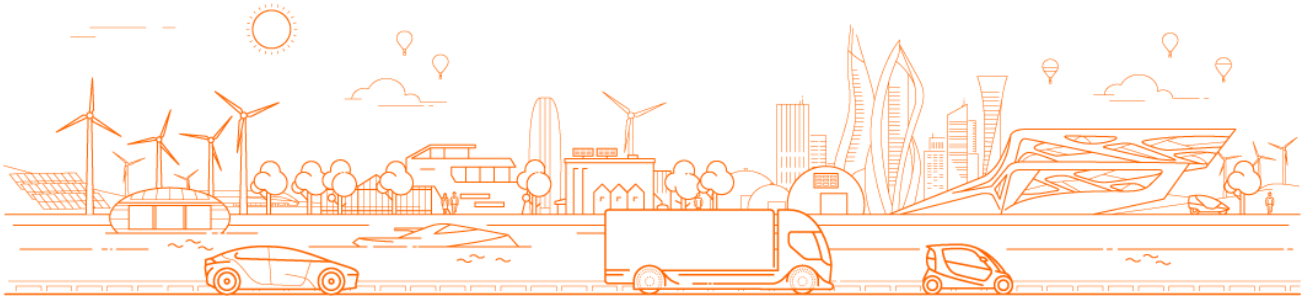

ING

Post-Issuance Green Bond Report 2017

ING Green Bond Allocation Reporting 2017

Portfolio date: 31 December 2017

Use of Proceeds for Eligible Green Projects				
Eligible Green Project Portfolio	**Number of loans**	**Amount (EUR)**	**Allocation of green funding (in period)**	**Amount (EUR)**
Existing loans 2017			***Allocated to green bonds***	
Renewable Energy			24 Nov 2015 due Nov 2020, EUR 500m, ISIN XS1324217733	500.000.000
Wind	18	652.084.051	24 Nov 2015 due Nov 2018, USD 800m, 144A registration	751.664.000
Solar	5	241.116.186	US44987CAJ71 // RegS registration US44987DAJ54	
Green Certified Buildings	6	292.142.506	29 Dec 2015 due Dec 2020, EUR 500m, ISIN XS1339542364	62.500.000
Waste to energy	1	80.893.123		
Public transport	2	110.072.937		
Sustainable Water Management	1	30.395.974		
Energy efficiency	0	0		
Eligible Green Loan Portfolio 2017 (31 Dec)	**33**	**1.406.704.777**	**Green Funding**	**1.314.164.000**

Percentage of Eligible Green Project Portfolio allocated to net proceeds of green funding:	**93,4%**	(usage)
Percentage of net proceeds of Green Bond allocated to Eligible Green Project Portfolio:	**100,0%**	
New projects in the portfolio since 2016	**14**	**525.316.375**

*EUR equivalent amount (EUR per USD as of 24 Nov 2015 0,93958)

ING Green Bond Impact Reporting 2017

Eligible Project Category	Number of loans	Signed Amount (EUR)	Share of Total Portfolio Financing	Eligibility for Green Bonds	Installed capacity of renewable energy in MW	GHG emissions avoided in tCO2e
a/		**b/**	**c/**	**d/**	**e/**	**e/**
Renewable Energy	23	893.200.237	63,50%	100%	3.460	741.476
Green Certified Building	6	292.142.506	20,77%	100%	n/a	1.834
Clean Transportation	2	110.072.937	7,82%	100%	n/a	2.801 *
Waste Management	1	80.893.123	5,75%	100%	n/a	61.959
Sustainable Water Management	1	30.395.974	2,16%	100%	n/a	n/a
Energy efficiency	0	0	0,00%			
Total	**33**	**€ 1.406.704.777**	**100%**	**100%**	**3.460**	**808.071**

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 cost that is financed by the issuer

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

e/ Impact indicators (Pro-rata)

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

* One of the assets was not included in impact calculations due to lack of relevant information to calculate the impact of theclean transportation infrastructure

An external consultant report detailing the environmental impact calculations presented above is presented in the next pages.

NAVIGANT

Methodology

ING Green Bond Climate Impact Measurement

10/16/2018

The ING Bank contributes to sustainability by financing projects that accelerate their clients' transition to a low carbon economy and by supporting clients that develop solutions to environmental and social challenges. To support the sustainable finance programme and fund their portfolio of green projects, ING has designed a Green bond framework. Navigant was asked to determine the positive climate impact of this Green bond. The positive climate impact is expressed by the avoided greenhouse gas emissions of selected projects financed through ING's Green bond for 2017. These projects include renewable energy (wind and solar), green buildings, waste to energy, and public transport. In this document we (1) describe what avoided emissions are, (2) show how we calculated the avoided emissions of projects financed by ING and (3) present key results.

ING can avoid the emissions of greenhouse gases by financing projects that replace an environmentally polluting technology with an environmentally friendly alternative. In other words, by investing in these technologies greenhouse gases are avoided. Clear examples are the solar and wind renewable energy projects financed by ING. The assumption is that renewable energy technologies will push environmentally polluting technologies such as fossil fuel (i.e. natural gas, coal and oil) fired power plants off the grid. Due to these investments in renewable energy, the CO_2eq emissions, which would normally be emitted by the fossil fuel fired power plants, can now be regarded as avoided emissions.

The following sub-sections provide the approach to calculating avoided emissions of the projects included in the green bond.

Wind and Solar

The approach to calculating the avoided emissions from the production of renewable energy are calculated by:

- Assuming that the introduction of renewable electricity pushes grey electricity of the grid.
- Multiplying the produced electricity of the projects financed by ING with the emission factor for grey electricity for the country in which the electricity is produced. We made a differentiation per country, since the emission factor for grey electricity varies greatly per country, depending on the mix of fossil fuels (i.e. coal, natural gas, oil) used by power plants. The grey electricity emission factors[1] are derived from the International

[1] We worked with the following emission factors for grey electricity: Australia 908 kg CO_2eq/MWh, Belgium 453 kg CO_2eq/MWh, France 514 kg CO_2eq/MWh, Germany 809 kg CO_2eq/MWh, Italy 542 kg CO_2eq/MWh, Italy 542 kg CO_2eq/MWh, the Netherlands 589 kg CO_2eq/MWh, Poland 919 kg CO_2eq/MWh, Portugal 689 kg CO_2eq/MWh, Sweden 894 kg CO_2eq/MWh, United Kingdom 477 kg CO_2eq/MWh and the United States 674 kg CO_2eq/MWh.

Energy Agency (IEA) and represent a weighted average of the emissions factors for coal, natural gas, and oil. The factors are weighted by the generation mix of the coal, natural gas, and oil fuels by country.

- In case the actual produced electricity is not provided by ING, we calculated (1) the annual electricity of wind by using an estimate of full load hours for onshore and offshore wind[2] based on Navigant experience and the European Wind Energy Association (EWEA) and (2) the annual electricity production of solar by using the PVWatts calculator from the National Renewable Energy Laboratory (NREL).
- Please note that the value chain emissions (i.e. emissions from the production and transport of wind turbines, solar panels and fossil fired power plants) are not taken into account.

Green Buildings

The approach to calculating the avoided emissions of green buildings includes the following:

- Avoided emissions are calculated based on the estimated avoided electricity and natural gas consumption of the building compared to a baseline. Navigant has set this baseline based on experience with the built environment and has set a strict (i.e. high), baseline. To be on the conservative side, we only find it reasonable to include avoided emissions if the building performs significantly better than the minimum energy performance standards for new buildings for that country.
- In case of refurbishment (i.e. for one building), emissions reductions are calculated comparing the energy performance prior and after the refurbishment.
- The performance of the building has been assessed on information from the ING Bank and on publicly available information. The main driver for the calculations is the awarded building certificate (e.g. BREEAM Excellent). The emission saving is based on CO_2-reduction data specified per certificate, which is obtained from the certification agency, assuming each ING building obtains the average emission saving associated with their awarded certificate.
- Energy consumption is based on actual measured energy consumption of the buildings if possible, otherwise a conservative assumption was made based on publicly available data.
- Emission intensity for electricity is based on the average electricity mix from IEA. All fuels used for heating and domestic hot water are assumed to be natural gas with an emission intensity of 222 g CO2/kWh.

Waste to Energy

There is one waste to energy project included in the portfolio. The following methodology was applied to this project:

- As a first step, the capacity of the installations that are under operations and maintenance of the project were divided proportionally over electricity and gas production. The accuracy of the calculations would improve if the actual electricity or gas production of these installations was used.
- We assume that the emissions from electricity produced from waste are the same as for the production of grey electricity, but only take half of those emissions because we assume that the waste contains 50% biogenic material.
- For the emissions from the combustion of biogenic material and for the gas captured from landfills, an emission factor of 0 is used because the emissions are biogenic and thus short cycled (the carbon does not originate from fossil fuels but from organic material, not adding any net carbon to the atmosphere).
- The fact that methane is captured from landfills that would otherwise be released in the atmosphere, is not taken into account. Due to the high global warming potential of methane, this would likely lead to higher avoided emissions than currently calculated. This makes our results conservative.
- It is not unlikely that the production of energy from the incineration of municipal waste or from the combustion of gas from landfill sites also leads to the production of heat. If this heat is fed in a district heating network, this could reduce the demand for natural gas and hence lead to reduced emissions. This is not taken into account in our calculations. This makes our calculations more conservative.

[2] Full load hours for onshore wind are set to 2,500 hours and full load hours for offshore wind are set to 3,650 hours.

Public Transport

There is one public transport project included in the calculation, as there was insufficient information to make an assessment on the remaining projects in the portfolio. The calculation was made using the following methodology:

- First, we assume that the new class of trains replace a standard regional train (where the new class is 50% more efficient than the previous class of train).
- The share of the total fleet of trains in the UK that is replaced by the new class trains is calculated
- The total number of passenger kilometres in the UK is multiplied by an emissions factor[3] to obtain the total annual emissions of all trains in the UK (for a standard regional train)
- The total annual emissions of all trains in the UK is then multiplied by the share of trains that are the new class. This represents the annual emissions of the 115 trains if they were not replaced (i.e. they were a standard regional train)
- Since the new class is 50% more efficient, the total annual emissions of the regional train is multiplied by 50% to obtain the emissions of the new class train, where the avoided emissions is equal to the difference

For all projects where ING does not finance the entire project but only part of the investment, the total annual avoided emissions are multiplied by the share that is financed by ING.

Key Results

Key results are presented in Table 1 below. The key results below are valid for the year 2017, assuming that all projects have been operational during the full year. Please note that within the calculation, the lead time of a project is not taken into account (i.e. the time it takes between financing and the project becoming operational).

Table 1. Avoided emissions per sector.

Sector	Number of projects included	Total value on ING balance (M€)	Annual avoided emissions (ton CO_2eq)	Average emission factor (ton CO_2eq/M€)	Annual avoided emissions (equivalent Dutch households[4])
Wind	18	652	582,938	939	± 73 thousand
Solar	5	241	158,538	509	± 20 thousand
Green Buildings	6	292	1,834[5]	6	± 230
Waste to energy	1	81	61,959	766	± 8 thousand
Public transport	1	97	2,801	29	± 350
Total	**31**	**1,363**	**806,423**	**592**	**± 100 thousand**

Source: ING data and Navigant analysis

In making these calculations, we depend on the accuracy of the information we receive from ING and on information from public sources (i.e. IEA, EWEA, NREL). It is important to realise that modelling avoided emissions has inherent uncertainties.

[3] The emissions factor applied represents the Well to Wheel emissions (WTW). This is equal to 42 (g CO2eq/pkm). (Source: IEA Railway Handbook)

[4] Based on an average CO_2 emission of 8 tonne per household in the Netherlands per year (source: Milieucentraal).

[5] Of this total, 141 ton CO_2eq is actually emissions reductions, resulting from the refurbishment of one building.