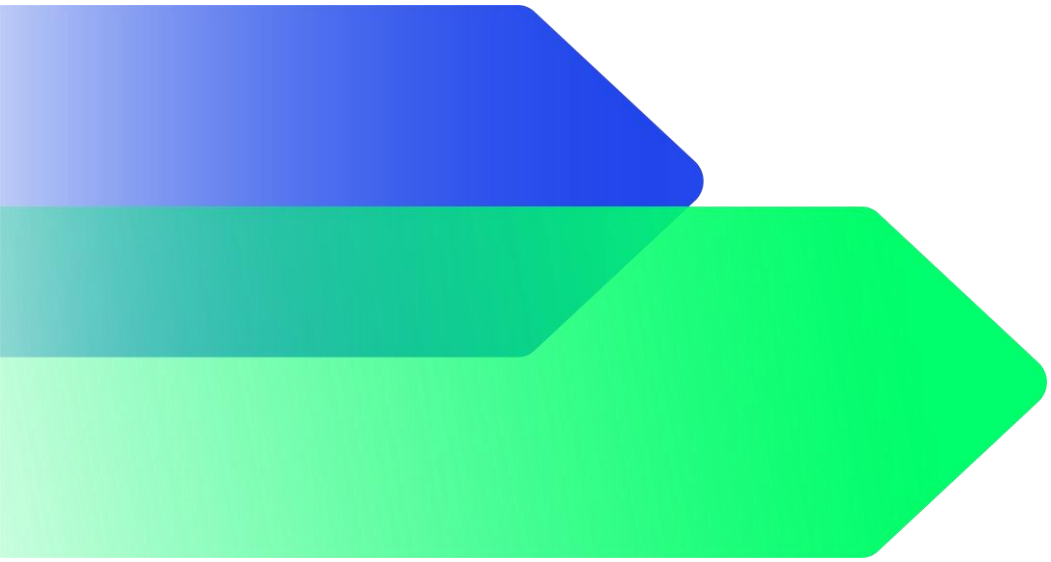
Northern Bank Limited T/A Danske Bank – Mortgage Service Product Emissions Report

November 2023



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1. Summary

1.1. Introduction

This report presents the results from the carbon footprint study of Northern Bank Limited T/A Danske Bank's provision of a new-to-bank mortgage.

This report conforms to the requirements for public disclosure of the life cycle GHG emissions of products laid out in the "Code of Good Practice for product GHG emissions and reductions". It aims to provide the basis to allow consistent information for product GHG emissions and reduction, assessed in conformity with the GHG Protocol Product Life Cycle Accounting and Reporting Standard, PAS 2050 Specification and the ISO 14067 Standard. The Product Emissions Report should be made available in the public domain.

1.2. Background Information

Table 1: Northern Bank Limited T/A Danske Bank Mortgage Service Carbon Footprint - Background Information

Category	Description
Company name	Northern Bank Limited T/A Danske Bank
Company contact information	PO Box 183, Donegall Square West, Belfast BT1 6JS, United Kingdom
Service name	Provision of a new-to-bank mortgage
Boundary	Cradle-to-grave
Standards, specifications and/or other documents used for footprinting methodology / against which the company has been assessed for conformity	PAS 2050 Specification ISO 14067 Standard GHG Protocol Product Life Cycle Accounting and Reporting Standard Carbon Trust Product Carbon Footprint - Requirements for Certification
Name of the independent, third-party verifier	Carbon Trust Assurance Ltd
Level of assurance achieved	Reasonable
Date of certification	27th November 2023

Functional Unit	$kgCO_2e$ per provision of a new-to-bank mortgage service* **includes provision, maintenance and closure of a new-to-bank mortgage (fixed rate and tracker), including a welcome box for Northern Ireland (welcome box not included for Great Britain). Does not include financed emissions.*
Data period	01/01/2022 to 31/12/2022
Product consistency criteria (PCC)	Provision of a mortgage

1.3. Results

The overall emissions are reported below in Tables 2 and 3 according to the location-based approach for Northern Ireland and Great Britain respectively. Total emissions according to the market-based approach are reported in Tables 4 and 5 for Northern Ireland and Great Britain respectively. The difference between the footprint results for Northern Ireland and Great Britain is the inclusion of welcome box emissions for Northern Ireland, which are not included for Great Britain.

Table 2: Danske Mortgage Service Results – Northern Ireland (location-based)

Net Total Emissions (kgCO2e per provision of a new-to-bank mortgage)	**36.3**
Fossil Emissions (kgCO2e per provision of a new-to-bank mortgage)	33.4
Biogenic Emissions (kgCO2e per provision of a new-to-bank mortgage)	5.1
Biogenic Removals (kgCO2e per provision of a new-to-bank mortgage)	(2.3)

Table 3: Danske Mortgage Service Results – Great Britain (location-based)

Net Total Emissions (kgCO2e per provision of a new-to-bank mortgage)	**29.9**
Fossil Emissions (kgCO2e per provision of a new-to-bank mortgage)	27.1
Biogenic Emissions (kgCO2e per provision of a new-to-bank mortgage)	5.1
Biogenic Removals (kgCO2e per provision of a new-to-bank mortgage)	(2.3)

Table 4: Danske Mortgage Service Results – Northern Ireland (market-based)

Net Total Emissions (kgCO2e per provision of a new-to-bank mortgage)	**22.4**
Fossil Emissions (kgCO2e per provision of a new-to-bank mortgage)	19.6
Biogenic Emissions (kgCO2e per provision of a new-to-bank mortgage)	5.1
Biogenic Removals (kgCO2e per provision of a new-to-bank mortgage)	(2.3)

Table 5: Danske Mortgage Service Results – Great Britain (market-based)

Net Total Emissions (kgCO2e per provision of a new-to-bank mortgage)	**16.1**
Fossil Emissions (kgCO2e per provision of a new-to-bank mortgage)	13.3
Biogenic Emissions (kgCO2e per provision of a new-to-bank mortgage)	5.1
Biogenic Removals (kgCO2e per provision of a new-to-bank mortgage)	(2.3)

1.4. Data

The data quality assessments were carried out based on a key developed internally at the Carbon Trust. The overall data quality for the project was assessed as medium due to primary data and emission factor limitations. See *Section 2.5.2. – Data Quality* for more details.

1.5. Key Assumptions

This service footprint covers the lifecycle emissions of the provision of new-to-bank mortgages, i.e. the process for offering new sanctions and drawdowns. Therefore, sanctions and drawdowns data have been used to apportion full-time equivalent (FTE) or other metrics, where relevant, as opposed to total application figures which include applications for additional borrowing, transferring title etc., where the mortgage product does not change.

For physical sites, assumptions have been built around the percentage activity in branches related to the provision of new-to-bank mortgages. This percentage is calculated based on new-to-bank sanctions data in the reporting period, translated as a percentage to a FTE, then applied to the emissions for the site. The FTE equivalent used in the mortgage journey for a given branch is the product of the total FTE of the branch multiplied by the percentage volume of sanctions (i.e. applications approved) of that branch as a proportion of total sanctions across all branches. For sites with shared floors/buildings, assumptions have been built around the percentage occupancy on shared floors / in shared buildings to apportion emissions in the mortgage journey, on the basis that 1 FTE = 1 desk.

For welcome boxes, the methodology used to calculate the delivery distance of the boxes is based on a sample of postal codes with the top ten highest volume of boxes delivered within the reporting period. The postal codes with the top ten highest volume of boxes delivered represent approximately 35% of all eligible accounts. For this sample, the total mileage for the delivery of boxes to the postal code locations

is divided by the total volume of boxes delivered to these locations. This figure is then multiplied by the total number of boxes issued to obtain the total delivery distance in the reporting period. The methodology was agreed on the basis that boxes are, where possible, delivered in batches to a small numbers of postcodes/towns per trip; however, Danske Bank cannot confirm that this is always how the order status is completed, as it depends on a number of factors (e.g. the number of completions in a week, other orders the company has). Therefore, to assume all postcode areas were delivered in one day is inaccurate and would grossly understate the position. However, assuming one trip per one box would also grossly overstate the position. Emissions from welcome boxes are only included in the mortgage service footprint for Northern Ireland as these welcome boxes were only shipped to customers in Northern Ireland (no shipping to Great Britain).

Another key assumption is the calculation of the split between physical and digital statement delivery. Statement delivery can be either physical or digital. Digital delivery is via Danske Bank's eBanking solution into an eBook (digital file). This solution is issued at customer level, meaning that, if a customer has ebanking, it covers all their accounts. This service footprint is at account level (mortgages only), therefore the number of accounts rather than customers has been used, to give accurate proportions. Please note that emissions from digital paperwork are inherently included in the physical site emissions.

1.6. Interpretation of results

The results show that the provision of a new-to-bank mortgage by Danske Bank to Northern Ireland and Great Britain within the 2022 calendar year has a location-based carbon footprint of 36kgCO2e and 30kgCO2e per mortgage respectively and a market-based carbon footprint of 22kgCO2e and 16kgCO2e per mortgage respectively (including net biogenic emissions). This service footprint does not include emissions related to the customer's use of the mortgaged property; the footprint only covers the activities associated with Danske Bank's provision of a new-to-bank mortgage to a customer. The mortgage service footprint to Northern Ireland also includes emissions related to welcome boxes while the mortgage service footprint for Great Britain does not as welcome boxes are only shipped to Northern Ireland.

1.7. Disclaimer on uncertainty

The emissions figures provided in this report have been calculated in accordance with the requirements of the GHG Protocol Product Life Cycle Accounting and Reporting Standard, the PAS 2050 specification and the ISO 14067 standard, using the primary and secondary sources of data specified above. Based on the GHG Protocol Product Life Cycle Accounting and Reporting Standard, the PAS 2050 specification and the ISO 14067 standard method of assessment, we believe that our assessment has identified 95% of the likely GHG emissions associated with the full life cycle of the product(s) covered in this report. However, readers should be aware that even primary sources of data are subject to variation over time, and the figures given in this report should be considered as our best estimates, based on reasonable cost of evaluation.

2. Main Report

2.1. Goal of the study

Table 6: Goal of the Study

Category	Description
Intended applications of study	Certification of the service carbon footprint in accordance with PAS 2050, the ISO 14067 Standard and the GHG Protocol Product Life Cycle Accounting and Reporting Standard
Environmental footprint impact category	Climate change
Methodological or environmental footprint impact category limitations	None
Reasons for carrying out the study	To enable Danske Bank to communicate its carbon neutrality credentials and reductions
Target audience	Internal (Danske Bank) and public stakeholders
Reference PEFCRs	N/A
Commissioner of the study	Chris Martin Head of Climate Risk & Strategy Northern Bank Limited T/A Danske Bank PO Box 183, Donegall Square West, Belfast BT1 6JS, United Kingdom

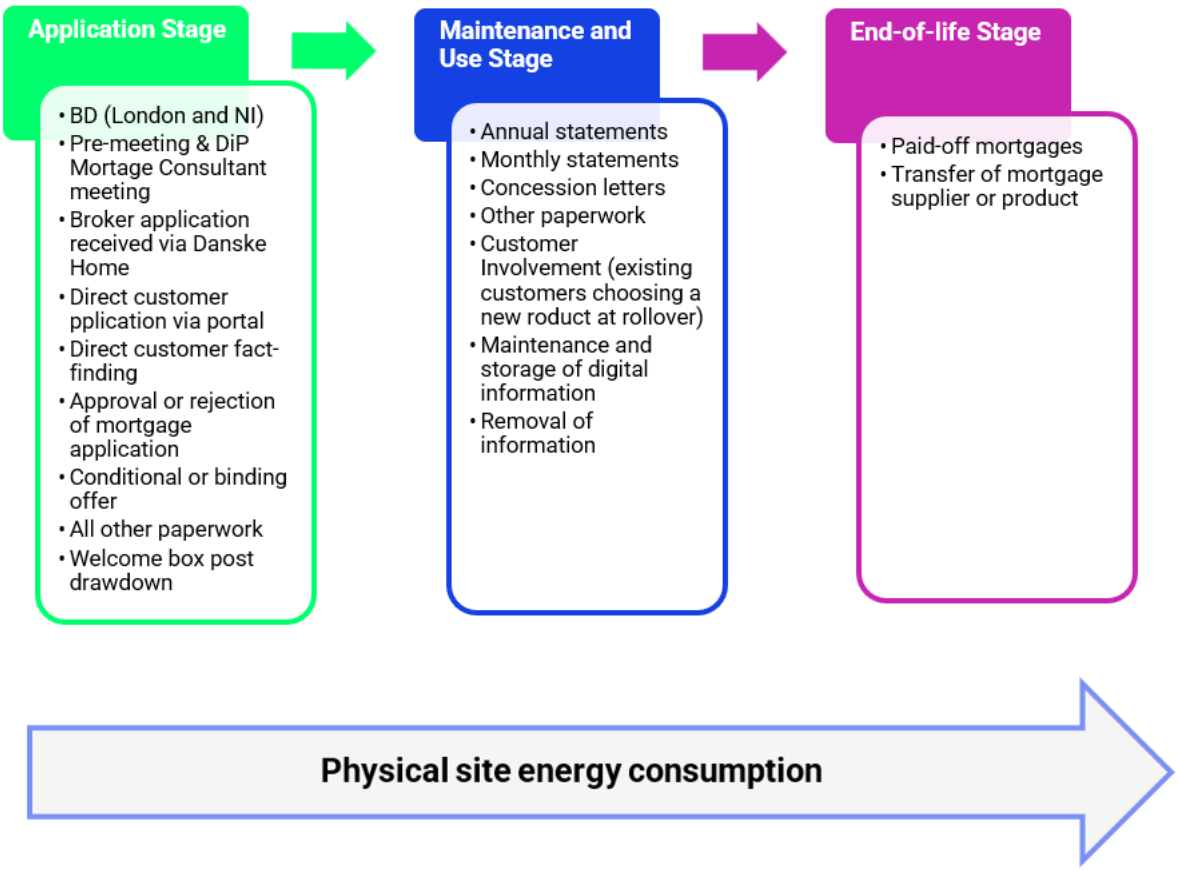
2.2. Scope

The project scope involves calculating the carbon footprint of Danske Bank's provision of a mortgage. This service will be footprinted cradle-to-grave, using $kgCO_2e$ per provision of a new-to-bank mortgage* as the functional unit. The scope of the footprint only covers the customer journey initiated from the first customer enquiry, the signing of the mortgage contract between the customer and Danske Banke and post-signing customer service directly related to the mortgage provision until closure of the mortgage contract. It is to be noted that the footprint does not include financed emissions or the emissions related to the usage of a mortgaged property by the mortgage-holder. The footprint also does not include marketing emissions on the basis that marketing is an activity with non-attributable emissions. This means that the proportion of marketing emissions that result in the provision of a mortgage service cannot be determined.

**includes provision, maintenance and closure of a new-to-bank mortgage (fixed rate and tracker), including a welcome box for Northern Ireland (welcome box not included for Great Britain). Does not include financed emissions.*

2.3. Boundary

This service footprint covers the weighted average of the provision of a new-to-bank mortgage by Danske Bank from cradle to grave. For physical site emissions from branches, the percentage of branch activity related to the provision of a new-to-bank mortgage is used as a weighting for calculating branch emissions related to the mortgage provision. This is explained in further detail in *Section 1.5 – Key assumptions*. The lifecycle stages include the application stage, the ongoing annual maintenance of the mortgage and the end-of-life of the mortgage (closure or transfer). Emissions from the energy consumption of Danske Bank's branches, HQ and customer contact centre occur throughout the lifetime of the mortgage so do not fall within a specific lifecycle stage and are accounted for separately.



2.3.1. Application

The mortgage application involves the following specific activities:

- Business development services in London and Northern Ireland
- Pre-meeting and DIP mortgage consultant meeting
- Broker application sent and received via Danske Home
- Direction customer application via online portal
- Direct customer fact-finding
- Approval or rejection of mortgage application
- Conditional or binding offer issued
- Delivery of welcome box post drawdown (customers in Northern Ireland only)

The materials used within the application stage are all physical paperwork related to the above-mentioned activities (including solicitor paperwork) and a welcome box sent post drawdown.

In addition to physical materials, this stage also involves emissions from the transmission, online storage and reading of digital paperwork.

2.3.2. Maintenance and use

The maintenance and use of the mortgage involve the following activities:

- Maintenance and storage of digital and physical paperwork
- Customer involvement on the online portal (i.e. existing customers choosing a new product at rollover)
- Removal of information

The physical materials used within the maintenance and use stage include annual statements, monthly statements, concession letters, solicitor paperwork and all other physical paperwork related to the above-mentioned activities.

In addition to physical materials, this stage also involves emissions from the transmission, online storage and reading of digital paperwork.

2.3.3. End of life

The end of life stage refers to the closure or transfer of a mortgage. This phase includes emissions from physical and digital paperwork.

2.3.4. Excluded attributable processes

Emissions related to activities from Danske Bank's London office are excluded from the mortgage service footprint as they are insignificant contributors to the mortgage service lifecycle. The London branch is not a traditional branch in that it is an office space (on one floor in a building, occupying a small proportion of the entire building) with no means for customers to lodge cash etc. Personal Banking staff are based there, however, their involvement in the mortgage journey is limited to ad hoc queries and pre-meetings; all other aspects of the journey are completed in Northern Ireland and accounted for in the mortgage service footprint.

Paperwork emissions from Conditions of sanction (COS) documentation have been excluded. A condition of sanction is one that needs to be met before Danske Bank will drawdown a mortgage. Customers upload their COS documentation to the Danske Bank online system and it is stored electronically in the customer folder. COS documentation has been excluded as the size of these packs vary significantly, both in terms of volume and in terms of type of file (jpeg, PDF etc). Therefore it is not possible to quantify this activity. Furthermore any digital emissions are inherently included in physical site emissions. It is also possible that branches are issuing external letters/ emails regarding mortgage accounts/ to mortgage customers. It is estimated that this is a very small proportion of all paperwork issued for the mortgage service given that there are dedicated teams attending to the main aspects of the mortgage journey; on this basis, branch activity in this regard has not been included. Emissions from SMS communications

between Danske Bank and customers have also been excluded on the basis of immateriality to the overall footprint.

2.4. Methodology

2.4.1. Methodological choices

The mortgage service footprint was calculated based on the physical and digital paperwork emissions occurring through the mortgage application, maintenance/use, and end-of-life stages. For each of these lifecycle stages, the cradle-to-grave emissions of physical and digital paperwork were calculated. For physical paperwork the cradle-to-grave lifecycle stages are paper usage (cradle to gate), printing, envelopes, posting of paperwork, and the end-of-life of paper and envelopes. For digital paperwork the cradle-to-grave lifecycle stages are hosting, transmission, online storage and the reading of paperwork on a device. Emissions for physical and digital paperwork were calculated by using the weight (in kg) of physical paper or the file size (in kb) of digital documents and multiplying this data by the relevant life cycle stage emission factor. Emission factors were used from various sources including paper manufacturers' online information, Ecoinvent 3.9.1, and other secondary sources.

Emissions from electricity consumption at physical sites were calculated using measured data, multiplied by the UK grid emission factor for the location-based approach (UK grid emission factors were sourced from BEIS). For the market-based approach, supplier-specific emission factors were used for Danske Bank's branches, Head Office in Donegall Square West (DSW) and contact centre (Killeaton House). Emission factors were sourced from Carbon Trust's Footprint Expert Analysis Tool, Ecoinvent 3.9.1, secondary papers and from BEIS. Business travel emissions were calculated using primary data on the distances travelled by taxi, aviation and car for business development related to the mortgage provision, multiplied by BEIS emission factors.

2.4.2. Key Assumptions

Table 7 outlines the full list of assumptions that have been made.

Table 7: List of Assumptions

Process Step	Key Assumption
Physical site emissions - Branches	Assumptions have been built around the percentage activity in branches (based on new-to-bank sanctions data in the reporting period, translated as a percentage to an FTE equivalent), then applied to the emissions for the building. The FTE equivalent used in the mortgage journey for a given branch is the product of the total FTE of the branch multiplied by the percentage volume of sanctions (i.e. applications approved) of that branch as a proportion of total sanctions across all branches.
Emissions data- shared occupancy in offices/ contact centre	Assumptions have been built around the percentage occupancy on shared floors / in shared buildings to apportion emissions in the mortgage journey, on the basis that 1FTE = 1 desk.
Ongoing paperwork - digital vs digital delivery	Statement delivery can be either physical or digital. Digital delivery is via Danske Bank's eBanking solution into an eBooks (digital file). This solution is issued at customer level, meaning that, if a customer has eBanking, it covers all their accounts. This service

	footprint is at account level (mortgages only), therefore the number of accounts rather than customers has been used, to give accurate proportions.
Digital paperwork emissions	Emissions from digital paperwork are inherently included in the physical site emissions
Maintenance and use – lifetime of mortgages	It is assumed that the average lifetime of a mortgage is 7 years
Application / Maintenance and use / End of Life – Digital paperwork	The current read time for all digital documents is assumed to be 20 minutes. This is likely to be slightly overstated; if customers read all the declarations and regulatory information, 20 mins is estimated to be accurate. Where they do not, ~5 mins would be more accurate. The overstated figure has been assumed.
Maintenance and use – Customer involvement (online portal)	The average number of log-ins per customer to Danske Bank's online portal was estimated based the assumption that the number of days a customer takes to complete a new product choice (at rollover) corresponds to a given number of log-ins on the online portal.
Welcome Box delivery distance	Welcome Box delivery distance was calculated by taking the average mileage for the top ten postal codes in terms of volumes of boxes delivered, and multiplying this figure by the total quantity of boxes issued in the reporting period.
Waste generation - brochureware and centrally (externally) printed items	Waste generation for centrally printed documents and brochureware is assumed to be 0.
Ongoing paperwork - number of pages in statements	The number of pages in a statement varies depending on the number of entries, however on a fixed rate mortgage, this is generally one page (one entry per month plus one permitted overpayment per year, where the feature is available). It is noted that 40 entries on a statement fills one page; it is very unlikely that a statement would exceed this.
Contact Centre (Customer Direct) FTE	There are 132.1 FTE in the contact centre. It is estimated that 5% of these staff are involved in the mortgage journey. A small allowance has been made for mortgage queries coming via the general / service line rather than to the dedicated advisory team.
Biogenic emissions and removals calculation	Biogenic emissions and removals have been calculated using the Carbon Trust's Biogenics Calculator Tool. The calculation of biogenic emissions and removals is based on the end of life fate of paper. It is assumed that the recycling rate for cardboard and paper is the same as the recycling rate for household waste in Northern Ireland and that the remaining portion of waste goes to landfill. The recycling rate for household waste in Northern Ireland is obtained from the UK government.
End of year and mid year mail	These emissions are inherently included in physical site emissions.
Business travel - distance travelled via London Underground	The distance travelled via London Underground was estimated. The average distance between two consecutive underground tube stations is equal to ~1.31km as per data from *Transport for London*. This figure was multiplied by the total number of tube stations between the starting and ending station of a journey. Where only data on a specific address was available rather than a London Underground station, the closest Underground station to the address was assumed to be the starting station of the journey.

Business travel - distance travelled via London Underground	The distance travelled via London Underground was estimated. The average distance between two consecutive underground tube stations is equal to ~1.31km as per data from *Transport for London*. This figure was multiplied by the total number of tube stations between the starting and ending station of a journey. Where only data on a specific address was available rather than a London Underground station, the closest Underground station to the address was assumed to be the starting station of the journey.

2.4.3. Allocation of inputs

The methodology used for the allocation of inputs is described below for each life cycle stage, where applicable.

Physical site emissions

Physical site emissions include emissions related to Danske Bank's offices and contact centre.

For Danske Bank offices, assumptions have been built on the percentage of activity of branches related to the provision of mortgages. This percentage is then applied to apportion the direct (natural gas, gas oil, refrigerants) and indirect (electricity) emissions of the branch building to the mortgage provision. The percentage of branch activity related to mortgage provision is calculated based on the percentage of total mortgages sanctioned (i.e. mortgage applications approved) at a given branch.

For Danske Bank's Head Office in Donegall Square West (DSW) and the contact centre (Killeaton House), the office spaces are shared and therefore emissions are allocated based on the percentage occupancy by FTE of the office floor area (for DSW) and building area (for Killeaton House). To apportion emissions, firstly the total number of FTE dedicated to the mortgage journey for each department in DSW and Killeaton House is calculated. Next, the percentage floor/building area occupancy is estimated by dividing the number of FTE dedicated to the mortgage journey for each department by the total number of desks in the floor/building, assuming that one FTE is equal to one desk.

Application paperwork emissions

Three documents related to new customer applications are issued for all product types (mainly current accounts) rather than only for mortgages. Therefore Danske Bank has assumed that 5% of these documents are issued to mortgage account holders given that 5% is the proportion of mortgage customers from the total personal banking book.

Ongoing paperwork emissions

Statement delivery can be either physical or digital. Digital delivery is via Danske Bank's eBanking solution into an eBooks (digital file). The split between physical and digital mortgage statements was calculated based on the split of total physical and digital SLS-8510 statements, i.e. annual statements for 2022. This was calculated as 36% and 64% for physical and digital documents respectively. It is therefore assumed that 64% of mortgage accounts use eBanking for the receipt of digital documents. Some statements are also issued for several product types (e.g. consumer loans and PCAs) in addition to mortgages. For these

types of document, the split is calculated between the total number of consumer loan, mortgage and PCA accounts in order to apportion emissions to mortgages.

End of life paperwork emissions

The same split between physical and digital mortgage statements for ongoing paperwork is used to apportion emissions for end of life paperwork.

2.4.4. Use-phase

Use phase emissions include all emissions related to the physical and digital paperwork issued following the approval of the mortgage application and before the closure/transfer of the mortgage.

Emissions for physical paperwork are calculated cradle-to-grave and are based on the total number of pages printed per document type over the reporting period. Emission factors are sourced from multiple databases. The embodied paper emission factors are sourced from the online websites of paper manufacturers *UPM* and *Sappi*; the printing emission factor is sourced from Ecoinvent; the delivery emission factor is sourced from the *International Post Corporation;* and the end-of-life emission factor is sourced from Carbon Trust's Footprint Expert Analysis.

Digital paperwork emissions are calculated using the total storage size per document over the reporting period and includes energy consumption emissions from data hosting, transmission, online storage and the reading of the paperwork. Energy consumption emissions are calculated using the full lifecycle Ireland electricity grid emission factor sourced from BEIS.

2.4.5. Fugitive and process emissions

There was only a single refrigerant top up in the branches in 2022.

2.5. Data

2.5.1. Data Collection and Validation

The data collection process included sending a bespoke data request sheet to Danske Bank tailored to the life cycle stages of the provision of a mortgage. Lifecycle stages were sub-divided between physical and digital statement delivery where applicable. Primary data was collected on the fuel use and energy consumption of all physical sites. For the issuance of welcome boxes, primary data was received but distance delivery was assumed based on a sample representing only 35% of eligible boxes. For physical and digital paperwork, the split between statement delivery for all documentation was assumed based on the split for a single document type (annual statements). Otherwise, primary data was provided for physical paper on the number of pages per documents, the paper type/profile of physical and whether the paper was printed on premises or externally. For digital paperwork, the total read time was assumed as it could not be measured.

The date and source of GWP factors used in calculating the product footprint are listed in Appendix 1.

2.5.2. Data Quality

The data quality assessments were carried out based on a key developed internally at Carbon Trust. The overall data quality for the project was medium.

Activity data for physical sites was rated as medium because primary data was obtained for all buildings/sites for fuel use and electricity consumption, but some estimations had to be made to allocate building emissions to Danske Bank where the office is in a shared building with other tenants. Under the market-based approach, supplier-specific electricity emission factors from 2021 were used as more recent data was not available. Therefore, the data quality indicator for physical site emission factors was downgraded to medium.

Activity data for the welcome box was rated as medium because the delivery distance of the boxes was based on a sample of only 35% of eligible boxes.

For physical and digital paperwork, activity data was rated medium because the percentage split between all physical and digital statements was assumed based on the physical-digital split of a single document type. The emission factor for one of the paper types used by Danske Bank was only available for 2019 so the data quality indictor for physical paper emission factors was downgraded to medium.

Table 8 summarises the data quality assessment of the most material data points.

Table 8: Data quality assessment for material data points

Data point	Emission Factor Data Quality Indicator	Activity Data Quality Indicator	Application Data Quality Indicator
Physical sites (fuel and electricity consumption)	Good	Good	Good
Welcome box	Good	Good	Good
Business travel	Good	Good	Good
Digital paperwork (application, ongoing and end of life stages)	Good	Medium	Medium
Physical paperwork (application, ongoing and end of life stages)	Good	Medium	Medium

Table 8a: Activity data – data quality assessment for material data points

Data point	Data source	Completeness	Technology	Location	Age	Data Quality Indicator
Physical sites (fuel and electricity consumption)	✓	✓	✓	✓	✓	Good
Welcome box	✓	✓	✓	✓	✓	Good

Business travel	✓	✓	✓	✓	✓	Good
Digital paperwork (application, ongoing and end of life stages)	✓		✓	✓	✓	Medium
Physical paperwork (application, ongoing and end of life stages)	✓		✓	✓	✓	Medium

Table 8b: Emission Factors - quality assessment for material data points

Data point	Data source	Completeness	Technology	Location	Age	Data Quality Indicator
Physical sites (fuel and electricity consumption)	✓	✓	✓	✓	✓	Good
Welcome box	✓	✓	✓	✓	✓	Good
Business travel	✓	✓	✓	✓	✓	Good
Digital paperwork (application, ongoing and end of life stages)	✓	✓	✓	✓	✓	Good
Physical paperwork (application, ongoing and end of life stages)	✓	✓	✓	✓		Medium

2.6. Results

An overall breakdown of the emissions associated with the provision of the new-to bank mortgage by process step and material is reported in the Tables below.

Table 9: Danske Mortgage Service Results – Total emissions (location-based)

Data Category	Emissions	% of Total
Process/material	*tCO_2e*	
Physical Site	74.8	58%
Application - Physical Paperwork	12.2	10%
Application - Digital Paperwork	<0.1	<1%
Application - Welcome Box	22.3	17%
Ongoing - Physical Paperwork	9.8	8%

Ongoing - Digital Paperwork	<0.1	<1%
End of life - Physical Paperwork	0.9	1%
End of life - Digital Paperwork	<0.1	<1%
Ongoing - Customer Involvement	<0.1	<1%
Business Travel – Air	4.1	3%
Business Travel – Ground Transport	0.4	<1%
Business Travel – Grey Fleet	3.5	3%
TOTAL EMISSIONS	**128.1**	**100%**

Table 10: Danske Mortgage Service Results – Total emissions (market-based)

Data Category	Emissions	% of Total
Process/material	*tCO_2e*	
Physical Site	25.9	33%
Application - Physical Paperwork	12.2	15%
Application - Digital Paperwork	<0.01	<1%
Application - Welcome Box	22.3	28%
Ongoing - Physical Paperwork	9.8	12%
Ongoing - Digital Paperwork	<0.01	<1%
End of life - Physical Paperwork	0.9	1%
End of life - Digital Paperwork	<0.01	<1%
Ongoing - Customer Involvement	<0.01	<1%
Business Travel – Air	4.1	5%
Business Travel – Ground Transport	0.4	1%
Business Travel – Grey Fleet	3.5	4%
TOTAL EMISSIONS	**79.2**	**100%**

Table 11: Danske Mortgage Service Results – Northern Ireland (location-based)

Data Category	Emissions	% of Total
Process/material	*$kgCO_2e$/provision of new-to-bank mortgage*	

Physical Site	21.2	55%
Application - Physical Paperwork	3.5	9%
Application - Digital Paperwork	<0.1	<1%
Application - Welcome Box	6.3	22%
Ongoing - Physical Paperwork	2.8	7%
Ongoing - Digital Paperwork	<0.1	<1%
End of life - Physical Paperwork	0.3	1%
End of life - Digital Paperwork	<0.1	<1%
Ongoing - Customer Involvement	<0.1	<1%
Business Travel – Air	1.2	3%
Business Travel – Ground Transport	0.1	<1%
Business Travel – Grey Fleet	1.0	3%
PRODUCT CARBON FOOTPRINT	**36.3**	**100%**

Table 12: Danske Mortgage Service Results – Great Britain (location-based)

Data Category	Emissions	% of Total
Process/material	*$kgCO_2e$/provision of new-to-bank mortgage*	
Physical Site	21.2	71%
Application - Physical Paperwork	3.5	12%
Application - Digital Paperwork	<0.1	<1%
Application - Welcome Box	-	-
Ongoing - Physical Paperwork	2.8	9%
Ongoing - Digital Paperwork	<0.1	<1%
End of life - Physical Paperwork	0.3	1%
End of life - Digital Paperwork	<0.1	<1%
Ongoing - Customer Involvement	<0.1	<1%
Business Travel – Air	1.2	4%
Business Travel – Ground Transport	0.1	<1%
Business Travel – Grey Fleet	1.0	3%
PRODUCT CARBON FOOTPRINT	**29.9**	**100%**

Table 13: Danske Mortgage Service Results – Northern Ireland (market-based)

Data Category	Emissions	% of Total
Process/material	*$kgCO_2e$/provision of new-to-bank mortgage*	
Physical Site	7.3	30%
Application - Physical Paperwork	3.5	14%
Application - Digital Paperwork	<0.1	<1%
Application - Welcome Box	6.3	35%
Ongoing - Physical Paperwork	2.8	11%
Ongoing - Digital Paperwork	<0.1	<1%
End of life - Physical Paperwork	0.3	1%
End of life - Digital Paperwork	<0.1	<1%
Ongoing - Customer Involvement	<0.1	<1%
Business Travel – Air	1.2	5%
Business Travel – Ground Transport	0.1	<1%
Business Travel – Grey Fleet	1.0	4%
PRODUCT CARBON FOOTPRINT	**22.4**	**100%**

Table 14: Danske Mortgage Service Results – Great Britain (market-based)

Data Category	Emissions	% of Total
Process/material	*$kgCO_2e$/provision of new-to-bank mortgage*	
Physical Site	7.3	46%
Application - Physical Paperwork	3.5	22%
Application - Digital Paperwork	<0.1	<1%
Application - Welcome Box	-	-
Ongoing - Physical Paperwork	2.8	17%
Ongoing - Digital Paperwork	<0.1	<1%
End of life - Physical Paperwork	0.3	2%
End of life - Digital Paperwork	<0.1	<1%

Ongoing - Customer Involvement	<0.1	<1%
Business Travel – Air	1.2	7%
Business Travel – Ground Transport	0.1	1%
Business Travel – Grey Fleet	1.0	6%
PRODUCT CARBON FOOTPRINT	**16.1**	**100%**

Table 15: Danske Mortgage Service Results (Biogenic Emissions and Removals per mortgage) – Northern Ireland

Data Category	Emissions	Emissions	Emissions
Process/material	*Total Biogenic Removals (-) (kgCO2e/mortgage)*	*Total Biogenic Emissions (kgCO2e/mortgage)*	*Net Biogenic Emissions (kgCO2e/mortgage)*
Application – Physical Paperwork	(1.7)	3.9	2.1
Welcome box – Paper Packaging	(<0.1)	<0.1	<0.1
Ongoing – Physical Paperwork	(0.5)	1.1	0.6
End of life – Physical Paperwork	(<0.1)	0.1	<0.1
PRODUCT CARBON FOOTPRINT (BIOGENIC EMISSIONS AND REMOVALS)	**(2.3)**	**5.1**	**2.8**

Table 16: Danske Mortgage Service Results (Biogenic Emissions and Removals per mortgage) – Great Britain

Data Category	Emissions	Emissions	Emissions
Process/material	*Total Biogenic Removals (-) (kgCO2e/mortgage)*	*Total Biogenic Emissions (kgCO2e/mortgage)*	*Net Biogenic Emissions (kgCO2e/mortgage)*
Application – Physical Paperwork	(1.7)	3.9	2.1
Ongoing – Physical Paperwork	(0.5)	1.1	0.6
End of life – Physical Paperwork	(<0.1)	0.1	<0.1

PRODUCT CARBON FOOTPRINT (BIOGENIC EMISSIONS AND REMOVALS)	**(2.3)**	**5.1**	**2.8**

Table 17: Danske Mortgage Service Results (Biogenic Emissions and Removals for all mortgages) – Northern Ireland

Data Category	Emissions	Emissions	Emissions
Process/material	*Total Biogenic Removals (-) (tCO2e)*	*Total Biogenic Emissions (tCO2e)*	*Net Biogenic Emissions (tCO2e)*
Application – Physical Paperwork	(6.1)	13.6	7.6
Welcome box – Paper Packaging	(<0.1)	<0.1	<0.1
Ongoing – Physical Paperwork	(1.7)	3.9	2.1
End of life – Physical Paperwork	(0.2)	0.4	0.2
PRODUCT CARBON FOOTPRINT (BIOGENIC EMISSIONS AND REMOVALS)	**(8.0)**	**17.9**	**10.0**

Table 18: Danske Mortgage Service Results (Biogenic Emissions and Removals for all mortgages) – Great Britain

Data Category	Emissions	Emissions	Emissions
Process/material	*Total Biogenic Removals (-) (tCO2e)*	*Total Biogenic Emissions (tCO2e)*	*Net Biogenic Emissions (tCO2e)*
Application – Physical Paperwork	(6.1)	13.6	7.6
Ongoing – Physical Paperwork	(1.7)	3.9	2.1
End of life – Physical Paperwork	(0.2)	0.4	0.2
PRODUCT CARBON FOOTPRINT (BIOGENIC EMISSIONS AND REMOVALS)	**(8.0)**	**17.9**	**10.0**

2.7. Conclusions

This study has reported the service carbon footprint of the provision of a new-to-bank mortgage to Northern Ireland and Great Britain within the 2022 calendar year. The footprint has been performed cradle-to-grave according to location and market-based approaches. It is to be noted that the scope of the footprint does not include the emissions related to the usage of a mortgaged property by the mortgage-holder.

2.8. Recommendations

2.8.1. Emissions reductions

The main carbon hotspots in the lifecycle of the mortgage service under the market-based approach are the physical site emissions of the branches providing the mortgage, accounting for 30% and 46% of total service emissions for Northern Ireland and Great Britain respectively, and the issuance of a welcome box to customers during the mortgage application stage, accounting for 35% of total service emissions (for Northern Ireland only). Reducing the energy consumption of branches by means of switching to renewable energy suppliers and improving the energy efficiency of facilities is therefore a key lever by which to reduce the service footprint. The service footprint can also be reduced by lowering the volume of welcome boxes sent to new customers. This can be done by only sending welcome boxes to customers residing within a short distance to a Danske Bank branch or switching to offering digital welcome packages to customers.

2.8.2. Data quality improvements

Data quality can be improved for welcome boxes by providing a complete set of data on the travel distances for all boxes issued. Data quality could also be improved for physical and digital statements by obtaining the exact number of documents for each digital and physical document type rather than using an assumed split.

2.9. Disclaimer on potential uses of this report

The results presented in this report are unique to the assumptions and practices of Northern Bank Limited T/A Danske Bank. The results are not meant as a platform for comparability to other companies and/or products. Even for similar products, differences in unit of analysis, use and end-of-life stage profiles, and data quality may produce incomparable results. The reader may refer to the GHG Protocol Product Life Cycle Accounting and Reporting Standard (www.ghgprotocol.org) / PAS 2050 specification / ISO 14067 standard for additional insight into the GHG inventory process.

3. Appendix

Appendix 1: GWP Factors

Table 17: GWP Factors

GWP Factor	Source	Date
Electricity full lifecycle grid emission factor (Ireland)	IEA	2022
Renewable tariff	Supplier specific	2022
WFU paper emission factor	UPM Paper Profile for WFU paper (New Future Premium, New Future Multi, New Future Multi Neutral, New Future Laser)	2022
Horizon 80gsm-300gsm FSC and PEFC emission factor	Sappi Europe Paper Profile for Horizon 80gsm-300gsm	2019
Paper printing emission factor	Ecoinvent 3.9.1 - printed paper//[Europe without Switzerland] operation, printer, laser, black/white, per kg printed paper	2022
Paper envelope delivery emission factor	International post corporation	2021
Paper end of life emission factor	Carbon Trust Footprint Expert Analysis	2022
Transport emission factor – Vans (average)	BEIS	2022

Appendix 2: Certification Details (Third Party Sign-Off)

This product footprinting study has been subject to an independent critical review to verify whether the methodology used for this LCA is compliant with PAS 2050, ISO 14067, GHG Product Protocol.

Category	Description
Name of the certifier	The Carbon Trust
Date of certification	27th November 2023
Data valid until	**26th November 2024**

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