution factor.

### 2.3.3 Avoided emissions calculation considering attribution factor

$$\sum_{\text{all assets}} \text{Attribution factor} * \text{Avoided Emissions}$$

## 2.4 AIB POT facilities

A POT facility is set up is when a developer is given a maximum amount that they can draw down on to develop residential properties (balance sheet lending). The financing is not linked to one development (project finance).

It is therefore very difficult to measure the impact as AIB do not have the number of buildings and floor area, however, they do know that all properties will be built to at least A3 BER standard.

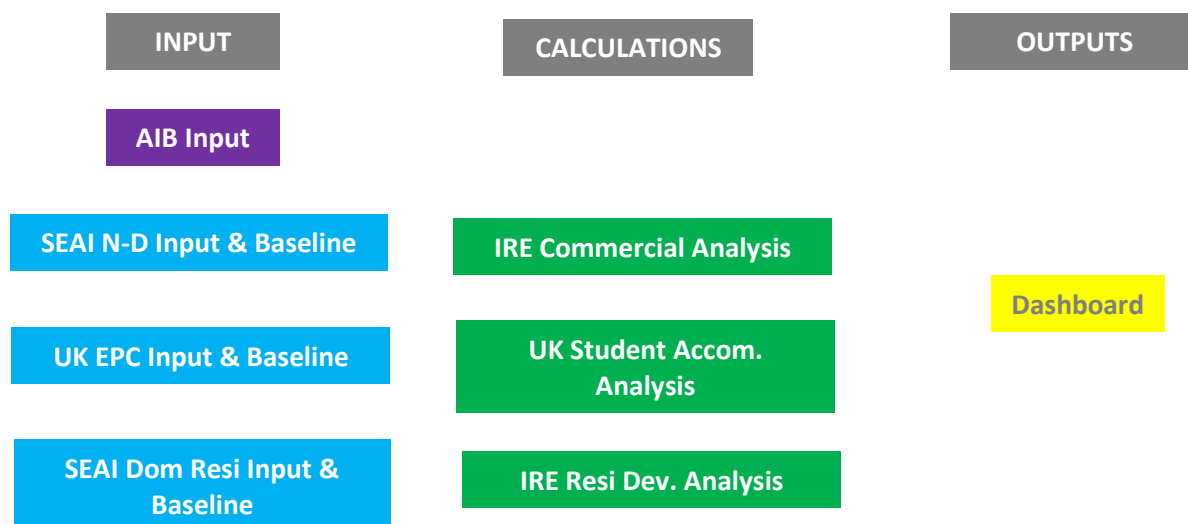
AIB will be able to quantify the difference between the average carbon intensity of an A3 property versus the IRE baseline, however, they will not be able to estimate the carbon avoided without more granular information on development size.

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<sup>11</sup> Harmonising and Implementing a carbon accounting approach for the financial sector, This report was commissioned by PCAF (Platform Carbon Accounting Financials) and compiled, edited and reviewed by Navigant, Netherlands, November 2018

### 3. AIB Impact Tool

The AIB Impact tool has been developed by the Carbon Trust to allow the AIB’s team to calculate and update the impact of the pool of current Green Commercial Loans by comparing the energy and carbon characteristics of the properties against the national average carbon and energy intensities of properties in the respective sector in Ireland and the UK. The benchmark tool consists of eight main tabs with the following infrastructure:



#### Inputs

##### AIB Input

All data relating to the AIB assets will be input onto the AIB input tab. If data is added the tool will need to be refreshed using the Data > Refresh All button. The Sector, Floor area and BER/EPC category fields are **essential fields** to be completed.

The AIB data currently in the tool is correct as of 28/02/2020 and the financial data is correct as of 21/12/2019.

Following receipt of the data from AIB the following modifications have been made, where required:

- Where a development has mixed use, the predominant activity is selected in the sector drop down.
- If different floor areas for a development are provided with different BER categories, these are added as two separate line items in the input sheet and the financial information split evenly between the number of additional rows.
- Where a range in energy consumption indicator is provided, the average value is used.
- If the date operational provided is just a year, the first of January is taken as the start date, unless a press release or supplementary information suggests otherwise.
- If date operational is “n/a” the property is assumed to still be under construction.
- Where the BER rating was provided for a property in the UK, the EPC label is assumed to be the letter (without the number)
- Where the BER rating is not provided, the minimum required for inclusion in the green bond as per the framework for the property type is applied.

## SEAI N-D Input & Baseline

This tab is where the SEAI non-domestic BER dataset is uploaded. On this tab the SEAI sectors are matched to broader sector groups. The baseline and average carbon intensity and energy intensity figures by BER category and sector are calculated on this tab. It currently contains data received from SEAI on 28.02.2020. It is recommended that AIB look to refresh this at least annually.

## UK EPC Input & Baseline

The tab contains all data from the EPC database for properties classed as “Residential Institutions - Universities and Colleges” to inform the baseline and any data gaps for UK residential accommodation in England and Scotland. This data is correct as of 28.02.2020 and it is recommended that AIB update this at least annually.

## SEAI Dom Resi Input & Baseline

This tab displays the data imported from the SEAI Research tool on 20/02/2020 and is used for estimating the baseline for domestic property developments in Ireland, and informing the carbon intensity and energy intensity of AIB’s portfolio where this data is not in the system. It is recommended that AIB look to refresh this annually.

## Calculations

Each calculation tab takes the data from the AIB input sheet and together with the respective baseline data, calculates the carbon and energy impact of each property, and the avoided emissions against the respective baseline.

## Dashboard

The dashboard provides a summary of the key figures from the analysis. Given that the green bond is yet to be issued, and the completion dates for under construction property is not documented, it is recommended that AIB report the split between operational and under construction assets. This data is provided on the dashboard of the model.

Metric	Units
Total number of assets	Total number and split by Operational vs Under Construction
Est. Total Annual Carbon Emissions	tCO <sub>2</sub> /year
Est. Total Annual Avoided Emissions	tCO <sub>2</sub> /year
Est. Total Annual Avoided Emissions Considering Attribution Factor	tCO <sub>2</sub> /year
Est. Total Annual Energy Consumption	kWh/year
Est. Total Annual Avoided Energy Consumption	kWh/year
Baseline Carbon Intensity by Sector	kgCO <sub>2</sub> /m <sup>2</sup> /year
Average AIB Carbon Intensity by Sector	kgCO <sub>2</sub> /m <sup>2</sup> /year

The Carbon Trust is an independent company with a mission to accelerate the move to a sustainable, low-carbon economy. The Carbon Trust:

- > advises businesses, governments and the public sector on opportunities in a sustainable, low-carbon world;



- > measures and certifies the environmental footprint of organisations, products and services;
- > helps develop and deploy low-carbon technologies and solutions, from energy efficiency to renewable power.

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