ING Green Bond Impact Report 2023

Financial Year 2023

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Content

Introduction

31 December 2023

Sustainability at the heart

At ING, our purpose is empowering people to stay a step ahead in life and in business. This also means helping customers and society to stay a step ahead of the challenges they're facing. Climate change is one of the world's greatest challenges. Also, people may struggle with inequality, poor financial health, or a lack of basic human rights. There's a growing sense of urgency and rising expectations that governments and businesses must help tackle these challenges.

We aim to put sustainability at the heart of what we do, defining new ways of doing business that align economic growth with positive environmental and social impact.

Our priorities are as follows:

- **Climate action**: This is our main focus. We want to lead by example by striving for net zero in our own operations. We aim to play our part in the low-carbon transformation that is necessary to achieve a sustainable future, steering the most carbon-intensive parts of our lending portfolio towards reaching net zero by 2050.
- **Collaboration**: We work with clients to achieve their own sustainability goals, increasing our impact through partnerships and coalition-building.
- **Climate-related, environmental and social risk**: We manage the most relevant environmental and social risks. We also contribute to positive change by supporting clients that seek continuous improvement in environmental and social practices.
- **Financial health and inclusion**: We're working to advance financial health and inclusion for customers and communities.
- **Empowering colleagues**: We empower colleagues to contribute to it all, for example by providing them with the right knowledge and training.

As society transitions to a low-carbon economy, so do our clients, and so does ING. The low-carbon transition cannot happen overnight. Even though we finance a lot of sustainable activities, we still finance more that's not, which is a reflection of the current global economy and how far the world still needs to go. Our approach follows data and science and evolves as the available science evolves. We want to be part of the solution and strongly believe we can make the most impact by engaging with clients, talking to them about their climate goals, and helping finance what they need to reach them.

For more information on our climate action approach, see www.ing.com/climate.

ING Sustainability Highlights 2023

Our sustainability efforts have been recognised externally by environmental, social and governance (ESG) rating agencies and other benchmarks. In 2023, Sustainalytics assessed our management of ESG material risk as 'strong'. Also in 2023, investment research firm MSCI awarded ING an AA ESG rating for the fourth consecutive year.

In December 2023, we took the next step and announced that we will phase out the financing of upstream oil and gas by 2040 and aim to **triple our renewable energy financing by 2025.**

Sustainable mortgages which provide an incentive to customers choosing A-labels (or the most energy-efficient homes) are available in the Netherlands, Germany, Luxembourg, Italy and Romania.

We announced that we are expanding our Terra approach to include additional carbon-intensive sectors and more parts of existing sectors. For example, we now cover our **global commercial real estate portfolio.**

ING Group Green Bond Impact Report

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ING Green Bond Framework

In alignment with ING's sustainability strategy, we have established a Green Bond Framework, under which ING Group and any of its subsidiaries can issue financial instruments (such as Senior Bonds, Subordinated Bonds, Covered Bonds, Commercial Papers, Medium-term notes and Deposits) to finance and refinance assets and projects which contribute to the UN Sustainable Development Goals and the sustainability strategy of ING.

ING established its sustainable debt strategy, via the publication of its first Green Bond Framework, back in 2015 and updated it in 2022, aimed at (re)financing green assets, namely green buildings and renewable energy projects.

Since the first publication of the Framework, ING has continued to take important steps to enhance its sustainable debt strategy and sees it as an important tool to support the strong growth of our own Sustainable Finance portfolio.

The framework aligns with the International Capital Market Association's (ICMA) Green Bond Principles (GBP) and has been externally assessed by **ISS ESG**. In the Second Party Opinion (SPO) by ISS ESG, the alignment with the Green Bond Principles (GBP), the EU Taxonomy and other additional regulations/standards has been assessed.

ING's Green Bond Impact Report

ING publishes its impact report of the Eligible Green Loan portfolio annually.

For Renewable Energy, these impact metrices are reported:

- Total Installation Capacity;
- Estimated annual avoided emissions in tonnes of CO_2 equivalent.

For Green Buildings, these impact metrices are reported:

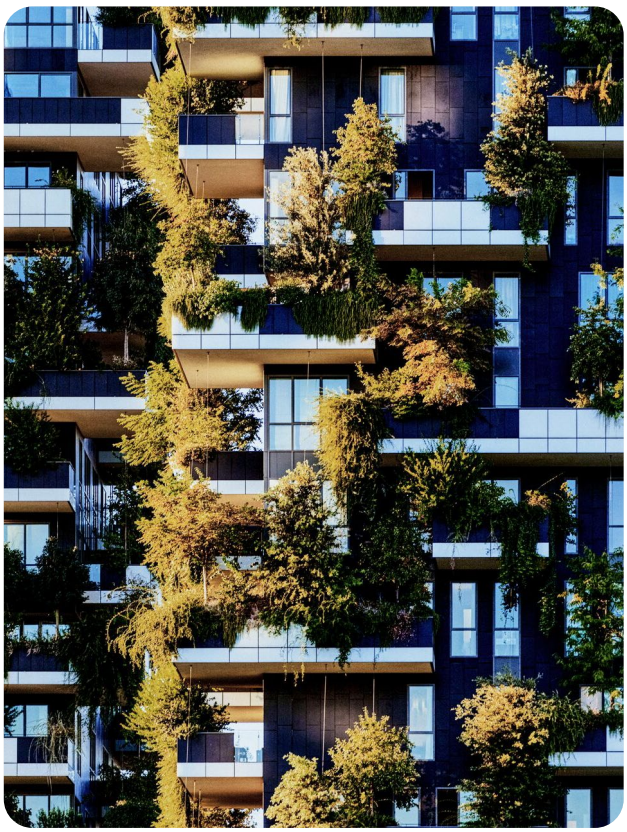
- Estimated annual energy consumption or energy saving in kWh/m²;
- Estimated annual reduced and/or avoided emissions in tons of CO_2 equivalent.

The impact calculations has been assessed by external consultants. For Green Buildings in the Netherlands, CFP calculated CO_2 emissions and energy consumption of 84,858 residential buildings and 15,926 commercial buildings. For German Residential buildings, Drees & Sommer has calculated the relevant metrices for 98,599 buildings. Lastly, CarbonTrust conducted the analysis for the 227 Renewable Energy Projects. All the impact analysis conducted by the consultants are consolidated in this report.

Our Green Bond Impact Report 2023 reflects the impact reporting requirements per ING's Green Bond Framework 2022. The Green Bond Framework 2022 has been externally assessed by ISS ESG. In the Second Party Opinion (SPO), alignment with the Green Bond Principles (GBP) has been confirmed as well as additional reviews.

Impact Reporting YE2023

- Since the publication of the Green Bond Framework in 2015 and the first allocation report in 2016, our Eligible Green Loan Portfolio grew from €1.31 bln to €52.17 bln.
- For the Renewables Portfolio, we have appointed a new impact consultant CarbonTrust. The impact report of this portfolio now includes additional impact indicators and further breakdown of technology type.
- For Green Buildings, we have now included the total Green Residential Buildings portfolio that are Green Bond eligible from ING Germany. Drees & Sommer have conducted the impact analysis on the total portfolio and the Cover Pool of the Covered Bond Programme.
- The Eligible Green Loan Portfolio of Green Lion, a Residential Mortgage-Backed Security (RMBS) issued by Green Lion 2023-1 (SPV of ING) has also been included in this impact report, under a separate table.



ING Group Green Bond Impact Report

31 December 2023

Impact Report Overview

Eligible project category (1)	Number of loans/ addresses	Eligible portfolio (€ mln) (2)	Share of total ING DiBa Green Covered Bond Financing* (3)	Share of total Green Funding Instrument Financing (4)	Eligibility for Green Bonds (5)	Building area m² (6)	Total Capacity (MWe)	Attributed Capacity (MWe)	GHG emissions avoided in tons of CO_2/year (7)
Green Residential Buildings									
ING Bank NV	84,858	22,494	0.00%	45.98%	100%	12,714,408	n/a	n/a	137,159
ING DiBa	98,599	19,376	23%	32.96%	100%	10,957,341	n/a	n/a	184,607
Of which DiBa Covered Bond Programme*	27,225	4,443	100%	2.44%	100%	3,509,244	n/a	n/a	62,133
Green Commercial Buildings									
ING Bank NV	12,091	2,928	0.00%	8.28%	100%	3,264,076	n/a	n/a	20,749
Renewable Energy**	227	6,250	0.00%	12.78%	100%	n/a	30,720	4,457	4,898,734
Total	**199,610**	**52,168**	**23%**	**100%**	**100%**	**26,935,825**	**30,720**	**4,457**	**5,241,249**

Impact per € mln calculations		
ING DiBa Green Covered Bonds	p/€ mln impact tons of CO_2/year	**13.98**
ING Group and Bank N.V. Green Funding Instruments (including only operational Renewable Energy projects)	p/€ mln impact tons of CO_2/year	**106.21**
ING Group and Bank N.V. Green Funding Instruments (including operational and under construction Renewable Energy Projects)	p/€ mln impact tons of CO_2/year	**162.81**

Portfolio based green bond report in accordance with the ICMA Harmonised Framework for Impact Reporting (version June 2023)

(1) Eligible category

(2) Signed amount represents the amount legally committed by the issuer for the portfolio or portfolio components eligible for Green Funding instruments financing

(3) This is the share of the total ING DiBa portfolio cost that is financed by the issuer for Green Covered Bonds*

(4) This is the share of the total portfolio cost that is financed by the issuer for Green Funding Instruments

(5) This is the share of the total portfolio costs that is Green Bond Eligible

(6) This is the building area in m²

(7) Impact indicators
- Estimated reduced energy (in MWh/year)
- Direct and indirect emissions avoided in tons of CO_2
- Estimated annual reduced emissions in tons of CO_2
- Expected power production (in MWh/year)

*Green Covered Bonds will be allocated to assets within the Covered Bond Cover Pool. Green Funding Instruments (including Green Covered Bonds) are allocated to all Use of Proceeds categories respectively (minus any Green Residential Buildings already allocated to Green Covered Bonds). In addition, for Unsecured Green Bonds, ING may allocate towards Eligible Green Loans situated within its subsidiaries as per the guidance laid out in the ICMA Guidance Handbook November 2023 regarding pledged assets
**For Renewable Energy, only operational projects are included. Impact metrices related to under construction projects are: 2,768,755 tCO2e/year for GHG emissions avoided. Resulting in the total GHG emissions avoided (operational + under construction) of 7,667,489 tCO2e/year.

ING Group Green Bond Impact Report

31 December 2023

Additional Information – Green Lion Residential Mortgage-Backed Security (RMBS)

Eligible project category	Number of loans/ addresses	Eligible portfolio (€ mln)	Building area m²	GHG emissions avoided in tons of CO_2/year
Green Residential Buildings				
Green Lion 2023-1*	2,696	894	350,449	4,282

*Green Lion 2023 is a Residential Mortgage-Backed Security issued by Green Lion 2023-1 B.V. (SPV of ING). The secured Green Collateralised Notes utilises the **"bond-by-bond approach".** On the Closing Date, the net proceeds of the issuance of the Secured Green Collateralised Notes by the Issuer will be exclusively applied to refinance, by way of purchase by the Issuer from the Seller – ING Bank N.V. (as originator), Mortgage Receivables forming part of the Initial Portfolio that meet, among other things, the Green Eligibility Criteria as at the **initial Cut-Off Date 31 August 2023**. The impact of the proceeds of the secured green collateralised notes are shown in this report.

For more information, Green Lion transaction SPO's, impact report of provisional pool and transaction reporting can be found here.

Impact assessment ING Green Residential Buildings Portfolio the Netherlands

Project: Impact Assessment ING Green Residential Buildings Portfolio

Subject: Reduced CO_2-emission calculation

Date: June 2024

Status: Final

CFP Green Buildings has been asked by ING to compare the greenhouse gas emissions[1] of a specific, energy-efficient group of residential real estate (in this document indicated as ING green residential building portfolio) to that of a comparable group of real estate with an average energy efficiency (indicated as "Reference" or "Reference Group"[2]). The objective of this analysis is to demonstrate that the selected buildings belong to the top most sustainable buildings in The Netherlands. This document outlines the results of this analysis.

The Eligible Green Building Portfolio

A total of 84,858 assets have been selected as eligible for ING's Green Residential Buildings Portfolio. Assets In ING's Green Residential Building Portfolio either have a registered energy label A, belong to the top 15% of the national or regional building stock expressed as operational Primary Energy Demand, as required by the EU taxonomy or meet the requirements for a PED lower than 10% threshold set for a Nearly Zero Energy Building (NZEB).

For the selection of the top 15% the year a new building code was introduced was used as a criterion. This is because the Dutch Building Regulation sets out energy efficiency requirements for different building types. The building code under which the building is built is used as a criterion to determine the top 15%. Over time, the Dutch Building Regulation becomes more stringent regarding energy-efficiency and sustainability requirements for new buildings. The year a new building code was introduced is therefore used as a selection criterion for the top 15% of ING's Green Residential Building Portfolio. For the Netherlands this is 2006. Hence, the selected year of construction to determine the top 15% is 2006. Approximately, 12.21% of the total Dutch housing stock is built between 2006 and year-end 2020.[3] This way, the buildings in the ING Green Residential Building Portfolio belong to the top 15% of most energy-efficient buildings of the Dutch residential real estate market.

For buildings built after 31 December 2020 in the portfolio, they are 10% more energy efficient than the NZEB requirements as they comply to the following values.

- Ground based houses: 27 kWh/m^2/year
- Flats and apartments: 45 kWh/m^2/year

[1] Greenhouse gas emissions are calculated in CO_2-equivalent, which will be referred to as CO_2 throughout this document.
[2] The Reference Group is represents the average CO2-emissions of residential buildings in the Netherlands, taking the floor area of the eligible assets into account.
[3] All residential buildings built since 2006 either have a registered energy label A or are within the top 15% of the national building stock expressed as operational Primary Energy Demand (PED).

Methodology

Within this study the CO_2-emissions of 84,858 residential objects, as selected by ING, were determined using the calculated energy consumption of these objects[4].

The energy usage is based on the algorithms and benchmarks from the expert system of CFP Green Buildings. CFP's Expert system is a database consisting of actual energy data of buildings. A section of this anonymized data provides live energy data derived from CFP's Energy Monitoring projects. Moreover, public big data, for example yearly updated average energy usage of homes in the Netherlands provided by Statistics Netherlands (CBS), is used to improve and check the benchmarking model. These algorithms and benchmarks are the same as those used in the online tool www.ingrefduurzaam.nl. In this study, the calculated energy consumption of the Reference Group was determined based on data from CBS, RVO, Kadaster and CFP[5]. The Netherlands' average CO_2 emissions per square meter per building type are calculated based on these sources. These averages are regularly updated as the public sources are also updated regularly. The numbers used for the calculations in this report are given in the table below[6].

CO^2 emissions of the reference group per m^2		
Residential	34.8	kg CO_2e per year

Table 1: Emission of the reference group

The CO_2-emissions in this report were calculated with the Dutch market standard conversion factors, derived from the Green Deal CO_2-Emissionfactors. The applied factors are illustrated in table 2[7].

Applied GHG emission factors[8]		
Natural gas	2.134	kg CO_2e /m^3
Electricity	0.329	kg CO_2e /kWh

Table 2: Dutch CO_2-emission factors

Table 3 shows the distribution of the assets in the ING Green Residential Buildings Portfolio among the three different criteria:

1. Buildings with an Energy Label A≥ (built before 2006).
2. The top 15% of the national or regional stock, expressed as primary energy demand.
3. Buildings built since 2021 that have a PED that is 10% lower than the NZEB requirements.

Criteria	Objects
Buildings built before 2006 with registered A labels	28,584
Building built between 2006-2020 (top 15%)	55,445
Buildings built since 2021 with PED of NZEB -10%	829

Table 3: Assets in the Green Residential Buildings Portfolio

[4] The data fields building type, energy label and building year origin from the ING database used for ING Groep's 2023 Green Asset Ratio Assessment. Other data fields for calculations are retrieved from sources Kadaster and EP-online.
[5] The reference group has the same floor area as the eligible objects. The CO_2-emissions are calculated by CFP algorithms taking into account the energy usage of all residential buildings in the Netherlands.
[6] The emission factors of table 2 are used.
[7] Source: https://www.co2emissiefactoren.nl using WTW emissions for natural gas in kg/CO_2 per m^3.
[8] Source: https://www.co2emissiefactoren.nl using WTW emissions for electricity (unknown) in kg/CO_2 in kWh.

Energy consumption

Table 4 shows the calculated energy consumption of the entire ING Green Residential Buildings Portfolio. The calculated annual energy consumption for electricity is 347 million kWh and 89 million m^3 for natural gas.

Electricity (kWh)	Natural gas(m^3)
346,754,608	89,768,948

Table 4: Energy consumption ING Green Residential Portfolio

CO_2-emission – Estimated Positive Impact

Table 5 shows the CO_2-emissions of the ING Green Residential Buildings Portfolio and the reference group based on calculated to energy consumption. The total CO_2-emission of the ING Green Residential Buildings Portfolio is 305,302 tonnes CO_2 per year. The Reference CO_2-emission is 442,461 tonnes of CO_2 per year. Resulting in a reduction of 137,159 tonnes of CO_2 per year.

Emission ING Green portfolio (tonnes CO_2)	Emission reference (tonnes CO_2)	Emission reduction (tonnes CO_2)
305,302	442,461	137,159

Table 5: Total CO_2-emission ING Green Residential Buildings Portfolio compared to Reference

Table 6 gives a summarized overview of the reduced CO2-emissions in relation to the reference group for the three different criteria building groups mentioned above.

Approximately 34% (in square meters) of the portfolio consists of A label buildings built before 2006. The CO_2-emissions of the ING Green Residential Portfolio for A label buildings built before 2006 is 120,443 tonnes of CO_2 per year. The reference CO_2-emission is 149,060 CO_2 per year.

Approximately 65% of the portfolio consists of buildings with a registered A label or are within the top 15% of the national building stock expressed as operational Primary Energy Demand (PED) built between 2006 and 2020. The CO_2-emissions of these buildings is 183,618 tonnes of CO_2 per year while the reference CO_2-emission for this group is 289,344 tonnes of CO_2 per year.

Approximately 1% of the portfolio consists of buildings that are eligible due to meeting the requirements for a PED lower than 10% threshold set for a Nearly Zero Energy Building (NZEB). The total CO_2-emissions of the ING Green Residential Portfolio for these new buildings 1,241 tonnes of CO_2 per year. The reference CO_2-emission is 4,057 tonnes of CO_2 per year. The reduction in CO_2-emissions for the three building groups can be found in table 6 below.

	#	m²	GHG Emission ING Green Residential Portfolio (tonnes CO_2)	GHG Emission reference (tonnes CO_2)	GHG Emission reduction (tonnes CO_2)
Buildings A label <2006	28,584	4,283,333	120,443	149,060	28,617
Buildings Top 15%	55,445	8,314,481	183,618	289,344	105,726
NZEB - 10% >2021	829	116,594	1,241	4,057	2,816
Total	84,858	12,714,408	305,302	442,461	137,159

Table 6: Summarized overview of the reduced CO_2-emissions compared to the reference

Conclusion

The following conclusions are drawn from this study:

- Based on the calculated real energy consumption, the ING Green Residential Portfolio has a CO_2-emission that is 137,159 tonnes per year lower than the reference, which is a difference of 31.0%.
- All buildings in the ING Green Residential Buildings Portfolio deliver a Substantial Contribution to Climate Change Mitigation following the EU Taxonomy definition either by having an EPC class A≥ rating, belonging to the top 15% of the national building stock expressed as operational PED for buildings built before 2021 or by meeting the requirements for a PED lower than 10% threshold set for a Nearly Zero Energy Building (NZEB) for buildings built after 2021.

Appendix Green Lion 2023-1

The residential buildings from the Green Lion 2023-1 mortgage receivables portfolio are not included in the ING Green Residential Buildings impact assessment. The table below gives an overview of the CO_2 emissions of the Green Lion 2023-1 portfolio in relation to the reference group. The portfolio consists of 2,696 assets.

Approximately 56% (in square meters) of the portfolio consists of A label buildings built before 2006. The CO_2-emissions of the Green Lion 2023-1 portfolio for A label buildings built before 2006 is 5,244 tonnes of CO_2 per year. The reference CO_2-emission is 6,633 CO_2 per year.

Approximately 27% of the Green Lion 2023-1 portfolio consists of buildings with a definitive A label built between 2006 and 2020. The CO_2-emissions of these buildings is 2,028 tonnes of CO_2 per year while the reference CO_2-emission for this group is 3,432 tonnes of CO_2 per year.

Approximately 17% of the Green Lion 2023-1 portfolio consists of buildings that are eligible due to meeting the requirements for a PED lower than 10% threshold set for a Nearly Zero Energy Building (NZEB). The total CO_2-emissions of the ING Green Residential Portfolio for these new buildings 642 tonnes of CO_2 per year. The reference CO_2-emission is 2,131 tonnes of CO_2 per year. The reduction in CO_2-emissions for the three building groups can be found in table 8 below.

The current indexed loan to value of the Green Lion 2023-1 portfolio is 71.58%. The total financed emissions under the residential mortgage loan receivables of Green Lion 2023-1 B.V. are 5,665 tonnes CO_2 per year.

	#	m^2	GHG Emission Green Lion 2023-1 Portfolio (tonnes CO_2)	GHG Emission reference (tonnes CO_2)	GHG Emission reduction (tonnes CO_2)
Buildings A label <2006	1,507	190,599	5,244	6,633	1,389
Buildings Top 15%	722	98,612	2,028	3,432	1,404
NZEB - 10% >2021	467	61,238	642	2,131	1,489
Total	2,696	350,449	7,914	12,196	4,282

Table 8: Summarized overview of the reduced CO_2-emissions compared to the reference.

Impact assessment ING Green Commercial Buildings Portfolio the Netherlands

Project: Impact Assessment ING Green Commercial Buildings Portfolio

Subject: Reduced CO_2-emission calculation

Date: June 2024

Status: Final

As requested by ING, CFP Green Buildings has been asked to compare the greenhouse gas emissions[1] of a specific, energy-efficient group of Commercial Real Estate (in this document indicated as ING Green Commercial Buildings Portfolio[2]) to that of a comparable group of real estate with an average energy efficiency (indicated as "Reference" or "Reference Group"[3]). The objective of this analysis is to demonstrate that the selected buildings belong to the top most sustainable buildings in The Netherlands. This document outlines the results of this analysis.

The Eligible Green Building Portfolio

A total of 15,926 assets have been selected as eligible for ING's Green Commercial Building Portfolio.

ING's Green Buildings Portfolio either have a registered energy label A, belong to the top 15% of the national or regional building stock expressed as operational Primary Energy Demand, as required by the EU taxonomy or meet the requirements for a PED lower than 10% threshold set for a Nearly Zero Energy Building (NZEB).

For Commercial Buildings, 12.15% of the national Dutch Commercial Buildings stock have a registered EPC label A≥. This means that commercial buildings with a registered EPC A≥ automatically belong to the top 15% of the national or regional building stock expressed as operational Primary Energy Demand.

Therefore commercial buildings with a registered EPC rating A≥ are selected for the ING Green Commercial Buildings portfolio for buildings built before 31 December 2020.

For buildings built after 31 December 2020 in the portfolio, they are required to have a registered EPC rating A≥ and are required to be 10% more energy efficient than the NZEB requirements as as see below values:

- Office (Kantoor): 36kWh/m^2/year
- Retail (Winkel): 54 kWh/m^2/year
- Residential (Wonen): 45kWh/m^2/year

Methodology

Within this study, the CO_2-emissions of 15,926 objects, as selected by ING, were determined using the calculated energy consumption of these objects.

The energy usage is based on the algorithms and benchmarks from the expert system of CFP Green Buildings. CFP's Expert system is a

[1] Greenhouse gas emissions are calculated in CO_2-equivalent, which will be referred to as CO_2 throughout this document.
[2] When referring to the Eligible Asset Portfolio in this document, we refer to buildings that are owned by professional real estate investors, including residential objects that are all intended to be rented out (commercially).
[3] The Reference Group is represents the average CO2-emissions of residential buildings in the Netherlands, taking the floor area of the eligible assets into account.

database consisting of actual energy data of buildings. A section of this anonymized data provides live energy data derived from CFP's Energy Monitoring projects. Moreover, public big data, for example yearly updated average energy usage of homes in the Netherlands provided by Statistics Netherlands (CBS), is used to improve and check the benchmarking model. These algorithms and benchmarks are the same as those used in the online tool www.ingrefduurzaam.nl. In this study, the calculated energy consumption of the Reference Group was determined based on data from CBS, RVO, Kadaster and CFP[4]. The Netherlands' average CO_2 emissions per square meter per building type are calculated based on these sources. These averages are regularly updated as the public sources are also updated regularly. The numbers used for the calculations in this report are given in the table below[5].

CO_2 emissions of the reference group per m^2		
Residential	34.8	kg CO_2e per year
Retail	79.7	kg CO_2e per year
Industrial	25.1	kg CO_2e per year
Office	46.1	kg CO_2e per year
Other[6]	56.1	kg CO_2e per year

Table 1: Emission of the reference group

The CO_2-emissions in this report were calculated with the Dutch market standard conversion factors, derived from the Green Deal CO_2-Emissionfactors. The applied factors are illustrated in table 1[7].

Applied GHG emission factors[8]		
Natural gas	2.134	kg CO_2e /m^3
Electricity	0.329	kg CO_2e /kWh

Table 2: Dutch CO_2-emission factors

Group Composition

The group composition of the 15,926 objects are shown in table 2. Retail buildings have the largest footprint with 40% of total square meters. Residential buildings account for 31% of the portfolio. About 48% of the portfolio are new buildings[9], 52% is refurbished to obtain an energy label A.

	#	m^2	Refurbished	New
Industry	282	201,493	209	73
Office	632	540,433	478	154
Retail	2,361	1,306,717	1,865	496
Residential	12,197	999,650	5,383	6,814
Other[7]	1,368	957,709	987	381
Total	15,926	3,264,076	8,235	7,691

Table 2: Group composition ING Green Buildings[10]

Energy consumption

Table 3 shows the calculated real energy consumption of the ING Green Commercial Buildings Portfolio. The calculated annual energy consumption for electricity is around 346.5 million kWh each year and approximately 22.9 million m^3 for natural gas each year.

Electricity (kWh)	Natural gas(m^3)
346,516,413	22,891,618

Table 3: Energy consumption ING green commercial building portfolio

[4] The reference group has the same floor area as the eligible objects. The CO_2-emissions are calculated by CFP algorithms taking into account the energy usage of all residential buildings in the Netherlands.
[5] The emission factors of table 2 are used.
[6] Other refers to all other building types such as education, hotels, health care, sport and unknown.
[7] Source: https://www.co2emissiefactoren.nl using WTW emissions for natural gas in kg/CO_2 per m^3.
[8] Source: https://www.co2emissiefactoren.nl using WTW emissions for electricity (unknown) in kg/CO_2 in kWh.
[9] A building is categorised as new when the construction year of the building is 2006 or later.
[10] Building types have been retrieved from kadaster.

CO_2-emission – Estimated positive impact

Table 4 shows the total CO_2-emissions of the ING Green Commercial Buildings Portfolio and the reference group based on the calculated energy consumption. The total CO_2-emission of the ING Green Commercial Buildings portfolio is 162,508 tonnes of CO_2 per year. The Reference CO_2-emission is 183,257 tonnes of CO_2 per year. This is a reduced amount of 20,749 tonnes of CO_2 per year.

GHG Emission ING Green Commercial Portfolio (tonnes CO_2)	GHG Emission reference (tonnes CO_2)	GHG Emission reduction (tonnes CO_2)
162,508	183,257	20,749

Table 4: CO_2-emission ING green commercial building portfolio compared to Reference

Table 5 shows an overview of the calculated CO_2-emissions reduction for the refurbished buildings and new buildings, compared to reference groups.

Approximately 52% (in square meters) of the portfolio consists of refurbished buildings. The CO_2-emissions of the ING Green Commercial Buildings Portfolio for refurbished buildings is 112,704 tonnes of CO_2 per year. The Reference CO_2-emission is 119,521 tonnes of CO_2 per year. For refurbished buildings, this is a reduced amount of 6,816 tonnes of CO_2 per year.

Approximately 48% of the portfolio consists of non-refurbished buildings or new buildings. The total CO_2-emission of the ING Green Commercial Buildings Portfolio for new buildings is 49,804 tonnes CO_2 per year. The Reference CO_2-emission is 63,736 tonnes of CO_2 per year. For new buildings, this is a reduced amount of 13,933 tonnes of CO_2 per year.

	#	m^2	GHG Emission ING Green Commercial Buildings Portfolio (tonnes CO_2)	GHG Emission reference (tonnes CO_2)	GHG Emission reduction (tonnes CO_2)
Refurbished buildings	8,235	2,005,000	112,704	119,521	6,816
New Buildings	7,691	1,259,076	49,804	63,736	13,933
Total	15,926	3,264,076	162,508	183,257	20,749

Table 5: CO_2-emission ING Green Commercial Building Portfolio compared to reference group

Conclusion

The following conclusions are drawn from this study:

- Based on the calculated real energy consumption, the ING Green Commercial Buildings Portfolio has a CO_2-emission that is 20,749 tonnes per year lower than the reference, which is a difference of 11.3%.
- All buildings in the ING Green Commercial Buildings Portfolio meet the EU Taxonomy Substantial Contribution to Climate Change Mitigation by having a registered EPC class A≥ rating for buildings built before 2021, and by meeting the respective requirements per building type for a PED lower than 10% threshold set for a Nearly Zero Energy Building (NZEB) for buildings built after 2021.

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SUSTAINABLE FINANCE

IMPACT REPORTING– RESIDENTIAL BUILDINGS – GERMANY

TOTAL GREEN PORTFOLIO

17.05.2024
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GREEN BOND IMPACT REPORT ING-DIBA AG

German residential real estate portfolio – Harmonized Framework

Low Carbon Buildings	Date of Issuance	Type	Signed Amount[a]	Share of Total Portfolio Financing[b]	Eligibility for green bonds[c]	Average portfolio lifetime[d]	Annual final energy savings[e]	Annual CO2 emissions avoidance[f]
Unit	*[dd.mm.yyyy]*	*[-]*	*[EUR]*	*[%]*	*[%]*	*[years]*	*[MWh/year]*	*[tCO2/year]*
ING-DiBa AG Green Bond	*31.12.2023*	*Low Carbon Building*	*19.375.594.859*	*100,0*	*100*	*6,8*	*609.525*	*184.607*
Einfamilienhaus	31.12.2023	Low Carbon Building	16.906.009	0,1	100	6,0	56	53
Einfamilienhaus (freistehend)			11.366.798.998	58,7	100	6,8	385.030	106.859
Zweifamilienhaus			577.549.800	3,0	100	6,9	25.409	6.386
Reihenhaus			1.504.491.660	7,8	100	7,1	47.309	15.915
Eigentumswohnung			3.622.761.827	18,7	100	6,5	79.067	33.140
Doppelhaushälfte			2.186.972.538	11,3	100	7,0	67.871	21.106
Mehrfamilienhaus bis 3 Whg.			61.124.840	0,3	100	6,7	4.091	954
Mehrfamilienhaus ab 4 Whg.			38.989.188	0,2	100	7,6	691	195

[a] Legally committed signed amount by the issuer for the porfolio or portfolio components eligible for green bond financing.

[b] Portion of the total portfolio cost that is financed by the issuer.

[c] Portion of the total portfolio cost that is eligible for Green Bond.

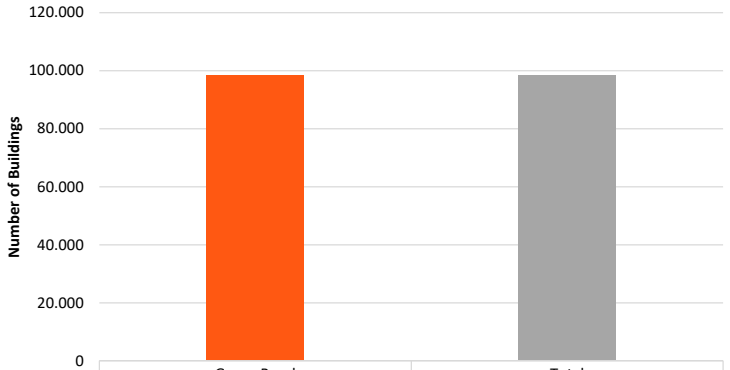
[d] average remaining term of Green Bond loan within the total portfolio.

[e] Final energy savings calculated using the difference between the top 15% and the national building stock benchmarks

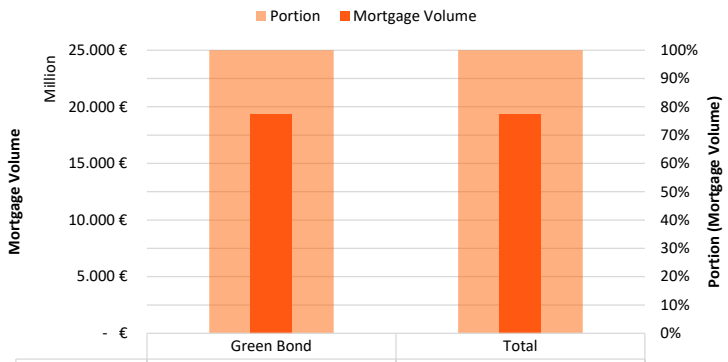
[f] Greenhouse gas emissions avoidance determined by multiplying the final energy savings with the carbon emissions intensity

GREEN BOND IMPACT REPORT ING-DIBA AG

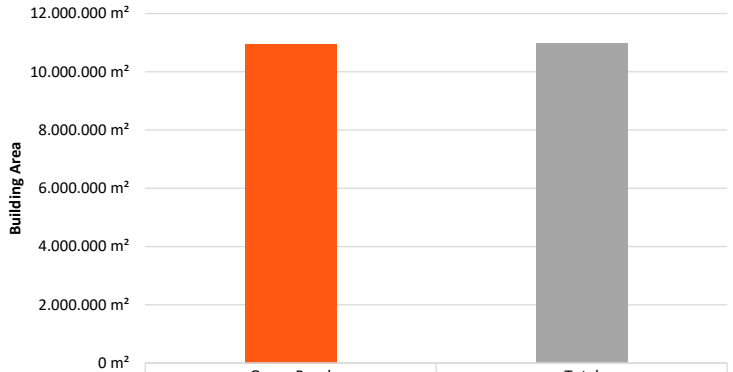
German residential real estate portfolio – Impact Reporting



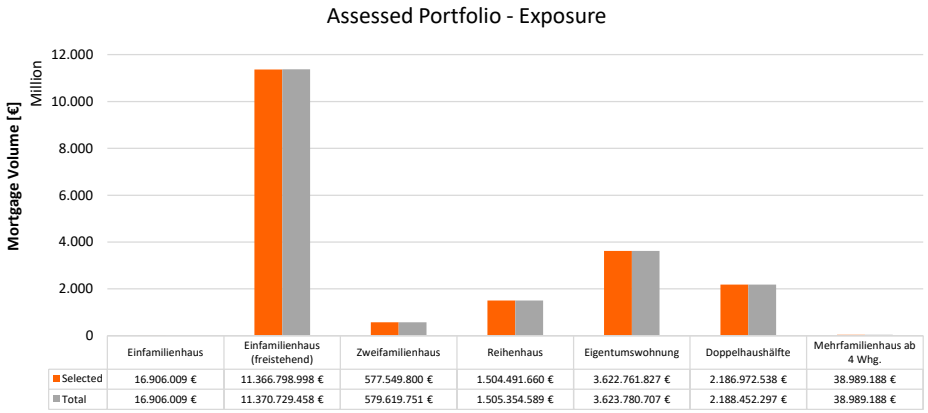
	Green Bond	Total
Amount	98.599	98.622



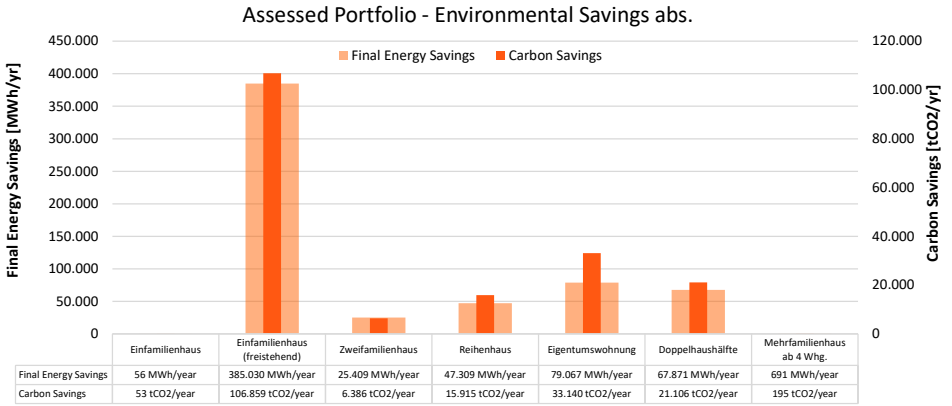
	Green Bond	Total
Portion	100%	100%
Mortgage Volume	19.375.594.859 €	19.384.956.838 €



	Green Bond	Total
Building Area	10.957.341 m²	10.961.227 m²



	Einfamilienhaus	Einfamilienhaus (freistehend)	Zweifamilienhaus	Reihenhaus	Eigentumswohnung	Doppelhaushälfte	Mehrfamilienhaus ab 4 Whg.
Selected	16.906.009 €	11.366.798.998 €	577.549.800 €	1.504.491.660 €	3.622.761.827 €	2.186.972.538 €	38.989.188 €
Total	16.906.009 €	11.370.729.458 €	579.619.751 €	1.505.354.589 €	3.623.780.707 €	2.188.452.297 €	38.989.188 €



	Einfamilienhaus	Einfamilienhaus (freistehend)	Zweifamilienhaus	Reihenhaus	Eigentumswohnung	Doppelhaushälfte	Mehrfamilienhaus ab 4 Whg.
Final Energy Savings	56 MWh/year	385.030 MWh/year	25.409 MWh/year	47.309 MWh/year	79.067 MWh/year	67.871 MWh/year	691 MWh/year
Carbon Savings	53 tCO2/year	106.859 tCO2/year	6.386 tCO2/year	15.915 tCO2/year	33.140 tCO2/year	21.106 tCO2/year	195 tCO2/year

German Green Bond Portfolio:

Buildings: 98.599

Exposure:
19.375.594.859 (100%)

Energy savings:
609.525 MWh/year

Carbon emissions savings:
184.607 tCO_2/year

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SUSTAINABLE FINANCE

IMPACT REPORTING– RESIDENTIAL BUILDINGS – GERMANY

PFANDBRIEF PORTFOLIO

17.05.2024
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GREEN BOND IMPACT REPORT ING-DIBA AG

German residential real estate portfolio – Harmonized Framework

Low Carbon Buildings	Date of Issuance	Type	Signed Amount[a]	Share of Total Portfolio Financing[b]	Eligibility for green bonds[c]	Average portfolio lifetime[d]	Annual final energy savings[e]	Annual CO2 emissions avoidance[f]
Unit	*[dd.mm.yyyy]*	*[-]*	*[EUR]*	*[%]*	*[%]*	*[years]*	*[MWh/year]*	*[tCO2/year]*
ING-DiBa AG Green Bond	*31.12.2023*	*Low Carbon Building*	*4.442.703.391*	*100,0*	*100*	*7,3*	*194.466*	*62.133*
Einfamilienhaus (freistehend)	31.12.2023	Low Carbon Building	2.395.435.123	53,9	100	7,3	118.102	34.328
Zweifamilienhaus			77.409.402	1,7	100	7,6	4.768	1.251
Reihenhaus			358.886.589	8,1	100	7,5	17.110	5.908
Eigentumswohnung			1.063.908.516	23,9	100	6,9	30.346	12.729
Doppelhaushälfte			547.063.762	12,3	100	7,6	24.140	7.917

[a] Legally committed signed amount by the issuer for the porfolio or portfolio components eligible for green bond financing.

[b] Portion of the total portfolio cost that is financed by the issuer.

[c] Portion of the total portfolio cost that is eligible for Green Bond.

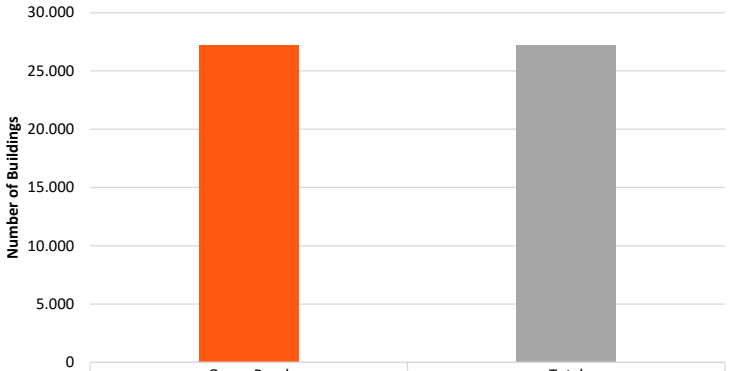
[d] average remaining term of Green Bond loan within the total portfolio.

[e] Final energy savings calculated using the difference between the top 15% and the national building stock benchmarks

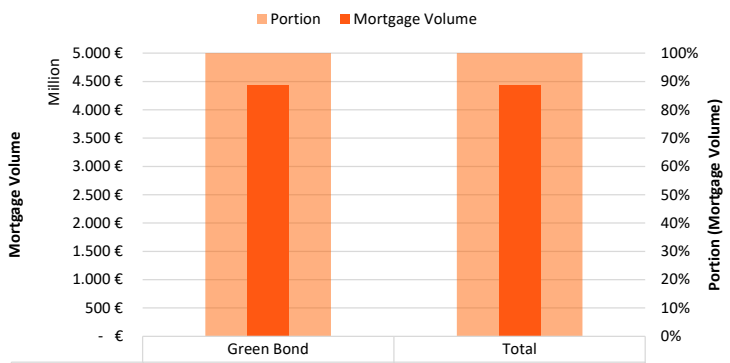
[f] Greenhouse gas emissions avoidance determined by multiplying the final energy savings with the carbon emissions intensity

GREEN BOND IMPACT REPORT ING-DIBA AG

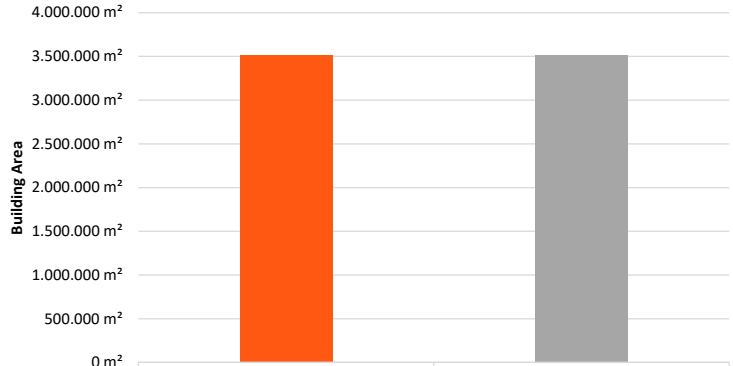
German residential real estate portfolio – Impact Reporting



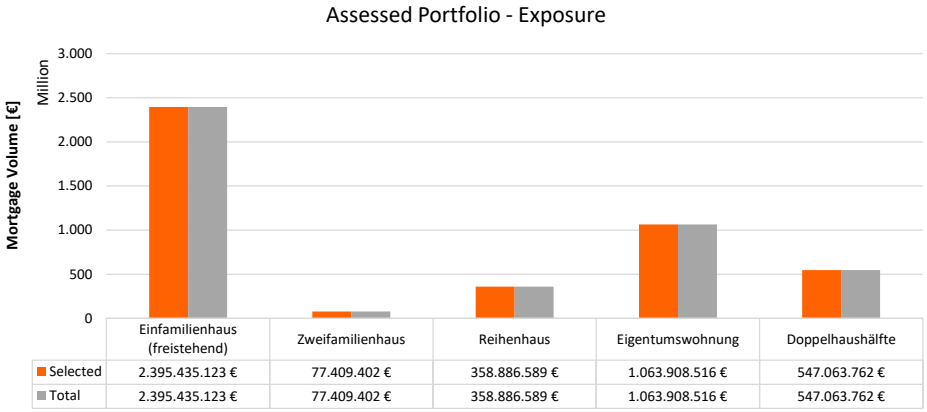
	Green Bond	Total
Amount	27.225	27.225



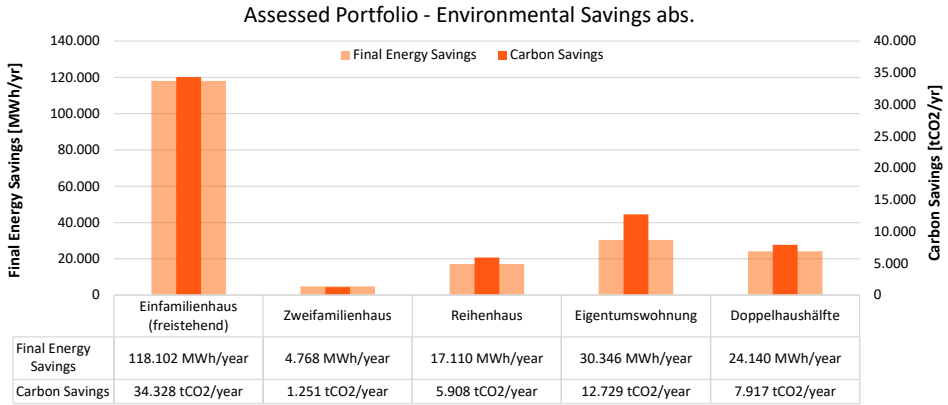
	Green Bond	Total
Portion	100%	100%
Mortgage Volume	4.442.703.391 €	4.442.703.391 €



	Green Bond	Total
Building Area	3.509.244 m²	3.509.244 m²



	Einfamilienhaus (freistehend)	Zweifamilienhaus	Reihenhaus	Eigentumswohnung	Doppelhaushälfte
Selected	2.395.435.123 €	77.409.402 €	358.886.589 €	1.063.908.516 €	547.063.762 €
Total	2.395.435.123 €	77.409.402 €	358.886.589 €	1.063.908.516 €	547.063.762 €



	Einfamilienhaus (freistehend)	Zweifamilienhaus	Reihenhaus	Eigentumswohnung	Doppelhaushälfte
Final Energy Savings	118.102 MWh/year	4.768 MWh/year	17.110 MWh/year	30.346 MWh/year	24.140 MWh/year
Carbon Savings	34.328 tCO2/year	1.251 tCO2/year	5.908 tCO2/year	12.729 tCO2/year	7.917 tCO2/year

German Green Bond Portfolio:

Buildings: 27.225

Exposure:
4.442.703.391 (100%)

Energy savings:
194.466 MWh/year

Carbon emissions savings:
62.133 tCO_2/year

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CARBON TRUST

REPORT

ING 2023 Impact Assessment

For eligible Green Bond projects for ING up to December 31, 2023

June 2024

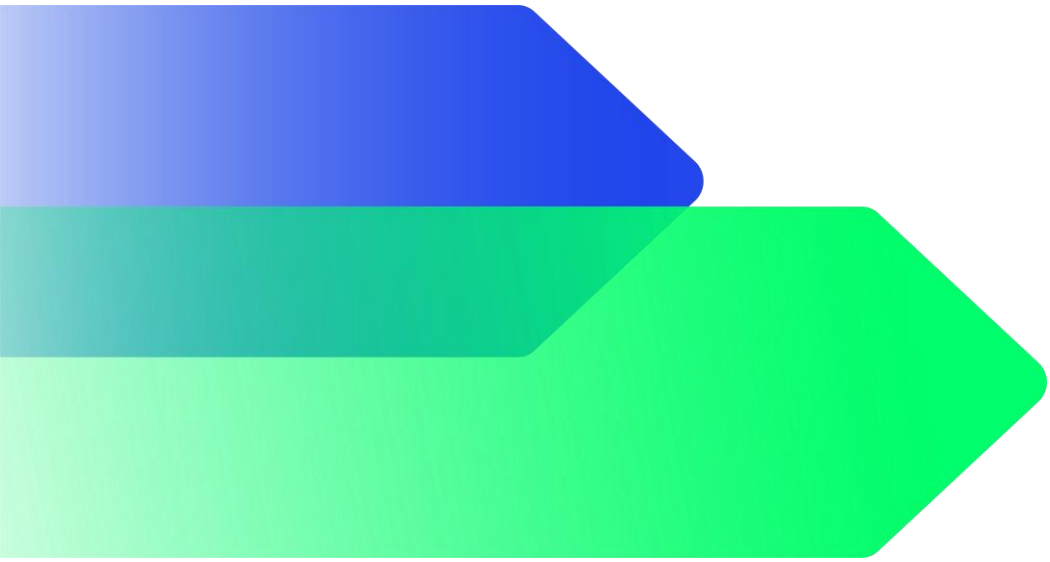


Table of Contents

Introduction

ING has a long-standing commitment to sustainability and has developed a clear set of objectives and targets to achieve its ambitions. This includes reaching net-zero by 2050 and decarbonising its global portfolio.

To support the growth in its Sustainable Finance portfolio, and meet its green funding requirements, ING has designed a Green Bond Framework (the "**Framework**") aligned to the ICMA Green Bond Principles ("**GBP**"). The first version of the Framework was published in 2015, with subsequent updates published in 2018 and 2022.

As part of its Framework, and aligned with the requirements of the GBP, ING has committed to regular and transparent reporting on the climate impacts related to the allocation of net proceeds to an Eligible Green Loan Portfolio (the "portfolio").

The portfolio covers the following eligible categories aligned to the GBP:

Eligible Green Loan Categories

Renewable Energy **Green Buildings**

In accordance with the ING Green Bond Framework, this document provides:

1. A description of the Eligible Green Projects;
2. The breakdown of the Eligible Green Projects by nature of what is being financed;
3. Metrics regarding Eligible Green Projects' environmental impacts.

This report presents the results of the impact assessment for ING's 2023 Green Bond Issuances. For clarity, the Carbon Trust has been engaged to support the development of the impact assessment methodology and calculations for Eligible Green Loans under the Renewable Energy category, only.

Description of Eligible Green Projects

ING, at its discretion, but in accordance with the ICMA Green Bond Principles[1], intends to allocate the proceeds from Green Finance Instruments to an Eligible Green Loan Portfolio, selected in accordance with the Eligibility Criteria and evaluation and selection process presented above. ING will strive, over

[1] ICMA Green Bond Principles – June 2021 (June 2022 Appendix 1)

time, to achieve a level of allocation for the Eligible Green Loan Portfolio that matches or exceeds the balance of net proceeds from its outstanding Green Finance Instruments.

Renewable Energy

Renewable Energy assets located in Ireland, the UK, and across the EEA, and the USA:

Loans to finance or refinance equipment, development, manufacturing, construction, operation, distribution and maintenance of renewable energy generation. Eligible renewable energy sources include:

a. **Solar Energy**: Photovoltaics (PV)

b. **Wind Energy**: Onshore and offshore wind energy generation facilities and other emerging technologies.

ING's eligible Green Project Portfolio is composed of financial assets (eligible loans), selected in accordance with the Eligibility Criteria set out in the Framework.

Contribution to EU environmental objectives

Eligible Projects substantially contribute to the achievement of the **EU Environmental Objective n. 1: Climate Change Mitigation**[2]

- Generating, transmitting, storing, distributing or using renewable energy in line with Renewable Energy Directive (EU) 2018/2001, including through using innovative technology with a potential for significant future savings or through necessary reinforcement or extension of the grid (1a);

The definition of the Eligibility Criteria takes into account the EU Taxonomy Regulation and the EU Taxonomy Climate Delegated Act on a best effort basis, where there are feasible practical applications for the use of proceeds category in question, and where there are feasible practical applications in the geographies where ING's assets are located (in terms of local regulation).

Contribution to the UN Sustainable Development Goals (UN SDGs):

Green Bonds issued under this Green Bond framework directly advance the following SDGs:

- SDG 7: Affordable and Clean Energy (Target 7.1, 7.2, 7.3)
- SDG 13: Climate Action (Target 13.1)

Market practice in green bond impact assessments, typically presents the total avoided emissions from a given asset allocated to the bond. Please note, in the case of renewables because of the nature of the financing it is normal practice to attribute impact according to the proportion of the total financing provided to the project. For further information on the methodology followed, please refer to the ING Green Bond Impact Assessment Methodology.

[2] Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 Jun 2020. On the establishment of a framework to facilitation sustainable investment – 'Taxonomy Regulation', see here.

The Eligible Green Project Portfolio is assessed regarding the following environmental impacts:

- **Renewable Energy:**
  - Total installed capacity (in MWe)
  - Estimated annual energy generation (in MWh)
  - Estimated annual avoided emissions (in tons of CO_2e/year)

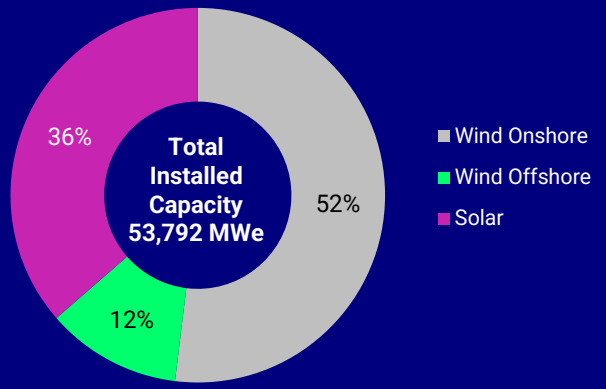
ING Green Bond Impact Highlights

Of the **6.25 billion EUR** outstanding loan balance**, 165 of the 227** projects are currently **operational** and the remaining **62** are still **under construction**.

113 solar PV projects have received EUR 3,175.3 million of financing. 71 of these projects were operational generating 1,782,557.2tCO_2e of avoided emissions

114 wind (onshore and offshore) projects have received EUR 3,074 million of financing. 94 of these projects were operational, generating 6,63,441 tCO_2e of avoided emissions.

ING Avoided Emissions Operational Projects (tCO_2e)



Total outstanding loan balance (EUR) 6.25 billion	**Operational avoided emissions per EUR invested in ($kgCO_2e$/EUR)** 1.2
Number of Eligible Projects 227	**Operational Attributed Avoided Emissions (tCO_2e)** 4.89 million
Under Construction Expected Attributed Avoided Emissions (tCO_2e) 2.77 million	**Total Attributed Avoided Emissions (tCO_2e)** 7.67 million

Sector Breakdown of Eligible Green Asset Register

The following section will present the results of the impact assessment on a category-by-category basis, covering all projects included in the 6.25 billion EUR outstanding loan amount. All results are provided as the attributed value (unless specified otherwise), along with a qualitative description of the impact. All results presented below include the actual and/or expected scope 1 and 2 emissions for both operational and under-construction projects.

In line with the Framework, the Sector Breakdown will focus on the environmental impact of the projects.

Renewable Energy

In 2023, the global renewable energy capacity grew by nearly 50%, which is the highest growth rate over the past two decades.[3] Given current policies and market conditions, it is projected that global renewable capacity will reach 7,300 GW by 2028. This growth trend would result in a global capacity increase of 2.5 times its current level by 2030, however, the International Energy Agency (IEA) has expressed that global capacity needs to increase threefold to meet 2050 net-zero targets.[4]

Figure 1 shows the avoided emissions relative to avoided emissions per Euro ($kgCO_2e$/EUR) for the top 10 countries by outstanding.

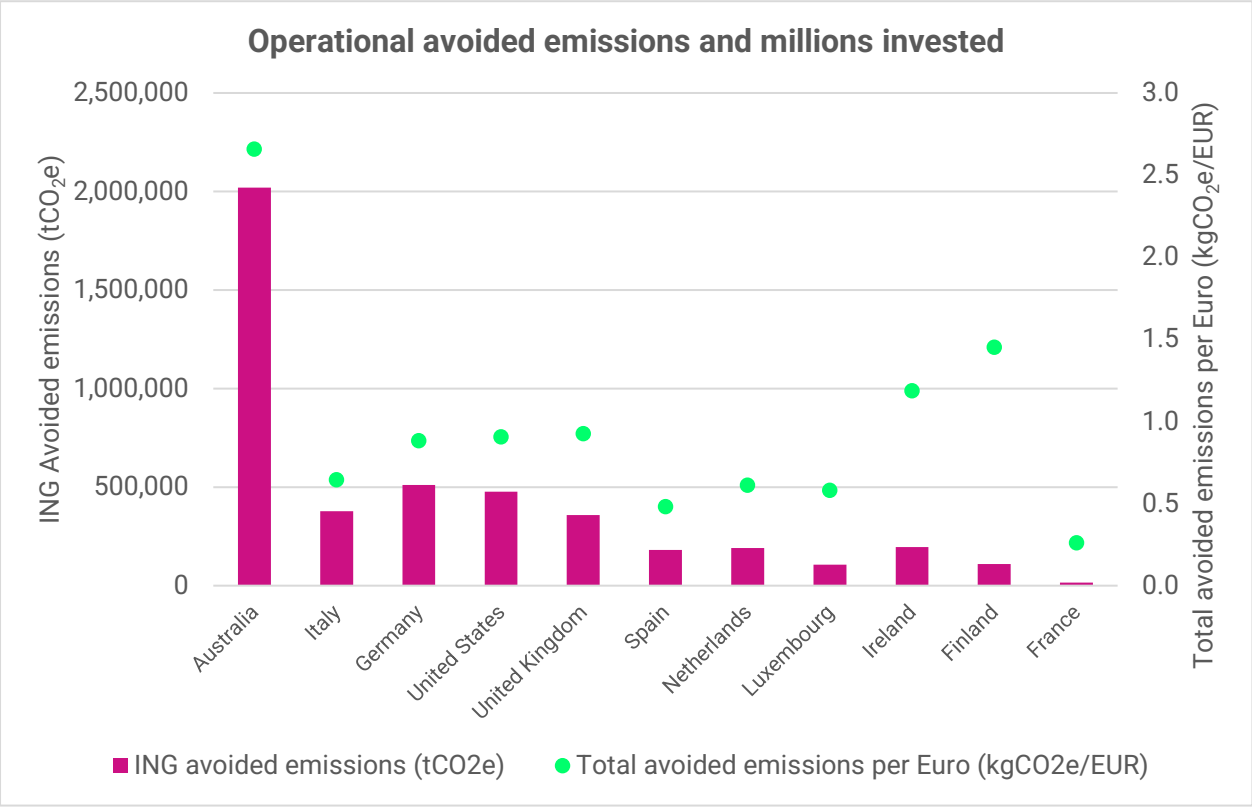


Figure 1 Operational avoided emissions and million invested.

[3] Renewables – Global Energy Review 2023 – Analysis - IEA

[4] Renewables – Global Energy Review 2023 – Analysis - IEA

Solar PV Impact

As of 2023, solar PV alone accounted for 75% of renewable capacity additions worldwide.[5] ING has contributed to this global figure by raising finance for 113 solar PV projects located in fourteen countries, with a combined capacity of 19,291 MWe.

Just above 63% of these projects are operational, with the total renewable energy capacity of these operational solar PV projects being 10,246 MWe. ING has also provided financing to 42 Solar PV projects which are expected to become operational. This will increase the attributed renewable energy generation by 9,045 MWh.

Number of Projects:	113
Relevant Project Locations:	Japan, Spain, USA, Poland, Netherlands, Italy, UK, France, Germany, India, Singapore, Australia, Mexico, Cayman Islands
Total Capacity of Renewable Energy Projects (MWe):	19,291
Attributed Annual Renewable Energy Generation (MWh):	6,425,718.2
Attributed Annual Avoided Emissions (tCO_2e):	3,350,503

Wind (Onshore & Offshore) Impact

Whilst 2023 was the best year ever for wind capacity – with 117 GW added globally – average installations will need to reach 320 GW per annum in order to meet the target of 2.75 TW of wind capacity necessary to meet targets agreed at COP28.[6]

ING has financed a 91 onshore and 23 offshore wind projects globally for a total of 114 projects in eighteen countries, of which two countries are in the top five markets for new wind installations – Germany and the United States.[7] Operational projects are generating 6,063,441.3 MWh (attributable to ING) whilst projects currently under construction are expected to generate an additional attributed 2,227,089.3 MWh.

Number of Projects:	114
Relevant Project Locations:	Spain, UK, Ireland, Netherlands, Germany, France, Portugal, Luxembourg, Taiwan, Poland, Belgium, Italy, Finland, Australia, Philippines, Norway, USA, Turkey
Total Capacity of Renewable Energy Projects (MWe):	34,501
Attributed Annual Renewable Energy Generation (MWh):	8,290,530.6
Attributed Annual Avoided Emissions (tCO_2e):	4,316,985.6

[5] Solar PV – Global Energy Review 2023 – Analysis - IEA

[6] GWEC – Global Wind Report 2024

[7] GWEC – Global Wind Report 2024

Appendix 1: Detailed Results

1.1. Summary of the Impact of ING's Eligible Pipeline Portfolio – Total Amount of Operational and Under Construction Projects

Project type	No. of projects (#)	Total outstanding investment (M EUR)	Total Capacity (Mwe)	Attributed Capacity (MWe)	Total Production (MWh)	ING attributed production of all projects (MWh)	ING avoided emissions (tCO_2e)	Total avoided emissions per Euro ($kgCO_2e$/EUR)	Total avoided emissions per production ($kgCO_2e$/MWh)
Renewable Energy									
Wind Onshore	91	2,064	20,235	2,304	55,991,211	6,199,088	3,418,847	1.7	551.5
Wind Offshore	23	1,011	14,266	702	58,807,661	2,091,442	898,139	0.9	429.4
Solar	113	3,175	19,291	3,498	41,174,948	6,425,718	3,350,503	1.1	521.4
Total	**227**	**6,250**	**53,792**	**6,503**	**155,973,820**	**14,716,249**	**7,667,489**	**1.2**	**521.0**

1.2. Summary of the Impact of ING's Eligible Pipeline Portfolio – Total Amount of Operational Projects

Project type	No. of projects (#)	Total outstanding investment (M EUR)	Total Capacity (Mwe)	Attributed Capacity (MWe)	Total Production (MWh)	ING attributed production of all projects (MWh)	ING avoided emissions (tCO_2e)	Total avoided emissions per Euro ($kgCO_2e$/EUR)	Total avoided emissions per production ($kgCO_2e$/MWh)
Renewable Energy									
Wind Onshore	81	1,662.7	13,509	1,843	34,050,460	4,652,282.5	2,544,558.4	1.5	546.9
Wind Offshore	13	512.6	6,965	503	26,998,126	1,411,158.7	571,618.5	1.1	405.1
Solar	71	2,059.5	10,246	2,112	16,979,587	3,453,722.5	1,782,557.2	0.9	516.1
Total	**165**	**4,234.8**	**30,720**	**4,457**	**78,028,173**	**9,517,164**	**4,898,734.0**	**1.2**	**514.7**

1.3. Summary of the Estimated Impact of ING's Eligible Pipeline Portfolio – Total Amount of Under Construction Projects

Project type	No. of projects (#)	Total outstanding investment (M EUR)	Total Capacity (Mwe)	Attributed Capacity (MWe)	Total Production (MWh)	ING attributed production of all projects (MWh)	ING avoided emissions (tCO_2e)	Total avoided emissions per Euro ($kgCO_2e$/EUR)	Total avoided emissions per production ($kgCO_2e$/MWh)
Renewable Energy									
Wind Onshore	10	401.0	6,726	461	21,940,751	1,546,805.7	874,288.2	2.2	565.2
Wind Offshore	10	498.0	7,301	199	31,809,535	680,283.6	326,520.6	0.7	480.0
Solar	42	1,115.8	9,045	1,385	24,195,361	2,971,995.7	1,567,945.8	1.4	527.6
Total	**62**	**2,015**	**23,072**	**2,045**	**77,945,647**	**5,199,085**	**2,768,755**	**1.4**	**532.5**

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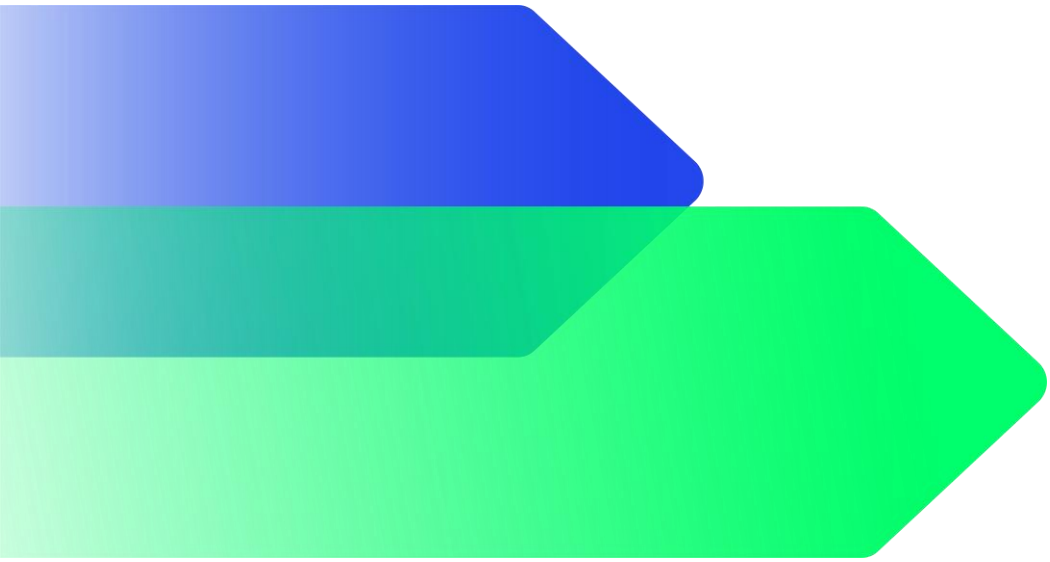
Published in the UK: 2024

REPORT

ING Green Bond Impact Assessment Methodology

For eligible renewable energy assets under the ING Green Bond Framework.

June 2024



The Carbon Trust's mission is to accelerate the move to a decarbonised future.

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Contents

Abbreviations

GBP	Green Bond Principles
GLP	Green Loan Principles
PCAF	Partnership for Carbon Accounting Financials
IFI	International Financial Institutions Working Group on Greenhouse Gas Accounting
PV	Photovoltaic
CSP	Concentrated Solar Power
SDG	Sustainable Development Goals
OM	Operating Margins

Introduction

Who we are

The Carbon Trust's mission is to accelerate the move to a decarbonised future. We are an expert guide to turn your climate ambition into impact. We have been climate pioneers for over 20 years, partnering with leading businesses, governments, and financial institutions to drive positive climate action. To date, our 400+ experts globally have helped set over 200 science-based targets and guided 3,000+ organisations and cities across five continents on their route to Net Zero.

ING Green Bond Overview

ING is a leading European universal bank with global activities. ING employs more than 60,000 people serving more than 38 million customers, corporate clients and financial institutions in over 40 countries. At ING, their purpose is empowering people to stay a step ahead in life and in business, they by i) putting sustainability at the heart of what they do and ii) providing a superior customer experience.

ING has a role in society to define new ways of doing business that align with economic changes, growth and social impact. Climate change is one of the world's biggest challenges, threatening societies as we know them today. ING is determined to be a banking leader in building a sustainable future for customers, society and the environment. The Bank wants to lead by example by striving for net zero in their own operations. Finally, they also want to play a part in the low-carbon transformation that's necessary to achieve a sustainable future, aiming to steer financing towards meeting global climate goals and working with clients to achieve their own sustainability goals.

In alignment with ING's sustainability strategy, ING has established a Green Bond Framework[1] (the '**Framework**') under which ING Group and any of its subsidiaries can issue financial instruments (such as senior bonds, subordinated bonds, covered bonds, commercial papers, medium-term notes and deposits) to finance and refinance assets and projects which contribute to the UN Sustainable Development Goals and the sustainability strategy of ING. The Framework conforms to the sustainable finance principles listed below:

- ICMA Green Bond Principles (**"GBP"**) of June 2021[2]

ING engaged ISS ISG to review the ING Green Bond Framework 2022 and provide a second-party opinion on the Framework's environmental credentials and its alignment with the Green Bond Principles 2021[3].

The GBP are a set of voluntary guidelines that recommend transparency and disclosure and promote integrity in the development of the sustainable finance market by clarifying the approach for issuing sustainable instruments. The Framework therefore has four key components for each sustainable issuance, which ING asserts that it will adopt:

[1] ING Green Bond Framework 2022

[2] ICMA Green Bond Principles, (June 2021)

[3] Second-Party Opinion ISS ESG

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

ING will strive, to achieve a level of allocation for the Eligible Green Loan Portfolio that matches or exceeds the balance of net proceeds from its outstanding Green Finance Instruments. Eligible Loans will be added to or removed from ING's Eligible Green Loan Portfolio to the extent required. Unallocated net proceeds from Green Finance Instruments will be held in ING's treasury liquidity portfolio, in cash or other short term and liquid instruments, at ING's own discretion.

The Eligible Green Loan Categories include:

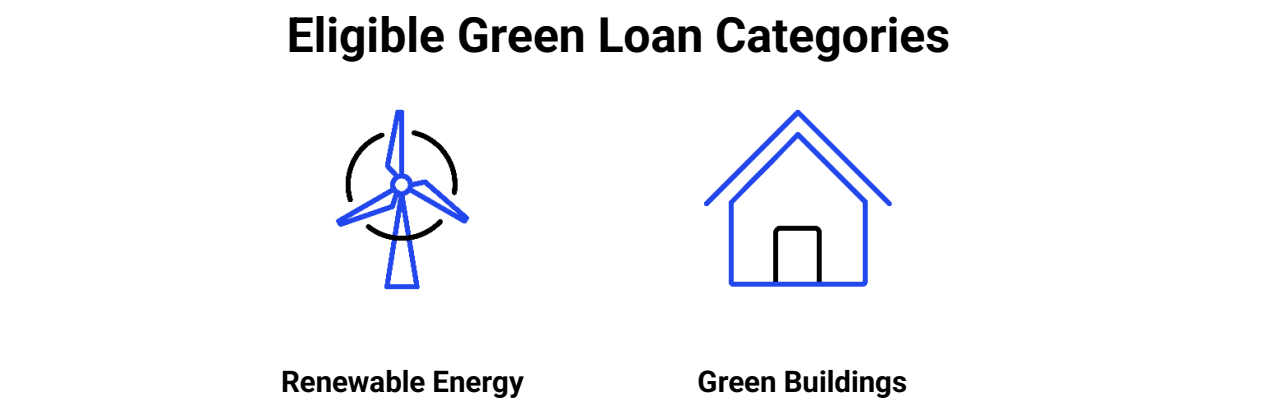

Figure 1: Eligible Green Project Categories

For clarity, the Carbon Trust has been engaged to support the development of the impact assessment methodology and calculations for **Eligible Green Loans under the Renewable Energy category, only**. This methodology report therefore covers only the Renewable Energy asset category of ING's green portfolio.

Reporting Principles

Reporting of the environmental impacts of green bonds is evolving and is still a relatively new concept. However, the Carbon Trust is committed to reporting on the method used to calculate the avoided GHG emissions based on:

- PCAF's The Global GHG Accounting and Reporting Standard for the Financial Industry (November 2020), Chapter 5.3 Project Finance[4],
- Climate Bonds Standard V3.0[5]

[4] The Global GHG Accounting and Reporting Standard for the Financial Industry (Dec 2022)

[5] Climate Bonds Standard V3.0 | Climate Bonds Initiative

- WBCSD Guidance on Avoided Emissions[6]
- IFI GHG Accounting for Grid Connected Renewable Energy Projects (July 2019),
- Green Loan Principles (Feb 2021),
- Green Bond Principles, Voluntary Process Guidelines for Issuing Green Bonds (2021), and,
- ICMA Harmonised Framework for Impact Reporting (2023)[7].

ING follows the key recommendations outlined in the Principles, with external reviewers present across their reporting process. The reporting is based on the Eligible Green Loan Portfolio and numbers will be aggregated for all Green Finance Instruments outstanding.

Scope of Calculations and Reporting

Where feasible, ING intends to report on the environmental impact of the Eligible Green Loans financed by Green Finance Instruments. For each Green Eligible Category, the impact report may provide:

- A description of relevant green projects;
- The breakdown of green projects by nature of what is being financed (financial assets); and
- Impact metrics regarding projects' environmental impact as outlined in ING's Framework.

ING will publish allocation and impact reports annually, covering the previous 12-month period[8] at least until full allocation. ING will show the allocation and impact of the Green Finance Instruments proceeds to the Eligible Green Loan Portfolio for each Eligible Project Category and on an aggregated basis for all of ING's Green Finance Instruments outstanding.

Avoided Emissions

Avoided emissions form a core component of the impact assessment. It provides an insight into the wider positive impact in the form of GHG emissions avoided or reduced as a result of the product and/or services in comparison to a base reference scenario. Existing as a subsection of avoided emissions, this assessment will also consider the enablement from a solution (product/service) and whether that allows for the same or similar function to be performed with significantly less GHG emissions. By providing these solutions, companies enable avoided emissions in the wider system, outside of their value chain. Avoided emissions, along with the entire impact assessment will be calculated on a year-by-year basis.

At the core of the avoided emissions assessment, is the reference scenario. This portion of the assessment looks to understand the context of the investment and what is directly being replaced/reduced as a result of the investment. The reference scenario must be a credible alternative to reflect the reality of the region. Where avoided emissions are calculated, the reference scenario will be

[6] WBCSD Guidance on Avoided Emissions (Mar 2023)

[7] Handbook Harmonised framework for impact reporting (June 2023)

[8] For certain projects, the most recent available data is from the 12-month period starting January 31, 2022 and ending December 31, 2022. Where this is the case, the projects will be clearly marked and noted within the impact report.

described in each of the relevant methodology sections. This is summarised in the graph and equation below:

$$\textbf{Avoided emissions} = \sum Reference\ Scenario\ Emissions - Solution\ Emissions$$

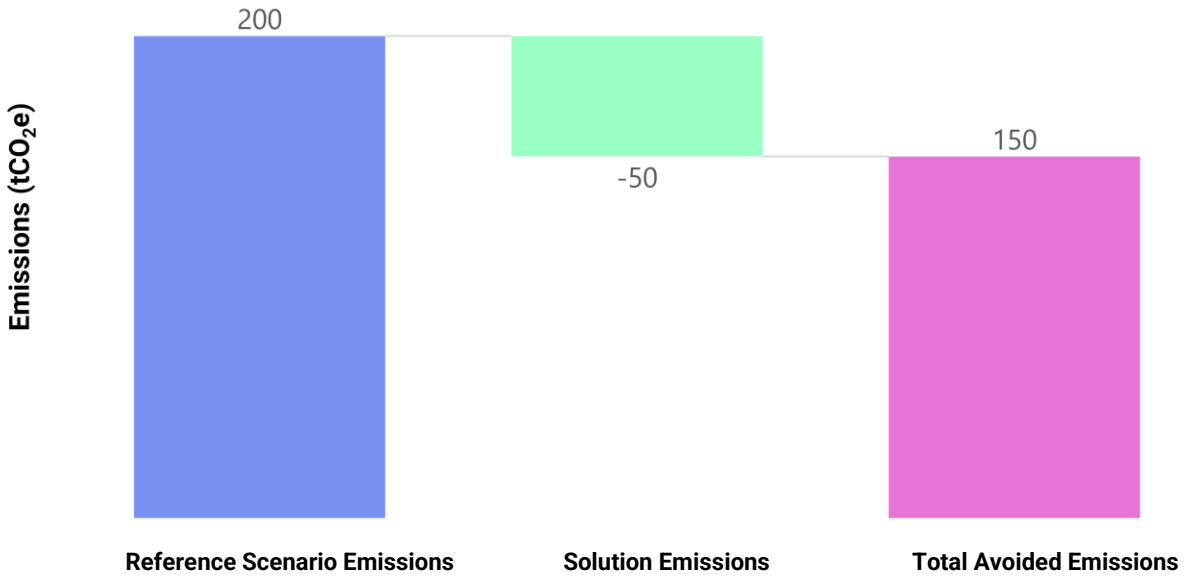

Figure 2 - Avoided emissions calculation example

ING Avoided Emissions and Attribution

When carrying out the impact assessment, an attribution factor was applied to all assets in line with PCAF's methodology. This factor helps understand the share of ING's exposure and contribution to the impact of the project.

$$\textbf{Project Avoided Emissions} = Attribution\ Factor \times Project\ Emissions$$

In the process of considering investments for allocation under the Green Finance Framework, ING will discount the portion of the Eligible Green Projects that have been disbursed by one or several other issuers.

To be consistent with the assessment from previous years, the attribution factor was calculated based on deal size. Following the equation below:

$$\textbf{Attribution Factor} = \frac{2023\ ING\ Outstanding\ Investment\ Amount}{Total\ Deal\ Size}$$

Methodology

The following section breaks down the methodologies used to calculate the impact of each eligible category included within the assessment. The assessment looks to calculate the impact of ING's investments between the timeframe of January 2023 to December 2023, unless otherwise specified as noted above.

In line with the ICMA Harmonised Framework for Impact Reporting[9], the impact assessment will consist of both a qualitative and quantitative assessment. Where possible, a qualitative assessment will accompany the quantitative calculations detailed below. Many of the projects included within ING's Register are currently under construction; to that end, some client information is not yet available to calculate the respective impact metrics. In these cases, a qualitative assessment was carried out around the expected regional benefits of the technologies that are being invested in.

Renewable Energy

As disclosed within the Framework, ING has committed to investing in renewable energy assets in the production, transmission, and storage of energy from the following renewable sources:

- **Wind power** (including onshore and offshore projects)
- **Solar power**

This category is designed to be aligned to the Sustainable Development Goal ("**SDG**") 7, Affordable and Clean Energy, with a particular focus on achieving the goals of "By 2030, increase substantially the share of renewable energy in the global energy mix" and Sustainable Development Goal ("**SDG**") 13, Climate Action, . In addition, it aims to align to the EU Environmental Objective for Climate Change Mitigation.

The resulting metrics that will be included in the assessment where applicable are:

- Capacity of renewable energy plant(s) in (MWe)
- Annual renewable energy generation in MWh/GWh (electricity) and GJ/TJ (other energy)
- Avoided emissions (tCO_2e)

Solar PV and Wind Energy Impact Methodology

Renewable energy generation is a low GHG emissions energy source and has an environmental benefit in replacing energy generated from fossil fuel-based power generation. Energy generated from renewable sources reduces the demand for fossil fuel sources and therefore reduces emissions of greenhouse gases into the atmosphere. In an electricity grid, renewable generation will displace fossil fuel sources and reduce the emissions intensity of the electricity grid.

For the renewable energy assets, the methodology as detailed below considers solar PV and wind power. The actual (or estimated) energy generation was multiplied by a consolidated country-specific electricity emissions factor for the relevant country grid electricity mix. In line with PCAF

[9] Handbook Harmonised framework for impact reporting (June 2023)

recommendations, the Operating Margin ("**OM**") was used as the emission factor. The OM represents the marginal generating capacity in the existing dispatch hierarchy that will most likely be displaced by the project. The full dataset for the OM emissions factors is published by IFI AHG-001[10]. This approach was undertaken instead of using the IFI combined margin as the OM provided the best outlook on which operations would most be affected, and ultimately which technologies were most likely to have been reduced over a year. The emissions associated with RE are calculated based on the actual energy generation/export from the facility, multiplied by the emission factor for energy generation.

The equation for estimating the avoided emissions from RE can be seen below (where "i" is each individual project):

$$\boldsymbol{Avoided\ emissions}\ (\boldsymbol{tCO_2}) = (\sum_{i=1}^{n} Generation\ (MWh)_i \times Renewable\ Energy\ Emission\ Factor\ (kgCO_2e/MWh) - (\sum_{i=1}^{n} Generation\ (MWh)_i \times Country\ Grid\ Operating\ Margin\ Carbon\ Intensity\ (kgCO_2e/MWh))$$

All qualifying assets began operation in years dating prior to the base year (2023) and therefore were operating and generating energy during the reporting period. Assets that are not yet operational are reported on separately within the assessment to highlight future potential impacts. For each asset, ING's portfolio companies provided the energy generation in the given year through actual generation figures on an annual basis. Where actual data was unavailable, ING shared P50 estimates, which are considered reasonable estimates in statistical modelling of energy generation and are commonly used in the evaluation of renewable energy assets. Where P50 estimates were not available, average load factors were used to estimate generation based on technology and the capacity of the projects.

[10] Renewable Energy GHG accounting approach

Appendix

Appendix: Grid Electricity

Table 1: Grid Emissions Factor

Country	Emissions Factor Type	Value	Unit	Source
Australia	Operating Margin	808.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Belgium	Operating Margin	252.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Cayman Islands	Operating Margin	753.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Finland	Operating Margin	267.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
France	Operating Margin	158.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Germany	Operating Margin	650.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Hungary	Operating Margin	296.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
India	Operating Margin	951.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Ireland	Operating Margin	380.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Italy	Operating Margin	414.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Japan	Operating Margin	471.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Luxembourg	Operating Margin	220.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Mexico	Operating Margin	531.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0

Netherlands	Operating Margin	326.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Norway	Operating Margin	47.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Philippines	Operating Margin	672.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Poland	Operating Margin	828.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Portugal	Operating Margin	389.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Singapore	Operating Margin	379.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Spain	Operating Margin	402.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Taiwan	Operating Margin	484.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
Turkey	Operating Margin	376.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
United Kingdom	Operating Margin	380.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0
United States	Operating Margin	416.0	$kgCO_2e/MWh$	Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0

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Published in the UK: 2024