ING Green Bond Impact Report 2020

Financial Year 2020

ING

ING Green Bond Impact Report

31 December 2020

Eligible Project Category	Number of Loans/Addresses		Signed Amount (EUR)	Share of Total Portfolio Financing	Eligibility for Green Bonds	Total Installed Capacity of Renewable Energy in MW	Pro-rata Installed Capacity of Renewable Energy in MW	GHG Emissions Avoided in tCO2e
a/			**b/**	**c/**	**d/**	**e/**	**e/**	**e/**
Renewable Energy	176	€	4.151.142.077	48,8%	100%	30.987	4.303	5.591.942
Green Buildings	16.009*	€	4.360.883.490	51,2%	100%			50.877
Total		**€**	**8.512.025.567**	**100%**	**100%**			**5.642.819**
Estimated impact per €1 million invested								**662,9**

EU Taxonomy Alignment summary:

Summary of Eligible Green Assets selected	Wind power, Solar power, Green Buildings in the Netherlands
Alignment with Draft EU Taxonomy Technical Screening Criteria (Draft Delegated Acts)	100%
Do No Significant Harm & Social Safeguards	ING ensures that all eligible loans comply with official national and international environmental and social standards and local laws and regulations on a best effort basis. It is part of ING's ESR transaction approval process to ensure, that all its loans comply with internal environmental and social directives, including those financed with the proceeds of the Green Bonds. These eligibility criteria and minimum requirements and ESG related matters are continuously developed and renewed in its external and internal policy frameworks. ING's environmental and social policies can be found on: https://www.ingwb.com/rules-regulations/environmental-and-social-risk-policies.

Portfolio-based Green Bond Report according to the Harmonized Framework for Impact Reporting

a/ Eligible category

b/ Signed amount represents the amount legally committed by the issuer for the portfolio or portfolio components eligible for Green Bond financing

c/ This is the share of the total portfolio per Eligible Category

d/ This is the share of the total portfolio costs that is Green Bond eligible

e/ Impact indicators

- Installed capacity of renewable energy in MW (total and pro-rata)
- GHG emissions avoided in tCO2e (pro-rata)
- For refurbished buildings: GHG emissions reduced in tCO2e when compared to the reference building code of the construction year

*In comparison with 2020, ING has added 37% extra square meters to the eligible green building assets. The number of assets has increased from 4.144 assets to 16.009 addresses. The main cause of this increase, is an improvement of registration at ING Real Estate Finance (ING REF). Nowadays, ING REF registers building information at single address level, instead of registration per loan asset.

External consultant reports detailing the environmental impact of the Eligible Green Loan Portfolio as per December 31st 2020, are presented in the next pages.

ING RENEWABLE ENERGY PORTFOLIO

CLIMATE IMPACT ASSESSMENT

PORTFOLIO AS OF
31 DECEMBER 2020

FEBRUARY 26, 2021

ING Guidehouse

ING RENEWABLE ENERGY PORTFOLIO

CLIMATE IMPACTS – PORTFOLIO AS OF 31 DECEMBER 2020

By the Numbers

Total ING Portfolio (M€)
4,151

Number of Projects
176

Annual, avoided Emissions (megatons CO_2eq)
5.6

Average Emissions per Euro Invested ($kgCO_2eq/€$)
1.3

Avoided emissions are equal to…

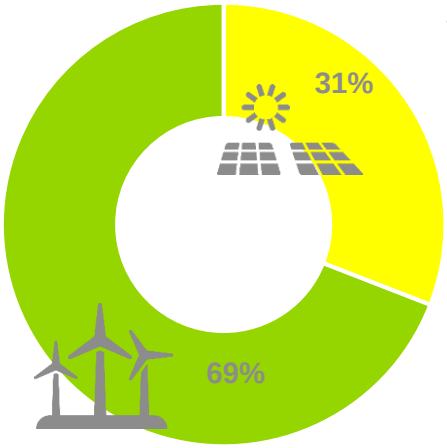
Passenger flights London to New York
4.1 million

Reduction in global beef consumption
93 kton

Key Findings

» The annual avoided emissions for this total portfolio was **5.6** megatons CO_2eq, or an average **1.3** $kgCO_2eq$ per euro invested

Avoided Emissions by Technology



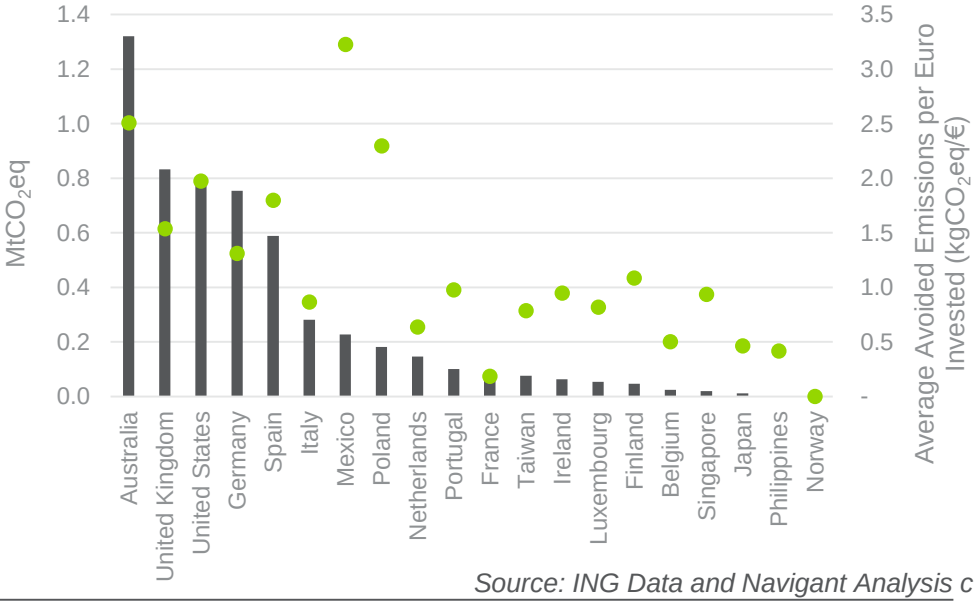
Total avoided Emissions (kton CO_2eq)
(number of projects in parentheses)

Wind	3,864 (122)
Solar	1,728 (54)

Total Installed Capacity (MW)
30,987

Capacity Currently Financed by ING (MW)
4,303

Avoided Emissions in megatons CO2eq (Bars) and Average Avoided Emissions per Euro Invested (Dots) by Project Country



Source: ING Data and Navigant Analysis c

ING RENEWABLE ENERGY PORTFOLIO
CLIMATE IMPACTS - METHODOLOGY

Introduction

ING Bank contributes to sustainability by financing projects that accelerate its clients' transition to a low-carbon economy. By financing projects that reduce the need for carbon intensive technologies on the electricity grid, ING can contribute to a low-carbon economy and help its clients' contribution as well. Such renewable energy projects diversify the grid and reduce the need for electricity generated by fossil fuel technologies (such as natural gas, coal or oil).

Guidehouse was appointed to calculate the positive climate impacts of ING's renewable energy portfolio. The positive climate impacts are expressed by the avoided greenhouse gas (GHG) emissions from solar and wind projects financed through ING.

Methodology

The method used to calculate the avoided GHG emissions for ING's portfolio is based on PCAF's *Global GHG Accounting and Reporting Standard for the Financial Industry*[1] and the *IFI Approach to GHG Accounting for Renewable Energy Projects*.[2]

Guidehouse measured the climate impacts from ING's renewable energy portfolio by calculating the avoided GHG emissions from loans and investments in projects financed through ING. The avoided GHG emissions were calculated by:

- Taking the estimated or actual electricity production of the project, measured in MWh, multiplied by a country specific emission factor.
- The country specific emission factor is the operating margin (OM). The OM represents the marginal generating capacity in the existing dispatch hierarchy that will most likely be displaced by the project. The OM is used in the methodology because the assessment is backward looking in the sense that it measures the avoided emissions over the previous financial year.
- In cases where the estimated electricity production was not provided by ING, production is calculated by multiplying (1) the annual load hours of wind, solar or hydro by (2) the project capacity (MW).
- In most cases, ING does not finance the entire project, therefore the avoided emissions are adjusted by the share (%) that is financed by ING. This attribution share is calculated by taking (1) the amount currently outstanding on the deal and dividing by (2) the original deal size amount.
- The calculations are valid based on the portfolio as of December 31st, 2020

[1] https://carbonaccountingfinancials.com/files/downloads/PCAF-Global-GHG-Standard.pdf
[2] https://unfccc.int/climate-action/sectoral-engagement/ifis-harmonization-of-standards-for-ghg-accounting

MEMO

Project: Impact assessment ING green commercial building portfolio assessment

Subject: CO_2-emission reduction calculation

Date: 07 April 2021

Status: Final

As requested by ING, CFP Green Buildings compared the CO_2-emission of a specific, energy-efficient group of real estate (in this document indicated as ING green commercial building portfolio) with a comparable group of real estate with an average energy-efficiency (indicated as Reference[1]). The objective of this analysis is also to demonstrate that the selected buildings belong to the top most sustainable buildings in The Netherlands. In this document the results are shown.

Energy label comparison

Figure 1 shows the distribution of the energy labels of ING green commercial building portfolio and the registered energy labels in the Netherlands. In the ING green commercial building portfolio, all of the objects have a registered energy label A.

There are 1.281.851 registered energy labels with an A rating in the Netherlands. This is 14,1% of all buildings in the Netherlands (9.067.059 buildings). Therefore buildings in the ING green commercial building portfolio belong to the top 15% most energy-efficient buildings of the Dutch real estate market.

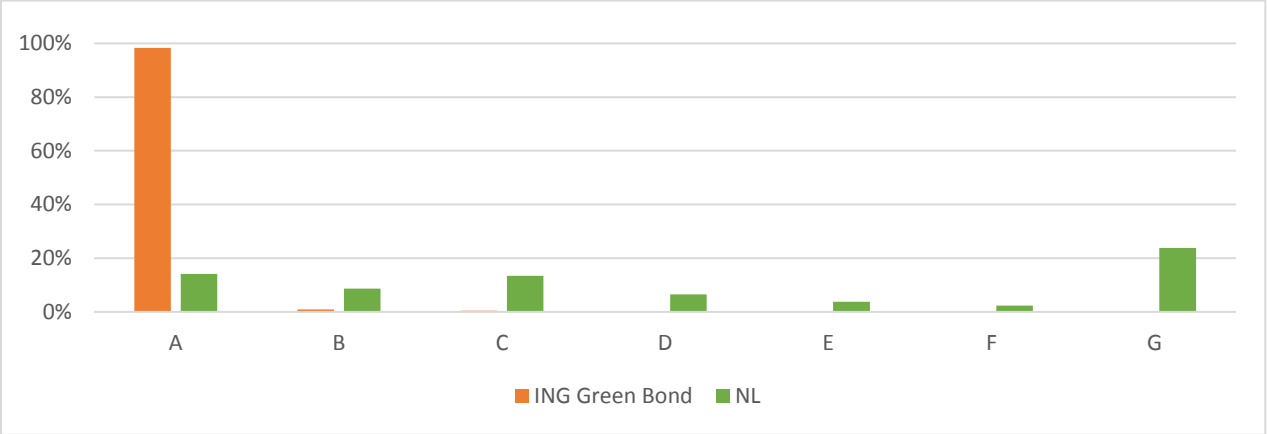


Figure 1: Distribution of energy labels ING green commercial building portfolio and in the Netherlands

Methodology

Within this study the CO_2-emissions of 16.009 objects, as selected by ING, were determined using the calculated real energy consumption of these objects. This selection is based on the selection criteria from the Green Bond Framework[2].

The energy usage is based on the algorithms and benchmarks from the expert system of CFP Green Buildings. This is the largest building database in The Netherlands with actual data on energy consumption and building characteristics. These algorithms and benchmarks are the same as those

1 The reference group is an anonymised portfolio from several clients form CFP Green Buildings, which contains about 140.000 comparable buildings

[2] In comparison with 2020, ING has added 37% extra square meters to the selection. The number of assets has increased from 4.144 assets to 16.009 addresses. The main cause of this increase, is an improvement of registration at ING Real Estate Finance (ING REF). Nowadays, ING REF registers building information at single address level, instead of registration per loan asset.

used in the online tool www.ingrefduurzaam.nl. In this study, the calculated real energy consumption of Dutch real estate (the Reference) was determined using this methodology.
The CO_2-emissions were calculated with the Dutch market standard conversion factors, derived from the Green Deal CO_2-Emissionfactors.

CO_2-emission - natural gas
The CO_2-emission of Dutch natural gas is 1,884 kg/m3.[3]

CO_2-emission - electricity
Values for carbon intensity, in kg per produced kWh of electricity, vary depending on assumptions made in the calculation method. In this assessment, an emission of 0,475 kg/kWh was used.[4]

Group composition

The group composition of the 16.009 objects is shown in table 1. Residential buildings account for 64% of the portfolio (10.213). Retail buildings have the largest footprint with 30% of total square meters. More than half of the portfolio (56%) are new buildings[5], 44% is refurbished to obtain an energy label A.

	#	m^2	Refurbished	New
Industry	207	602.180	155	52
Office	803	865.548	594	209
Retail	2.693	1.274.267	2.193	500
Residential	10.213	832.040	4.646	5.567
Other	2.300	1.325.848	1.553	747
Total	**16.009**	**4.297.703**	**8.986**	**7.023**

Table 1: Group composition ING Green Buildings Loan Portfolio

Energy consumption

Table 2 shows the calculated real energy consumption of the ING green commercial building portfolio. Calculated real energy consumption for electricity is 158 million kWh each year and 93 million m^3 natural gas each year.

Electricity consumption (kWh)	Natural gas consumption (m^3)
157.974.747	*92.934.543*

Table 2: Calculated energy consumption ING green commercial building portfolio

CO_2-emission

Table 3 shows the CO_2-emissions of both groups, based on calculated real energy consumption. The total CO_2-emission of the ING green commercial building portfolio is 250.127 ton CO_2 per year. The Reference CO_2-emission is 328.032 ton CO_2 per year.

CO_2-emission ING green commercial building portfolio (ton CO_2)	CO_2-emission Reference (ton CO_2)	CO_2-emission Reduction (ton CO_2)
250.127	*328.032*	*77.905*

Table 3: CO_2-emission ING green commercial building portfolio compared to Reference

Approximately 44% of the portfolio consists of refurbished buildings. Another way of calculating reduced CO_2-emissions can be done by comparing the current emissions with the original built quality emissions.

[3] Source: https://www.co2emissiefactoren.nl with WTW emission for natural gas in kg/CO_2 per m^3
[4] Source: https://www.co2emissiefactoren.nl with WTW emission for electricity (unknown) in kg/CO_2 per kWh
[5] New buildings are defined as constructed in 2006 or later.

Table 3 shows an overview of the calculated CO_2-emissions reduction for the refurbished buildings, compared to the theoretical original built quality based on the expected Energy Index. The total CO_2-emissions of the ING green commercial building portfolio for refurbished buildings is 176.817 ton CO_2 per year. The original built quality CO_2-emission is 213.171 ton CO_2 per year.

CO_2-emission ING green commercial building portfolio Refurbished (ton CO_2)	***CO_2-emission according to building code (ton CO_2)***	***CO_2-emission Reduction (ton CO_2)***
176.817	*213.171*	*36.354*

Table 4: CO_2-emission ING green commercial building portfolio Refurbished compared to the original built quality

Approximately 56% of the portfolio consists of non-refurbished buildings or new buildings[6]. Table 5 shows an overview of the calculated CO_2-emission reduction for the new buildings, compared to the theoretical original built quality based on the expected Energy Index. The total CO_2-emission of the ING green commercial building portfolio for new buildings is 73.310 ton CO_2 per year. The original built quality CO_2-emission is 87.833 ton CO_2 per year.

CO_2-emission ING green commercial building portfolio New (ton CO_2)	***CO_2-emission according to building code (ton CO_2)***	***CO_2-emission Reduction (ton CO_2)***
73.310	*87.833*	*14.523*

Table 5: CO_2-emission reduction (avoided) ING green commercial building portfolio New (new buildings that were more energy-efficient than the building code required at the time of construction help to avoid CO_2-emission).

Table 6 gives an overview of the reduced CO_2-emissions according to building code for both refurbished and new buildings with a definitive energy label.

	Number	**m^2**	**CO_2-emission ING green commercial building portfolio (ton CO_2)**	**CO_2-emission Original building code (ton CO_2)**	**CO_2-emission Reduction (ton CO_2)**
Refurbished buildings	8.986	2.898.447	176.817	213.171	36.354
New buildings	7.023	1.399.256	73.310	87.833	14.523
Total	***16.009***	***4.297.703***	***250.127***	***301.004***	***50.877***

Table 6: CO_2-emission ING green commercial building portfolio compared to original building code

Conclusion

From this study the following conclusions are determined:

- Based on the calculated real energy consumption, the ING green commercial building portfolio has a CO_2-emission that is 77.905 tons per year lower than the reference, which is a difference of 23,7%.
- Compared to the original building code, the ING green commercial building portfolio has a CO_2-emission reduction of 50.877 tons per year, which is a reduction of 16,9%.
- Based on the official and calculated energy labels, buildings in the ING green commercial building portfolio belong to the top 15% most energy-efficient buildings of the Dutch real estate market.

[6] A building is categorised as new when the construction year of the building is 2006 or later