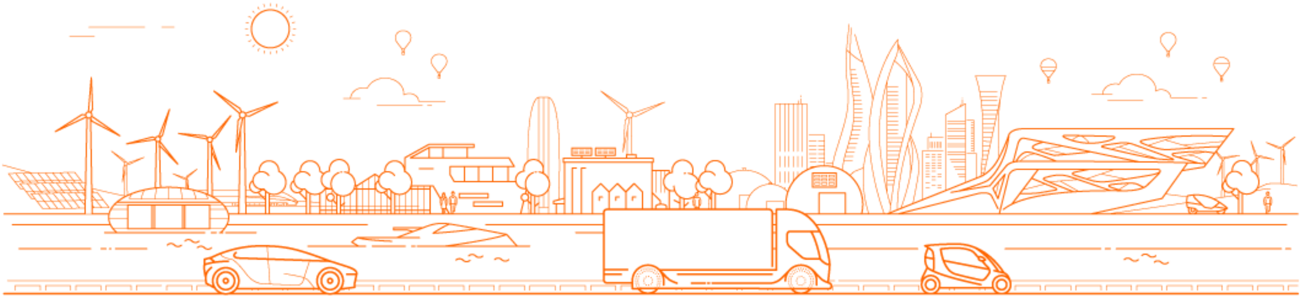

ING

Post-Issuance Green Bond Report 2016

ING Green Bond Allocation Reporting 2016

Portfolio date: H1 2016

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 2015			***Allocated to green bonds***	
Renewable Energy			24 Nov 2015 due Nov 2020, EUR 500m, ISIN XS1324217733	500.000.000
Wind	5	233.476.200	24 Nov 2015 due Nov 2018, USD 800m*, 144A registration	751.664.000
Solar	2	90.552.451	US44987CAJ71 // RegS registration US44987DAJ54 (EUR752m)	
Green Certified Buildings	4	271.345.827	29 Dec 2015 due Dec 2020, EUR 500m, ISIN XS1339542364	62.500.000
Clean Transportation	3	160.540.204		
Waste Management	1	4.502.476		
Water Management	1	49.282.993		
Net inflow 2016				
Renewable Energy				
Wind	3	167.556.963		
Solar	3	223.287.406		
Green Certified Buildings	1	65.843.415		
Clean Transportation	1	48.612.065		
Waste Management	0	-		
Water management	0	-		
Eligible Green Loan Portfolio 2016	**24**	**1.315.000.000**	**Green Funding**	**1.314.164.000**

Percentage of Eligible Green Project Portfolio allocated to net proceeds of green funding **99,9%** (usage)

Percentage of net proceeds of Green Bond allocated to Eligible Green Project Portfolio: **100,0%**

New projects in the portfolio since 2015 **8**

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

ING Green Bond Impact Reporting 2016

Portfolio date: H1 2016

Eligible Project Category a/	Number of loans	Signed Amount (EUR) b/	Share of Total Portfolio Financing c/	Eligibility for Green Bonds d/	Number of loans included in impact calculation	GHG emissions avoided in tCO2e e/
Renewable Energy						
Wind	8	401.033.163	30,50%	100%	8	401
Solar	5	313.839.858	23,87%	100%	5	314
Green Certified Buildings	5	337.189.242	25,64%	100%	0	
Clean Transportation	4	209.152.269	15,91%	100%	0	
Waste Management	1	4.502.476	0,34%	100%	1	5
Water Management	1	49.282.993	3,75%	100%	0	
Total	**24**	**€ 1.315.000.000**	**100%**	**100%**	**14**	**720**

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)
- GHG emissions avoided in tCO2e

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

Introduction

20th of July 2016

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Reviewed by Caspar Noach and Heleen Groenenberg, with input from Willemijn Pouwels and Sven Schimschar

ECOFYS

sustainable energy for everyone

Purpose of this document

The ING Bank N.V. asked Ecofys to make an impact measurement of their Green Bond. This impact measurement includes the avoided CO_2 equivalent emissions of selected projects financed through ING's Green Bond for 2016. This document contains the impact calculations and their results. All calculations have been based on data from ING, public sources and Ecofys expertise. Sources, assumptions and estimates are all clearly indicated in the calculations and listed at the bottom of this sheet. In addition, Ecofys has downloaded and saved copies of online sources, which are available upon request.

If it was not possible to make a reasonable calculation of the avoided emissions of a project, this has been clearly explained in the analysis.

All avoided greenhouse gas emissions are expressed in CO_2 equivalents (CO_2eq). CO2 equivalent is a metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). For instance, over a period of 100 year releasing 1 tonne of methane in the

Below under the aggregated results of the calculations are included, showing the total annual avoided emissions per project category and per project. Using the total value on ING's balance, the emission factor is calculated per category and as a total, for comparison purposes. The emission factor is negative, because we are talking about avoided emissions.

At the bottom, under heading '**Admin**' are shown the emission factors, conversion factors and other constants

Methodological choices and assumptions

The calculations are valid for Q2 2016 and assume that all projects will be operational during the full year. For some projects, this will lead to inaccuracies, because ING Bank has only financed them during a part of the year. This could lead to inaccuracies for projects that have started to receive finance in 2016. However, if ING Bank continues financing the projects included in this calculations, the calculated annual avoided emissions remain valid.

The calculations also don't take the lead time of a project into account (i.e. the time it takes between financing and the project becoming operational).

Conservative calculations

Ecofys takes a conservative approach for calculating the avoided emissions calculations for ING Bank. We do this to prevent the ING Bank from being accused of green washing, to make it easier to audit the calculations, and to avoid the risk of 'overstating' results and having to recalibrate them to a lower figure if new insights become available. We often indicate in the calculations where we take a conservative approach.

Avoided emissions from renewable electricity production

The avoided emissions from the production of renewable electricity are calculated by assuming that the introduction of renewable electricity pushes grey electricity (based on fossil fuels) of the grid. We calculate the avoided emissions by multiplying the produced electricity with the emission factor for grey electricity for the country in which the electricity is produced.

The emission factors for grey electricity for the different countries is obtained from calculations based on information from the International Energy Agency.

Uncertainties

In making these calculations, we depend on the accuracy of the information we receive from ING and that we can find in public sources. It is important to realise that modeling avoided emissions has inherent uncertainties. We have introduced low end emissions to show what the emissions could be in a more pessimistic scenario.

The calculations for low end avoided emissions are based on a better performance of the installations. Alternatively, a low end estimate could have been established by using a lower emission factor. An important driver behind the avoided emissions is the use of average grey electricity being pushed of the grid. In reality, it will probably be baseload coal fired power plants that will remain on the grid, while natural gas fired powerplants will be the "marginal" power plants that are switched off as soon as a lot of renewable electricity enters the grid (in the near future). Therefore, one could argue that instead of calculating with grey you should calculate with the emissions of gas fired power plants to calculate the (low end) avoided emissions.

Wind and solar energy calculations

To the extent that ING did not provide the actual production of wind energy, we calculated the annual electricity production by using an estimate of the full load hours for onshore and offshore wind energy based on Ecofys experience and the European Wind Energy Association (EWEA).

The alternative annual avoided emissions for wind energy have been obtained from online figures on avoided emissions or produced electricity.

When calculating the electricity produced from solar projects, we have used the PVWatts calculator from National Renewable Energy Laboratory (NREL). The selections that we made in these calculations (type of solar cell, tracking system, etc.) has been provided in the blue "Solar" tab.

The value chain emissions of neither wind and solar energy nor for fossil energy is taken into account.

Waste to energy calculations

As a first step, the capacity of the installations has been 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 landfil 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.

Allocating emissions to ING

ING often finances part of a project. As such, ING is only responsible for a share of the avoided emissions from this project. This share has been calculated by dividing ING's outstanding loan by the total capital investment costs of the project (CAPEX). As outstanding loan we have used the max limit from ING's systems, which stand for the maximum amount of money that is specifically allocated to this project. As the loan gets paid back, the max limit decreases and ING's share in the project decreases accordingly. This is standard practise in carbon accounting.

It is possible that the client increases the max limit during the course of the loan. In that case, the share of ING can become higher than 100%. We have capped the share of ING at 100% to make sure that no more avoided emissions are allocated to ING than is realistic.

If ING participates in the acquisition of a project, we took this into account when determining the share of the project financed by ING.

Sector	Number of projects in climate impact calculation	Total value on ING balance (M€)	Annual avoided emissions (kton CO2eq)	Average emission factor (kton CO2eq per M€)	Annual avoided emissions (equivalent Dutch households)
Wind	8	401	429	-1,069	53.579
Solar	5	314	224	-0,713	27.954
Waste to energy	1	5	3,8	-0,838	472
Total	14	719	656	-0,912	82.005

Nr	Project type	Total value on ING balance (M€)	Annual avoided emissions (kton CO2eq)
1	Wind	33	52
2	Wind	97	159
3	Wind	32	35
4	Wind	51	44
5	Wind	46	34
6	Wind	26	12
7	Wind	78	58
8	Wind	38	35
	Total	401	429
1	Solar	60	29
2	Solar	43	11
3	Solar	31	10
4	Solar	135	134
5	Solar	45	40
	Total	314	224
1	Waste to energy	5	3,8
	Total	5	3,8

Emission factor (kton CO2eq per M€)
-1,58
-1,64
-1,09
-0,87
-0,73
-0,44
-0,75
-0,92
-0,48
-0,26
-0,31
-0,99
-0,90
-0,84

Admin

Emission factors	Value	Unit	Source	Remarks
Emission factors electricity				
Australia	925	kg CO_2eq/MWh	IEA overview of countries 2011	Total fossile power generation data were used
Belgium	467	kg CO_2eq/MWh	IEA overview of countries 2011	Total fossile power generation data were used
France	817	kg CO_2eq/MWh	IEA overview of countries 2011	Total fossile power generation data were used
Germany	817	kg CO_2eq/MWh	IEA overview of countries 2011	Total fossile power generation data were used
Italy	598	kg CO_2eq/MWh	IEA overview of countries 2011	Total fossile power generation data were used
Netherlands	519	kg CO_2eq/MWh	IEA overview of countries 2011	Total fossile power generation data were used
Poland	988	kg CO_2eq/MWh	IEA overview of countries 2011	Total fossile power generation data were used
Portugal	620	kg CO_2eq/MWh	IEA overview of countries 2011	Total fossile power generation data were used
Sweden	985	kg CO_2eq/MWh	IEA overview of countries 2011	Total fossile power generation data were used
United Kingdom	623	kg CO_2eq/MWh	IEA overview of countries 2011	Total fossile power generation data were used
United States	759	kg CO_2eq/MWh	IEA overview of countries 2011	Total fossile power generation data were used. For the US we take only one emission factor for grey electricity instead of looking at the emission factors for specific states. To improve the accuracy of the results, we recommend using
EF Passenger car The Netherlands	0,220	kg CO_2eq/pkm	CO2 emissiefactoren.nl	Regardless of the type of fuel and weight of car
EF Bus The Netherlands	0,140	kg CO_2eq/pkm	CO2 emissiefactoren.nl	Regardless of the type of fuel and weight of car
EF National rail UK	0,045	kg CO_2eq/pkm	DEFRA 2015 - national rail	
EF Natural gas per GJ	56,2	kg CO_2eq/GJ	http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html	
EF Natural gas per MWh	202,1	kg CO_2eq/MWh	Calculation Ecofys	
Emission factor intercontinental flights	147	gram CO_2/km	http://CO2eqmissiefactoren.nl/lijst-emissiefactoren/#totale_lijst	
Flight distance Amsterdam - New York	6.000	km	Assumption Ecofys, based on http://www.prokerala.com/travel/flight-time/from-amsterdam/to-new-york/	
Emission factor flight Amsterdam - New York	0,9	ton CO_2eq		
Emissions of a Dutch household	8	ton CO_2eq	www.milieucentraal.nl/klimaat-en-aarde/klimaatverandering/bereken-je-co2-uitstoot/	

Conversion units	Value	Source
kg per ton	1.000	
kWh per MWh	1.000	
EUR per GBP	1,293	http://www.xe.com/currencyconverter/convert/?From=GBP&To=EUR, checked on 02-03-2016
EUR per USD	0,922	http://www.xe.com/currencyconverter/convert/?From=EUR&To=USD, checked on 02-03-2016
GJ per MWh	3,6	

Other parameters	Value	Source
Full load hours solar		
United States	1.400	Conservative estimate Ecofys. We found several online sources claiming 4 to 5 full load solar hours per day across the USA.
United Kingdom	1.000	Estimate Ecofys
Italy	1.300	Estimate Ecofys
France	1.100	Estimate Ecofys
Full load hours waste to energy	4.000	Ecofys estimate. Technically it could be 7,500, but it depends upon the supply of waste and the demand for energy. We choose 4,000 to be on the conservative side. This is assumed to be valid for both electricity as well as
Full load hours onshore wind energy	2.500	Estimate Ecofys (Erik Holtslag september 2015), based on EWEA report 2009
Full load hours offshore wind energy	3.650	Estimate Ecofys (Erik Holtslag september 2015), based on EWEA report 2009