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ASN Bank Carbon Profit and Loss Methodology

version 3.0

asn bank

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Introduction

Since our foundation in 1960 ASN Bank has aimed to achieve a sustainable, fair society. ASN Bank's mission is: 'ASN Bank is a company committed to promoting the sustainability of society and is guided by that commitment in its commercial conduct.' We aim to achieve this mission by increasing sustainability in both our office organisation and our investments. The latter is essential, as the impact we have on a sustainable future through our 'balance sheet activities' – ASN Bank's investments and the investments of the ASN Investment Funds and ASN Asset Management – is many times larger than the influence exercised by our office organisation.

We formulate objectives for the sustainability performance of the office organisation, ASN Bank's banking activities and the activities of the ASN Investment Funds. For the short term, we define quantitative and qualitative goals. We also identify long-term goals to start transition processes that will promote sustainability in the decades to come.

As a sustainable bank, ASN Bank wants to make an active contribution to social transition processes that promote the long-term sustainability of society. We have been formulating long-term goals at the strategic level for some time now. These goals will allow us to incorporate our mission in all our activities. In wording our long-term goals, we base ourselves on the three pillars of our sustainability policy: climate change, human rights and biodiversity. The first long-term goal we have formulated is our climate objective. The problem of climate change is highly urgent in our view, requiring everyone to contribute to a solution. We aim for a maximum contribution by ASN Bank, if only because we want to set an example to other companies and banks.

With regards to climate change, ASN Bank wishes to contribute to both mitigation and adaptation through its investments. We want both our organisation and all of our investments on the ASN Bank balance sheet and under management at the ASN Investment Funds to be carbon neutral by 2030.
This works as follows. Our direct and indirect investments that emit greenhouse gases are offset by our direct and indirect investments that reduce greenhouse gas emissions. Our goal is that the sum of the emissions and the reduction of emissions will be zero in 2030, resulting in a net zero effect on the climate. Our office organisation is already carbon neutral[1]. This goal of becoming net climate neutral is presented as a 'Carbon Profit and Loss Account', in line with financial terminology. Being net climate neutral means that emissions (losses) are equal to avoided emissions (profits).

At first, to measure the progress towards becoming net climate neutral, ASN Bank created a GHG inventory (methodology) for its equity funds, supported by Trucost, and its renewable energy investments, supported by Ecofys. ASN Bank has taken the next step and commissioned Ecofys in 2013 to develop a Carbon Profit and loss Methodology and Tool to footprint ASN Bank's total portfolio. The purpose is to track ASN Bank's progress towards net climate neutrality and to be able to make strategic decisions towards that goal through influencing and reducing the impact of its portfolio.
This document is the outcome of this work and describes the full methodology to create a greenhouse gas inventory of ASN Bank's total portfolio. The current version, which was updated in August 2016, contains the changes that were made since the last version, in April 2015.

In 2015 ASN Bank initiated the Dutch Carbon Pledge and launched the Dutch Carbon Accounting Platform Financials (PCAF) together with a group of eleven leading Dutch financials at the Climate Summit in Paris. In this document, they called on negotiators to pay due regard to the role that investors and financial institutions can play in the achievement of climate change objectives.[2]

Furthermore in 2015 de Volksbank, formerly known as de SNS Bank, started working with the ASN Bank Carbon P&L Methodology and in 2016 de Volksbank adopted the ambition to be carbon neutral by 2030 as well. Finally ASN Bank initiated the foundation of the Platform Carbon Accounting Financials (PCAF). Eleven Dutch financial institutions joined. They will jointly continue the development of the methods used to measure the impact that their investments and loans have on the climate. The platform members are: ABN AMRO, ACTIAM, APG, ASN Bank, FMO, MN Services, PGGM, de Volksbank, Stichting Pensioenfonds Metaal en Techniek (PMT), Stichting Pensioenfonds van de Metalektro (PME) and Triodos Bank.

[1] ASN Bank's office is carbon neutral for scope 1 and scope 2 and part of scope 3 (transport by train and aircraft). Scope 1 emissions are direct greenhouse gas emissions by our own activities, such as gas consumption in the kitchen. Scope 2 emissions are indirect greenhouse gas emissions resulting from our own activities, such as the generation of electricity we use and the heat we take from district heating. Scope 3 emissions are the emissions of greenhouse gases in our supply chain, such as the paper we use and the investments we make.

[2] nieuws.asnbank.nl/download/134903/dutchcarbonpledge-2.pdf

This methodology on the GHG footprinting of investments is in line with standards from the GHG Protocol, European Bank for Reconstruction and Development (EBRD) and UNEP Finance Initiative. It has been developed by:

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With valuable contribution of various colleagues of ASN Bank & Ecofys.

Definitions

In this methodology the following definitions are used:

Net climate neutral
Net climate neutrality is achieved when the absolute amount of greenhouse gas emissions caused by the direct operations and investments of the ASN Bank is in balance with (equal to) the absolute amount of greenhouse gas emissions avoided by ASN Bank investments.

Carbon profit and loss account
A carbon profit and loss account is a way to present the carbon emissions and avoided emissions of a company in line with financial terminology. The carbon emissions are seen as losses and presented as such in the carbon profit and loss account. The avoided carbon emissions are seen as profits. A company and its operations are net climate neutral when losses are equal to profit.

Investment
In this methodology the term "investment" (unless explicitly stated otherwise) is used in the broad sense: 'putting money into activities or organisations with the expectation of making a profit'. This in contradiction to the more narrow definition sometimes used within ASN Bank: as one of several financing options, besides e.g. debt finance, equity finance. Most forms of investment involve some form of risk taking, such as investments in equities, debt, property, projects, and even fixed interest securities which are subject to inflation risk, amongst other risks.

CO_2 equivalents (CO_2eq)
A carbon dioxide equivalent (CO_2eq) is a quantity that describes, for a given mixture and amount of greenhouse gas, the amount of CO_2 that would have the same global warming potential (GWP), when measured over a specified timescale (generally, 100 years).

Greenhouse Gases (GHG)
Gases in the atmosphere that absorb and emit radiation. This process is the fundamental cause of the greenhouse effect. The GHG Protocol (http://www.ghgprotocol.org/) recognizes six greenhouse gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), chlorofluorocarbons (CxFyClz), sulfur hexafluoride (SF6) and ozone (O_3). In the Carbon Profit and loss account, all emissions are converted to CO2 equivalents, or CO_2eq, using the conversion ratios determined by the Intergovernmental Panel on Climate Change (IPCC).

Portfolio
A portfolio is a collection of investments, which can largely be categorized into four segments:
- Equity investments;
- Debt investments;
- Project investments/finance; and
- Managed investments and client services.

Avoided emissions
Avoided emissions are emissions that are avoided outside of a company's scope 1, scope 2, and scope 3 inventories and require a project accounting methodology. Any estimates of avoided emissions must be reported separately from a company's scope 1, scope 2, and scope 3 emissions, rather than included or deducted from the scope 3 inventory. For ASN Bank avoided emissions occur when investing in energy savings and renewable energy.

Essentials of GHG accounting

In this paragraph, the basic principles of greenhouse gas accounting for investments and the corresponding methodology are explained.

Organisational boundaries and consolidation approach

As described in the GHG Protocol[3], the organisational boundaries have to be defined in order to determine which parts of the emissions from the organisation and its value chain need to be included in the carbon footprint of a company. Furthermore, the selection of a consolidation approach affects which activities in the company's value chain are categorized as direct emissions and as indirect emissions (Scope 1, 2 and 3 emissions: see next paragraph). In line with the GHG Protocol Corporate Standard [WRI & WBCSD; 2004] ASN Bank has chosen for an operational control approach, which means that ASN Bank accounts for all the emissions from operations over which it has control, either as Scope 1 (direct) or Scope 2 (indirect) emissions.[4]

Emissions caused by ASN Bank

As stated in the GHG Protocol Corporate Value Chain Standard (Scope 3) [WRI & WBCSD; 2011] an organisation should identify its direct and indirect emissions:

- Direct GHG emissions: from sources that are owned or controlled by ASN Bank;
- Indirect GHG emissions: are a consequence of the activities of ASN Bank, but occur at sources owned or controlled by another entity.

The GHG Protocol categorizes these emissions caused by the organisation into three broad scopes. Considering the consolidation approach (control approach) selected by the ASN Bank these scopes are as follows:

Scope 1: All direct GHG emissions by the ASN Bank organisation (natural gas and fuel use by their car fleet);
Scope 2: Indirect GHG emissions by the ASN Bank organisation (consumption of electricity, heat & steam);
Scope 3: Other indirect emissions not covered in Scope 2 like purchased products/services, waste disposal or in case of ASN Bank mostly emissions associated with their investments.

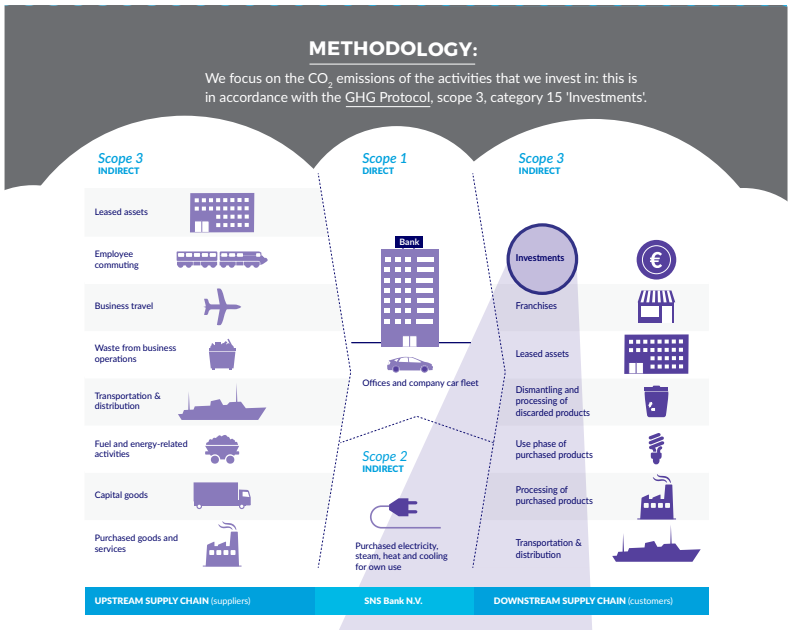


Figure 1: An overview of the different scopes within the carbon footprint.

[3] The Greenhouse Gas (GHG) Protocol, developed by World Resources Institute (WRI) and World Business Council on Sustainable Development (WBCSD), sets the global standard for how to measure, manage, and report greenhouse gas emissions.

[4] Other consolidation approaches are equity share and financial control. In the equity share approach, a company accounts for GHG emissions from operations according to the share of equity in the operation. In the financial control approach, a company accounts for GHG emissions from operations over which it has financial control. This means it does not account for GHG emissions from operations in which it owns an interest but does not have financial control. Operational control is the most frequently used consolidation approach. The operational control approach was selected for ASN Bank because it allocates the emissions most accurately to the parties which are in a position to influence them. In addition, the operational control is flexible enough to do justice to the activities of a bank. Using the operational control approach, conventional investments, over which the bank has limited control, can be included under indirect emissions, whereas more strategic investments, such as separate entities which manage funds on the bank's behalf, can be included under direct emissions.

The GHG Protocol Corporate Value Chain Standard provides guidance for reporting Scope 3 emissions. This also includes the emissions of investments, which are reported under Scope 3 category 15 Investments[5]. In general, category 15 is a very important category for banks. For example, according to a 2008 Rainforest Action Network report, the annual financed emissions of Canadian banks with large financing relationships with fossil fuel companies were about 100 times larger than the direct and indirect emissions from their operations (Rainforest Action Network, Bankrolling Climate Disruption: The Impacts of the Banking Sector's Financed Emissions, October 2012).

Other sources report emissions to be over 1000 times larger (World Development Movement, *RBS carbon emissions up to 1,200 times higher than reported figure*, August 2013). This is also supported by the results of the ASN Bank Carbon Profit and loss Methodology, which shows that the Scope 3 emissions are about 1,000 times higher than its Scope 1 and 2 emissions.

Chapter 2 of this report provides a more detailed description of the methodology of accounting for the GHG emissions of the ASN Bank. The methodology is in line with the requirements of the GHG Protocol.

According to the GHG Protocol, emissions from investments should be attributed to ASN Bank based on ASN Bank's proportional share of the investment. This also means that ASN Bank will not account for GHG emissions that are indirectly avoided by its activities (for example through lobbying for improved national policies on renewable energy or energy savings) if no financial share is involved. Because investment portfolios are dynamic and can change frequently throughout the reporting year, ASN Bank identifies investments by choosing a fixed point in time, such as December 31 of the reporting year.

Emissions avoided by ASN Bank

ASN Bank's goal is to be net climate neutral in 2030, this includes own operations and investments, loans, mortgages, bonds and equity investments. This means that investments in projects that avoid emissions by the use of renewable energy or energy savings measures must be equal to the emissions caused by ASN Bank. This is depicted in Figure 2.

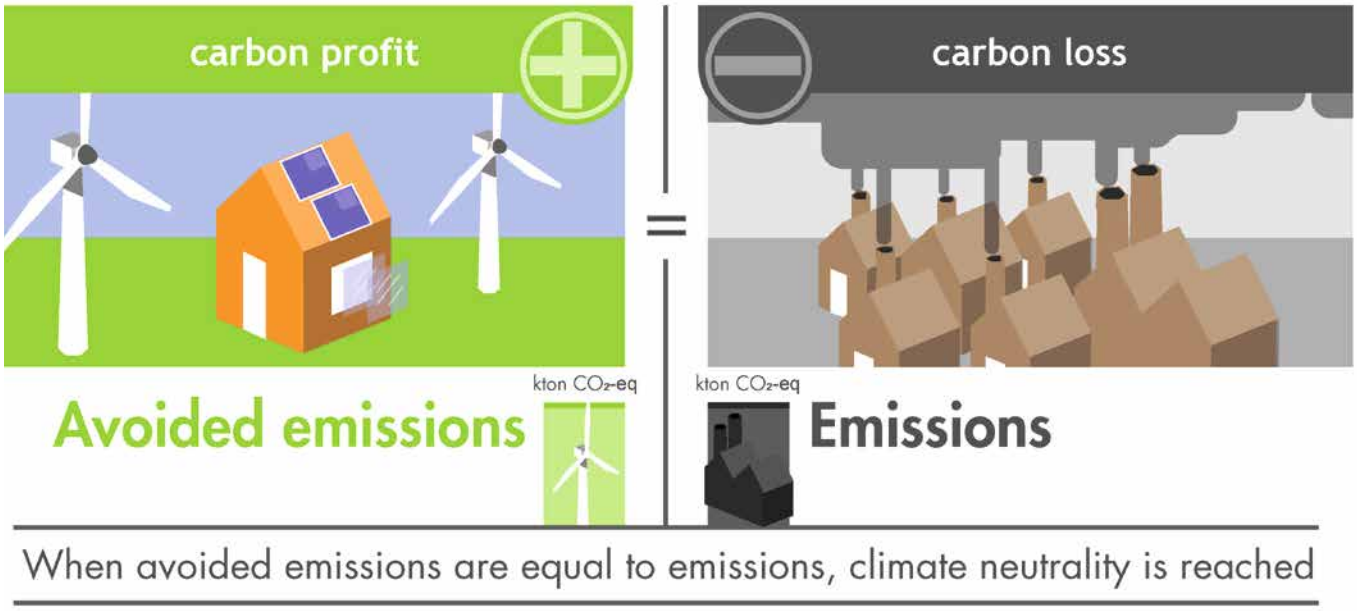


Figure 2: Climate neutrality is reached when the avoided emissions equal the emissions.

[5] www.ghgprotocol.org/files/ghgp/Chapter15.pdf

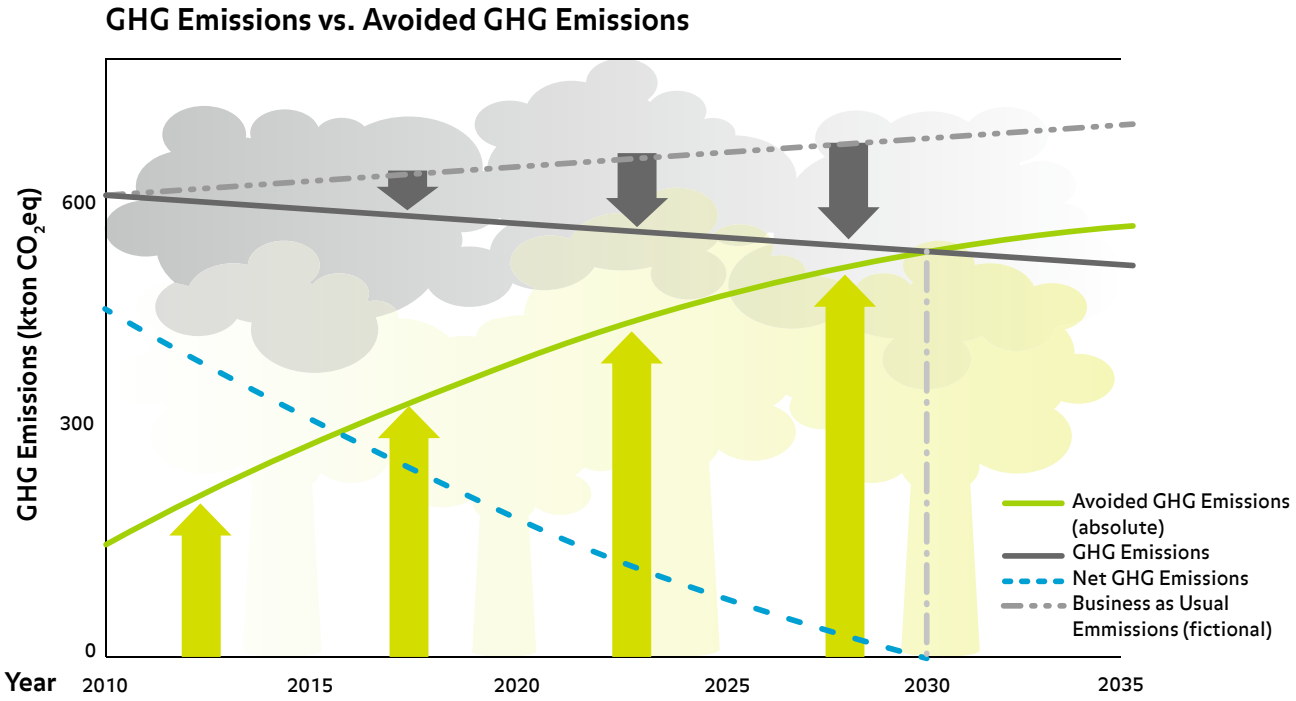
Within the GHG Protocol standards, emission reductions outside of a company's scope 1, scope 2, and scope 3 inventories are called "avoided emissions". These emissions require a project accounting methodology and can be reported within the full GHG footprint of an organisation, but must be reported separately from Scope 1, 2 and 3 emissions.
For ASN Bank avoided emissions occur when investing in energy savings and renewable energy. Figure 3 shows a fictional pathway towards net zero GHG emissions in 2030.

Units used by the ASN Bank in GHG accounting

There are different units available for expressing quantities of CO_2eq. The ASN Bank has decided to use the following:

- In its annual report the ASN Bank uses ktonne[6] CO_2eq in its Carbon Profit and Loss account;
- For regular internal control of the Carbon Profit and loss account to steer towards climate neutrality, tonnes of CO_2eq is used, and
- Most emission factors in the Carbon Profit and loss account are expressed in kg or even grams of CO_2eq per activity (i.e. g CO_2eq/kWh for electricity consumption and kgCO_2eq/m^3 of natural gas consumption or kgCO_2eq/litre of diesel consumed).

The average household in the Netherlands emits 8,15 tonne CO_2eq annually. 1 kilotonne CO_2eq is equivalent to the annual CO_2eq emissions of approximately 127 households.



This figure is a fictional representation of the pathway towards zero net GHG emissions. The purpose of this graph is to show the path we expect to follow, not to provide a founded forecast.

Two movements can be observed: (1) GHG emissions are decreasing and (2) avoided GHG emissions are increasing. As a result, emisssions and avoided emissions will break even in 2030. At this point, net climate neutrality is achieved with net GHG emissions equalling zero.

Figure 3: Visualisation of balance between GHG emissions and GHG emission reductions. (www.asnbank.nl/klimaatneutraal)

[6] Ktonne = kilotonne = 1,000 tonnes

Carbon Profit and Loss Account

The results from the ASN Carbon Profit and Loss Tool are presented in the form of a profit and loss account, analogous to accounting in the financial sector. The emissions from the ASN Bank are shown as the losses for the climate, whereas the avoided emissions are seen as profits for the climate. In order to become net climate neutral, carbon losses should be equal to carbon profits, see Figure 4.

Figure 4: asn bank achieves net climate neutrality when carbon loss (emissions caused) equals carbon profit (emissions avoided)

Accounting and design principles

The methodology is designed following basic accounting principles that will be further explained in this paragraph:

- Compatibility with existing and future standards;
- Consistency between different types of investment;
- Prevention of double counting;
- Workability and level of data quality;
- Reporting absolute emissions;
- Attributing emissions proportionally;
- Annual accounting and reporting of emissions;
- Target setting;
- Prudence.

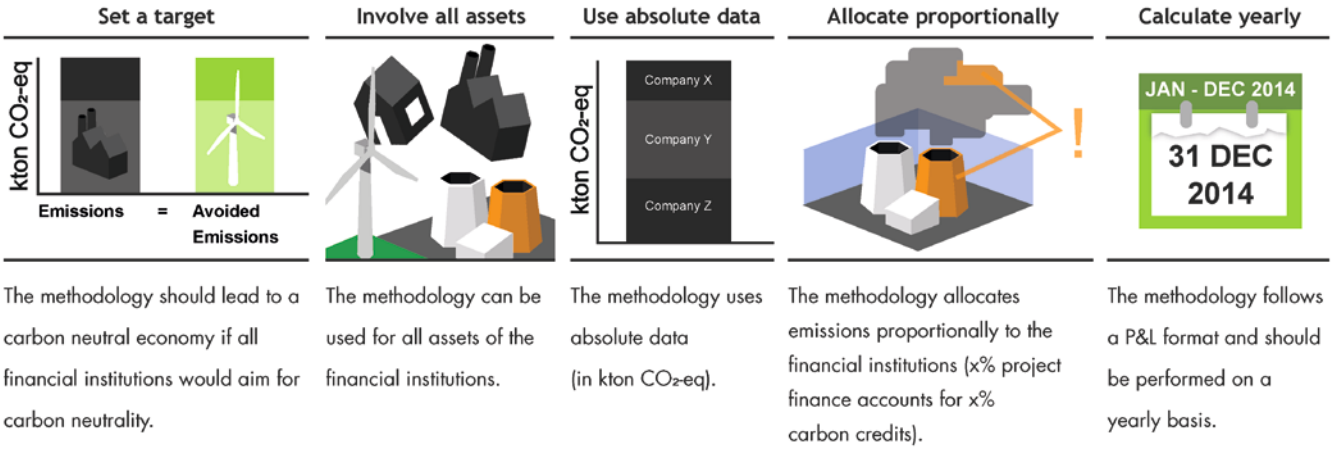


Figure 5: Design principles of the asn bank carbon profit and loss methodology

Compatibility

For the credibility of the methodology, it is important that it is in line with existing accounting initiatives like those of the Greenhouse Gas Protocol's Corporate Value Chain Standard, European Bank for Reconstruction and Development (EBRD) and United Nations Environment Programme Finance Initiative (UNEP FI).

In 2014 the Greenhouse Gas Protocol and UNEP FI partnered to develop guidance for the financial sector to account for greenhouse gas (GHG) emissions associated with lending and investments and to track emission reductions over time [WRI & WBCSD, 2011]. This initiative was recently strengthened by the 2 Degrees Investing Initiative and renamed the Portfolio Carbon Initiative. The guidance is tailored to asset owners and banks in three work streams: Asset Owners, Banks and Risk Management. The initiative has resulted in a practical framework for assessing carbon asset risks and a report describing best practices for different asset classes.

Several International Financial Institutions (IFIs), guided by the EBRD, have also been working together to agree on a harmonised approach for project level GHG accounting [EBRD, 2012].[7] This approach covers methodology issues, commitments, reporting and cooperation between IFIs. The purpose was to establish minimum requirements in undertaking this work, all of which each IFI can optionally exceed with additional considerations and reporting. Even though there is no final approach yet, they have provisionally agreed on the following principles:

- Each IFI reports on mitigation projects;
- Portfolio-wide net emissions are optional;
- Estimation of gross GHG emissions based on established methodologies;[8]
- Definitions, assumptions and methodologies must be documented;
- Scope 1 & 2 emissions are included in tonnes of CO_2eq;
- Scope 3 emissions included only if their contribution is significant, this should be clearly stated in procedures and results. According to the harmonised approach from the EBRD, the development and mitigation contribution of projects, net (or "relative") GHG emissions against a baseline, should be assessed as follows:

[7] The IFIs in this initiative are the Agence Française de Développement (AfD), the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), the Inter-American Development Bank (IDB), the International Finance Corporation (IFC), KFW Development Bank, the Nordic Environment Finance Corporation (NEFCO), and the World Bank (WB).

[8] Methodologies such as: GHG Protocol, Clean Development Mechanism methodology, Verified Carbon Standard, Gold Standard and the EU Emissions Trading Scheme, ISO 14064 (Part 1 and 2), or other international standards.

- The net GHG emissions contribution that a project is expected to achieve is estimated on an annual basis for a representative year once it is complete and at normal operating capacity;
- Net emissions are calculated compared to a baseline scenario. This reference scenario may be either a "without project" or "alternative" scenario that reflects the most likely alternative means of achieving the same project outcomes or level of service;

PRI's Montréal Pledge and the Portfolio Decarbonization Coalition

The PRI Montréal Pledge was launched on 25 September 2014 at PRI in Person in Montréal, and is supported by the Principles for Responsible Investment (PRI) and the United Nations Environment Programme Finance Initiative (UNEP FI).

Overseen by the PRI (Principles for Responsible Investments), it has attracted commitments from over 120 investors with over US$10 trillion in assets under management, as of the United Nations Climate Change Conference (COP21) in December 2015 in Paris. Support for the Montréal Carbon Pledge comes from investors across Europe, the USA, Canada, Australia, Japan, Singapore and South Africa. The Montréal Carbon Pledge allows investors (asset owners and investment managers) to formalise their commitment to the goals of the Portfolio Decarbonization Coalition, which mobilises investors to measure, disclose and reduce their portfolio carbon footprints. Over US$100 billion has been committed to this as of COP21. In September 2015 ASN Bank signed the Montréal Carbon Pledge, committing itself to annually measuring and disclosing the carbon footprint of its investment and lending portfolios. http://montrealpledge.org

The Portfolio Decarbonization Coalition aims to move financial markets to catalyse the decarbonisation of the economy by decarbonising their portfolios. This includes measuring and disclosing the climate impact of their investments. In addition, the coalition aims to assemble a group of investors willing to commit to decarbonizing at least $100 billion in institutional equity investment before the Conference of Parties (COP21) in Paris at the end of 2015. http://unepfi.org/pdc/

- As net GHG emissions may be a subcomponent of a larger project, the boundary can be limited to the single activity, facility, or infrastructure resulting in net GHG emissions.

The principles of the GHG Protocol, UNEP FI & EBRD as described above, provided ASN Bank and Ecofys with a solid basis to develop this methodology in line with these initiatives.

Consistency

In order to obtain a valuable and compatible methodology, providing comparable and credible results, it is very important that the calculation methodology is consistent across the entire portfolio of investments. Furthermore, ASN Bank will track emissions over time in order to identify trends and assess the progress towards net climate neutrality. For this reason, the consistent application of accounting approaches, the inventory boundary, emission factor sources and calculation methodologies is essential. If there are changes to the inventory boundary (e.g., inclusion of previously excluded activities), methods, data, or other factors affecting emission estimates, they need to be transparently documented and justified, and may warrant recalculation of base year emissions.

An important part of a consistent methodology is applying consistent (minimum) boundaries for emissions to be included. Considering these boundaries, Scope 1 & 2 emissions of all investments are always included (in line with the GHG Protocol). Scope 3 emissions of an investment are only included if the following main conditions are met:

1. The purpose of the investment of ASN Bank is to contribute to the main activities within Scope 3 of the investee. (Follow the money principle)[9]
2. There is a significant estimated contribution to the total emissions of ASN Bank and its investments;
3. ASN Bank can, or chooses to, actively influence these Scope 3 emissions through its investment.

Within the portfolio of ASN Bank, particularly water boards, housing associations, government loans and investment funds are examples of investments in which Scope 3 emissions are taken into account.

[9] For example: ASN Bank will lend money to housing associations, to enable the housing association to fulfil their social role in developing, building and maintaining affordable houses. The purpose is not for ASN Bank to spend this money on behalf of the housing association. What matters is the purpose of ASN Bank's investment.

Example of included Scope 3 emissions: Water boards

The ASN Bank invests in water boards, called "*waterschappen*" in Dutch, which are regional governmental bodies dedicated to water management. In Q2 2016, ASN Bank had approximately 268 million euros invested, which is 2,2% of the Bank's total portfolio. The water boards have an extensive carbon moni-toring system and report on their Scope 1, 2 and 3 emissions every couple of years. This report, called the "*klimaatmonitor waterschappen*", is used by ASN Bank to calculate the specific emissions for each water board. Scope 3 emissions are included for water boards because they make up almost half of their total footprint. Based on the share of the balance financed by ASN Bank, these emissions are allocated to ASN Bank's Scope 3 carbon footprint.

Prevention of double counting

When including the Scope 3 emissions of investments, another issue arises, which is the prevention of double counting. This could occur when the Scope 3 emissions of one investment overlap with the (Scope 1, 2, or 3) emissions of another investment. An example is when the emissions reported by a municipality also include emissions from its water board in Scope 3. In that case the emissions from the water board could be double counted if ASN Bank invests in the municipality and in the water board.

Example of double counting: government bonds

A potential source of double counting in the calculation methodology is the approach used for the calculation of emissions from government bonds. The method attributes emissions from all sectors to the government based on the government's spending in the sectors. Therefore, it is possible that emissions from a company are attributed to ASN Bank through government bonds, while these same emissions are also attributed to ASN Bank because ASN Bank distributed a loan to this company. However, the impact of double counting is generally low, and therefore, based on the prudence principle, ASN Bank chooses to include these emissions.

Another risk for double counting exists when the financial institution allocates emissions to itself because it financed a project, but another actor, for example the operator or the licensing authority, allocates these emissions to itself as well. In that case, both entities allocate the emissions to themselves and double counting occurs.

It is very difficult to rule out double counting completely. This methodology aims to avoid double counting as much as possible by choosing the correct emission factor and by being as transparent as possible.

Workability & data quality

For workability the following basic principles apply:

- The calculation method should be clear and transparent;
- The outcomes should be easy to interpret;
- The update should take as little effort as possible.

Some of the main challenges during the implementation of the methodology are data quality and data availability. In other current initiatives, IFIs also demand more guidance on data collection, assessing data quality and the use of secondary data. In our methodology, we aim for high workability in the short term and less uncertainty (and improved and higher data quality) in the longer term.

The reliability of the carbon footprint calculation depends on the quality of the data sources used. The quality of the available data usually varies and insight into the data quality is valuable for assessing uncertainties in the outcome and to work efficiently to improve data quality over time.

To obtain insight into the quality of the data used, Ecofys developed a methodology to quantify the level of data quality. A score of 1 to 4 is given for the data quality. This methodology is already used in several footprint calculations and is highly valued by users, since:

1. It supports the transparency of the calculations and the presentation to internal and external stakeholders;
2. It helps to monitor and improve the data quality. Targets can be set to improve the quality within the short or long term.

The figure on the right shows an example of how the current data quality scores, and the options for future improvements can be visualized.

Detailed: Bottom up (less uncertainty)

4. Project specific / primary data & calculation method
3. Debtor specific calculation method
2. 'Average data method' sector specific or proxy data as the basis for calculation; on basis of material & energy flows or economic/financial parameters.
1. Missing data or estimate with very limited support

Generic: Top down (more uncertainty)

Within current initiatives it is suggested that a significant threshold value in terms of GHG emissions could be used to help focus on data collection. Within financed emissions, IFIs suggest to apply the 80-20 rule[10]. They recommend to use average sector data as a fairly reliable substitute to cover the last 20% of emissions. Accordingly, ASN Bank should prioritise improving the data quality for its investments with the largest GHG impact. A quick scan can be made of the investments of the bank to assess which investments are likely to cause the most emissions.

Example of improved data quality: NRW.BANK Green Bond

NRW.BANK, the development bank for the German state of North Rhine-Westphalia, has issued Green Bonds since 2013 of to actively support the climate protection policy of the state. The proceeds of these green bonds are used to finance environmentally friendly projects in North Rhine-Westphalia in the fields of water (river restoration or water management) and energy (energy efficiency, renewable energies). In 2013, an estimate of their investments combined with emission factors was used to determine the climate impact of the NRW.BANK's Green Bonds. In 2015, the NRW.BANK started reporting on their climate impact providing a corresponding emission factor investors could use. The reporting was further developed in 2016 and has led to a detailed reporting based on project specific calculations. These improvements in reporting are the result of investor's demand from the market and, consequently, the reporting guidelines that are being developed, like the Green Bonds Initiative and the Climate Bond standard. As a result the data quality for the NRW.BANK's Green bonds has increased from 2 (average data method) to 3 (debtor specific data method).

Reporting absolute emissions

In addition to relative emissions, e.g. emissions per euro invested, financial institutions should also report their absolute emissions. Reporting relative emissions can still lead to an absolute increase in emissions if institutions continue to grow. Only by tracking and finally lowering the absolute emissions of financial institutions can we strive for a maximum contribution to limiting climate change to 2°C.

Attribute emissions proportionally

Emissions from projects and investments should be attributed to the financial institution according to the proportional share that is financed by the financial institution. This means that if a financial institution only finances 10% of a wind park, only 10% of the avoided emissions from that wind park can be allocated to the financial institution.

Annual accounting and reporting of financed emissions

Financed emissions should be accounted for at least on a yearly basis. Reporting is recommended. If a company chooses to report, it is recommended to also do so on an annual basis. Changes in the scope of accounting and reporting should be carefully monitored and reported over the years.

Target setting

Sustainability targets are often based on achievable ('realistic') goals purely formulated from the companies view. With regards to CO_2eq emissions, ASN Bank decided to set an aspirational goal based on what is needed according to climate scientists instead of what seems to be achievable for ASN Bank.
According to climate science, greenhouse gas emissions need to drop steeply in the next decades to limit global warming to a maximum of 2°C. In stricter scenarios, such as the 1.5°C scenario which has received a lot of attention after the COP21 in Paris at the end of last year, emissions need to start dropping earlier and even turn negative at a certain date. Rogelj et al. (2015) mention an "an earlier transition to net zero carbon emissions worldwide, to be achieved between 2045 and 2060". By setting a target that puts the ASN Bank on the path of becoming net climate neutral already in 2030, ASN Bank is setting a leading example of how financial institutions can actively participate in the decarbonisation of the global economy and in limiting the chances of irreversible climate change.

[10] Roughly 80% of the effects (emissions) come from 20% of the causes (activities)

Prudence

Financed emissions are always accounted for with the principle of prudence in mind. This means in practice that for ASN Bank, being the first retail bank to implement such a methodology for all investments, the preference is to account emissions and avoided emissions in a conservative manner. If the methodology runs short or good data are not available we choose for the methodology or data that are most negative for our performance. If the methodology and/or the data quality improve this should lead to better performance, not worse. This helps to prevent that during the development of the methodology in the coming years that the past performance was actually less positive than calculated.

Calculation methodology

In this chapter the calculation methodology is presented for:

1. ASN Bank's direct Scope 1 emissions;
2. ASN Bank's indirect Scope 2 emissions;
3. ASN Bank's indirect Scope 3 emissions;
4. Emission reductions through energy savings (EE) and renewable energy

Methodological changes since the last version (Version 2.0, April 2015)

The following major methodological changes have been made since the last version of the methodology in April 2015:

- For mortgages, a higher data quality was achieved by using a database from RVO, containing energy labels of most houses in the Netherlands. This increased the coverage of energy labels significantly, because indicative energy labels are available for most houses.
- The methodology for government bonds is changed. Now, a country-specific approach is used in which emissions from all sectors within a country are attributed to the government based on its spending per sector. Furthermore, government emissions are attributed by share of financed debt rather than share of government spending.
- For the category other loans, a sectoral approach is added to increase workability for large amount of relatively small loans to companies active in different sectors.

General outline

In the next paragraphs the emission factors used within the footprint calculations are presented. In each following paragraph the method for calculating the GHG emissions of different types of emission categories is presented. This presentation is done in a consistent way by using a table structure. In the paragraph below an empty table is shown with an explanation of all columns and rows.

GHG emissions for some types of investment can be calculated by using more than one calculation method with different levels of data quality (from top-down (data quality level 1) to bottom-up (data quality level 4). In the heading of each table the calculation method number and data quality level is presented. Also the proportional share that is appropriate for calculating the GHG emissions to be accounted to ASN Bank is given in this heading of each table.

Table 2: Example of table structure
Type of investment: Names of sector(s) / debtor / projects included
Calculation method number: x of N
Data quality: Y (1-4)
Proportional share accounted to ASN Bank: X% of balance of organization / value property /...

The activities included in part of the Carbon profit and loss account of ASN Bank	*Unit*	*Source*	*Calculation*
Direct energy use (Scope 1) of sector(s) / debtor / project initiation	0.95	Data sources are given	Calculation formula is presented
Indirect energy use (Scope 2) of sector(s) / debtor / project initiation	0.89		
Other indirect emissions (Scope 3) only if contribution is significant	0.85		
Avoided emissions by the use of renewables or energy savings measures	0.69		

Emissions caused by ASN Banks offices

ASN Bank itself wants to operate as sustainable as possible. It therefore places strict demands on itself in terms of its impact on the environment. The office activities result in emissions of CO2eq from the (indirect) use of fossil fuels.

This is caused primarily by natural gas consumption and the transport of employees (Scope 1) and heat and electricity used at the office (Scope 2) and the use of paper (Scope 3).

	2015	2014	2013	2012[6]	2011
CO_2 emissions 1: tonnes					
CO_2 emissions (Scopes 1 and 2)	160	153	183	138	140
CO_2 emissions (Scopes 1 and 2): tonnes per FTE 2	1.14	1.15	1.58	1.38	1.61
CO_2 emissions (Scope 3) [3]	158	160	-	-	-
Energy consumption					
Electricity: kWh [4]	320,705	296,999	314,723	314,696	198,126
Electricity: kWh [4] per FTE [2]	2,285	2,235	2,705	3,139	2,284
Gas [5]: m³	18,141	21,867	33,903	34,709	27,053
Gas [5]: m³ per m²	6	7	11	14	13
Paper consumption in kilograms					
Total paper consumption	238,254	244,032	288,276	215,721	249,766
Paper consumption per client account	0.29	0.31	0.37	0.28	0.33
Water consumption					
Water: m³	754	1.166	786	642	677
Water: m³ per FTE [2]	5.4	8.8	6.3	6.3	7.8
Waste					
Paper waste: tonnes	12.2	13.6	12.8	19.3	13.0

Source: ASN Bank, 2015.

In this methodology these emissions fit in Scopes 1, 2 and 3.
The paragraphs below show the rationale for these calculations.

Scope 1: Direct emissions of ASN Bank

Included in scope 1: Direct energy use of ASN Bank offices & used fuel of car fleet
Calculation method: 1 of 1
Data quality: 4 (ASN Bank specific data & calculation method)
Proportional share accounted to ASN Bank: 100%

Activities included in Scope 1 of ASN Bank	*Unit*	*Source*	*Calculation*
Natural gas (fossil or biogas) used by ASN Bank	[m³]	ASN Bank	100% accounting ASN Bank * [A1 m³ natural gas* EF Natural gas + B1 liter diesel * EF Diesel +
Fuel used by car fleet of ASN Bank	[litre]	ASN Bank	B2 liter petrol * EF Petrol…]

Scope 2: Indirect emissions of ASN Bank

Included in scope 2: Indirect energy use of ASN Bank offices Calculation method: 1 of 1
Data quality: 4 (ASN Bank specific data & calculation method)
Proportional share accounted to ASN Bank: 100%

Activities included in Scope 2 of ASN Bank	*Unit*	*Source*	*Calculation*
Electricity consumed by ASN Bank	[kWh]	ASN Bank	100% accounting ASN Bank * [C1 kWh fossil electricity * EF NL Supply Mix Fossil+
Heat consumed by ASN Bank	[GJ]	ASN Bank	C2 kWh green electricity * EF green electricity+ D1 GJ heat * EF district heating]

Scope 3: Other indirect emissions of ASN Bank besides investments

Scope 3 in the GHG Protocol consists of 15 categories. "Category 6: Business travel" and "Category 7: Commuting" are the most important Scope 3 categories besides investments.[11]

Included in scope 3: Indirect emissions use of ASN Bank offices besides investments
Calculation method: 1 of 1
Data quality: 4 (ASN Bank specific data & calculation method)
Proportional share accounted to ASN Bank: 100%

Activities included in Scope 3 of ASN Bank	*Unit*	*Source*	*Calculation*
Employee commuting (vehicles outside the car fleet of ASN Bank: petrol car, diesel car, train, bus)	tonne CO_2eq by car, train and bus and tram	ASN Bank	100% accounting ASN Bank * [E1 type of transport * EF type of transport 1 + E2 type of transport * EF type of transport 2 + E3 type of transport * EF type of transport 3...]
Business travel (vehicles outside the car fleet of ASN Bank: petrol car, diesel car, train, taxi, airplane)	tonne CO_2eq by airplane	ASN Bank	100% accounting ASN Bank * [F1 type of transport * EF type of transport 1 + F2 type of transport * EF type of transport 2 + F3 type of transport * EF type of transport 3...]

[11] In general, Category 15: Investments is a very important category for banks. For example, according to a 2008 Rainforest Action Network report, the annual financed emissions of Canadian banks with large financing relationships with fossil fuel companies were about 100 times larger than the direct and indirect emissions from their operations (Rainforest Action Network, Bankrolling Climate Disruption: The Impacts of the Banking Sector's Financed Emissions, October 2012).

Emissions caused by ASN Banks investments

In Scope 3, the emissions of investments are reported in Scope 3 category 15: Investments. In this category four types of investments are distinguished:

1. Equity investments;
2. Debt investments;
3. Project finance; and
4. Managed investments and client services.

In the following paragraphs the GHG accounting methodology for these type of investments will be detailed for ASN Bank.

Equity investments

Equity investments: Investment funds.

The yearly absolute GHG emissions of all equity investments are derived from Trucost data based on a specific calculation method [http://www.trucost.com/methodology]. Trucost has developed a comprehensive approach to calculate environmental impacts across operations, supply chains and investment portfolios. At the heart of the process is Trucost's environmental profiling model which accounts for 464 industries worldwide and tracks over 100 environmental impacts. The model also examines the interactions and cash flows between sectors in order to map each sector's supply chain.

In the table below this method is outlined on a high level.
Calculation method: 1 of 1
Data quality: 3 (Investment specific calculation)
Proportional share accounted to ASN Bank: 100% of all funds

Activities included in Scope 3 (category 15) of ASN Bank	*Unit*	*Source*	*Calculation*
Scope 1, 2 & 3 emissions of listed companies in investment funds	[tonne CO_2eq]	ASN Bank / Trucost	[market value investment ASN Bank in listed company/ market cap listed company] * [Y tonne CO_2eq of listed company according to Trucost]

ASN Bank uses the direct (scope 1) and the first tier indirect (part of scope 2 & 3) GHG emissions of a listed company. The carbon footprint of the fund is the sum of these contributions. The carbon first tier indirect (tonne CO_2eq) emissions consist of CO_2 and other greenhouse gases emitted by the direct suppliers to a company. The most significant sources are typically purchased electricity (Scope 2 of the GHG Protocol) and employees' business air travel (reference: GHG Protocol). This calculation, for workability and data availability reasons, does not yet take into account the capital structure of the invested listed company. In practice this could mean that ASN Bank accounts for a larger emission share than would be the case than if the capital structure would be taken into account.

Debt investments

Debt investments are categorized in five types (ASN Bank specific) with a specific calculation methodology for each type of investment:

i. Government bonds
ii. Mortgages
iii. Housing corporations
iv. Green bond and sustainability bonds
v. General loans

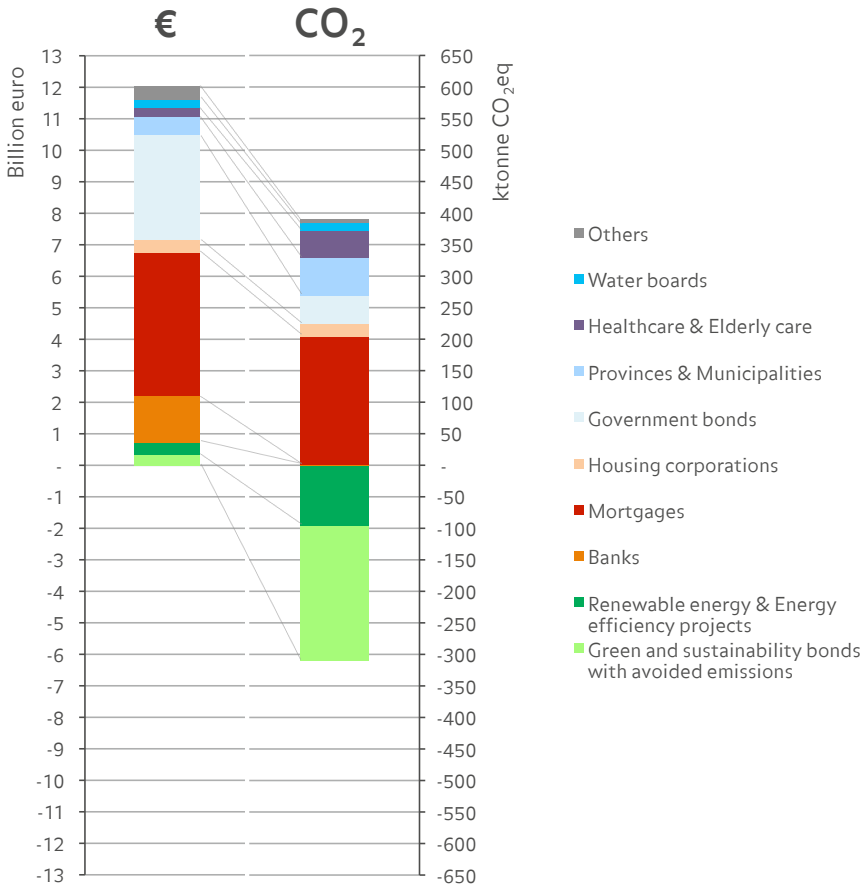


Figure 6. The financial balance translated to the carbon profit and loss account with q2 2016 numbers.

Debt investments category I: Government bonds

The annual GHG emissions of government bonds are calculated by taking the proportional share of the Scope 1, 2, and 3 emissions of the public administration of that specific nation. We believe that by including scope 3 emissions, the methodology accounts more accurately for the emissions that are actually caused by the purchase of government bonds, applying the "follow the money principle"[12]. We assume that the money from these bonds is spent by the government to finance the government's activities, such as education, healthcare and construction. These activities would cause the scope 3 emissions of the government.

The direct emissions (Scope 1) of the governments are retrieved from Eurostat, from the sector "Public administration and defence; compulsory social security". We believe that this sector matches best with the government's activities. This is supported by Eurostat's publication on NACE codes, which are used to classify economic activities in the European Union. On page 286 it mentions the following:
"This section [i.e. sector Public administration…] includes activities of a governmental nature, normally carried out by the public administration."

The indirect (Scopes 2 and 3) emissions of the government are calculated using input-output tables per country, which are also obtained from Eurostat. These tables contain the input of a certain sector in another sector of a national economy, expressed in monetary terms. Input here refers to the deliveries of products and services of a certain sector to another sector, expressed in monetary terms. Since we are interested in the emissions of the government, we use these input-output tables to determine the money that flows from the government to the other sectors of the economy, e.g. how much of the total economic output in the education sector in the Netherlands has been enabled by the Dutch government?

The input-output tables are used to determine the share of the government sector's spending in the output of each of the sectors of the economy. This share is then multiplied with the emissions of that sector. The emissions for each of these sectors are then summed to arrive at the total indirect emissions from the government. For example, the government's share of the output from the power sector multiplied by the emissions of the power sector would be the indirect emissions of the government.[13]

[12] After all, the emissions caused by the money provided to the government is not only caused by the government's own operations, but also by how the government spends its money, e.g. healthcare, education and defence.

[13] The power sector would be the "Electricity, gas, steam and air conditioning supply" sector in Eurostat and the government sector would be the "Public administration and defence; compulsory social security" sector in Eurostat. The government's spending in the power sector could include the purchase of electricity (the government's Scope 2 emissions) as well as e.g. subsidies to the power sector, which would be the government's Scope 3 emissions.

Example calculation for the Dutch government bond

Example calculation for the Dutch government bond

The central government of the Netherlands has a debt of €403.7 billion in 2015. The direct emissions of the Dutch government are extracted directly from Eurostat by summing the emissions of economic activity (NACE) category O (Public administration and defence; compulsory social security). The following table shows the direct emissions of the Netherlands:

Direct emissions by the Dutch government	
Carbon dioxide	2.163.698
Methane (tonne CO_2eq)	188.875
Nitrous oxide (tonne CO_2eq)	27.834
Hydrofluorocarbones (tonne CO_2eq)	-
Perfluorocarbones (tonne CO_2eq)	-
Sulphur hexafluoride (tonne CO_2eq)	-
Total direct emissions in tonne CO_2eq	**2.380.407**

The indirect emissions are calculated by following government expenses within sectors and determining the financed emissions within each sector. By summing all financed emissions in each NACE sector, we can calculate the total indirect emissions of the Dutch government, see the table below.

NACE code	*NACE activity*	*Financed by the Dutch government (million Euro)*	*Total financing in the sector (million Euro)*	*Share of government financing per sector*	*GHG emissions per sector (tonne CO_2eq)*	*Financed emissions by the government (tonne CO_2eq)*
A01	Crop and animal production, hunting and ...	€ 153	€ 23.053	0,7%	28.662.868	230.755
A02	Forestry and logging	€ 9	€ 91	9,9%	52.587	5.008
A03	Fishing and aquaculture	€ 3	€ 162	1,9%	494.299	7.805
B	Mining and quarrying	€ 218	€ 45.905	0,5%	3.263.069	19.606
|	|	|	|	|	|	|
U	Activities of extraterritorial organisations	€ -	€ -	0,0%	-	-
	Total indirect emissions in tonne CO_2eq					**3.895.281**

When we sum the direct and indirect emissions and divide it by the total government debt, we get to the emission factor for the Dutch sovereign bond. The ASN bank's financed emissions for the Dutch sovereign bond can be calculated by multiplying this emission factor by the financed amount. In the same way, financed emissions can be calculated for other (European) countries.

	GHG Emissions (tonne CO_2eq)	*Government debt (Trillion Euro)*	*Emissionfactor (tonne CO_2/M€)*
Direct emission	2.380.407,00		5,90
Indirect emissions	3.895.281,00		9,65
Total emissions	**6.275.688,00**	**403.672,00**	**15,55**

The direct and indirect emissions are summed and divided by the government consolidated gross debt to arrive at an emission factor per million euro. It works with national debt instead of the financial balance of the government. This is more practical, because reliable information on the government debt is easy to obtain from Eurostat. At the same time, we stay consistent with our methodology for companies, where we attribute emissions based on the share of the sum of liabilities and equity financed by the investor. As equity is very small for a government compared to liabilities (debt), we decide to ignore it and only work with government debt. Government debt has also been derived from Eurostat.

Calculation method: 1 of 2
Data quality: 3 (Debtor specific calculation)
Proportional share accounted to ASN Bank: Pro ratio of total consolidated gross debt of the country

Activities included in Scope 3 (category 15) of ASN Bank	*Unit*	*Source*	*Calculation*
Total deliveries per sector per country	[€]	Eurostat	Sum of government emissions in all sectors (Deliveries to government from sector / total deliveries of sector * emissions of sector) * % financed government debt
Deliveries to government per sector per country	[€]		
Emissions per sector per country	[tonne CO_2eq]		
Consolidated gross debt	[€]		

For countries for which no specific information is available, the median of the emission factors from the other European countries is used.

Calculation method: 2 of 2
Data quality: 2 (Average data method)
Proportional share accounted to ASN Bank: Pro ratio of total consolidated gross debt of the country

Activities included in Scope 3 (category 15) of ASN Bank	*Unit*	*Source*	*Calculation*
Emission factors for investing in European countries	[tonne CO_2eq per million €]	Results from calculation method 1 of 2	Median of emissions per invested amount of European countries of which data is available.

Debt investments category II: Mortgages

The GHG emissions of the mortgage portfolio are calculated each quarter based on a specific analysis of the climate impact of the mortgage portfolio of De Volksbank. The climate impact of the mortgage portfolio is calculated based on the energy labels of the portfolio, obtained from RVO (Netherlands Enterprise Agency, part of the Dutch Ministry of Economic Affairs), and the average electricity and natural gas consumption per label, obtained from the Energiemodule WoON 2012.[14] Using emission factors for electricity and natural gas consumption, the average emissions per energy label are calculated. By multiplying this with the number of labels in the portfolio, the total emissions of the portfolio are calculated. It is important to note that the emission factor for mortgages is created taking the total emissions of the home into account, even though the bank only finances a share of the value of the home. This was decided to avoid fluctuations in emissions over the years from increases or decreases in the prices of homes. In addition, this is a conservative approach, attributing a larger share of the emissions to the bank.

The emissions and the value of the mortgage portfolio of De Volksbank are used to create an emission factor for mortgages. This factor is used to calculate the emissions of investments in other mortgages in the investment portfolio as well.

[14] All homes in the Netherlands have an energy label, which gives an indication of how energy efficient the home is. These labels range from very inefficient (G) to very efficient (A and even A+/A++). The WoonOnderzoek Netherlands, abbreviated as WoON, is an initiative by the Dutch government where they analyse the living situations of Dutch citizens. The WoON also results in the average natural gas and electricity consumption per energy label. The WoON study is performed every three years.

Calculation method: 1 of 1
Data quality: 2 (Sector specific calculation method)
Proportional share accounted to ASN Bank: All the emissions per mortgage, share of the mortgage portfolio of De Volksbank attributed to ASN Bank

Activities included in Scope 3 (category 15) of ASN Bank	*Unit*	*Source*	*Calculation*
Number of mortgages per energy label of the mortgage portfolio	#	De Volksbank & RVO	Energy consumption per energy label * emission factors per energy type * number of mortgages in that label category + etc. * share of mortgages attributed to ASN Bank
Average electricity and gas consumption per energy label	kWh and m^3 per label	Energie-module WoON 2012	
Emission factors for electricity and gas	g CO_2 per kWh and m^3	http://co2emissiefactoren.nl/	
Share of the mortgage portfolio of De Volksbank attributed to ASN Bank	%	ASN Bank / De Volksbank	

In the future, a calculation method with improved data quality could be implemented. Data that should be collected to be able to make a more detailed calculation includes the following:

- The actual figures for the natural gas, heat and electricity consumption per financed house (most favourable);
- The floor area (m^2) per mortgage, since this greatly determines the energy use per label. (second most favourable);
- The energy label per house as determined by an energy audit (currently only a small share are verified by such an audit, the rest are estimations) (least favourable).

Improvements in carbon footprinting of mortgages

Since the previous version of the Carbon Profit and Loss Methodology, some improvements in the footprinting of emissions from mortgages have been implemented. The rather limited coverage of energy labels is improved significantly with the use of data from RVO. Although this results in better coverage, most of the energy labels are still indicative. Therefore, ASN Bank is talking to grid operators to gain access to actual energy consumption data. This would drastically reduce the uncertainties in the carbon footprint, and enable ASN Bank to track the energy efficiency improvements of the financed houses more accurately.

Debt investments category III: Housing associations

The yearly GHG emissions of housing associations are calculated by taking the proportional share of the Scope 1 and 2 emissions of the housing corporations and the rented homes, without the fuel consumption of the dwellers' vehicles (Scope 3 for the housing association), based on the balances of the associations (values of the homes). Scope 3 is included here because with the loans to housing associations ASN Bank intends to support the core activities of the housing association (social renting housing and social property). Because there is no data on household specific energy uses, average household energy use data is used:

Calculation method: 1 of 2
Data quality: 3 (Sector specific calculation method)
Proportional share accounted to ASN Bank: % of total balance of the housing corporation

Activities included in Scope 3 (category 15) of ASN Bank	*Unit*	*Source*	*Calculation*
Scope 1 + 2 of the corporation organisation	[tonne CO_2eq]	Housing corporation, CBS, Agentschap NL	% of total balance of corporation*
Type and number of rented home	[#]		[Scope 1+2 of organisation +
Average Scope 1+2 emissions per type of rented home	[tonne CO_2eq]		Average Scope 1 + 2 emissions of a rented home * number of rented homes of the corporation]
Balance total of the whole organisation	[€]		

When balance totals and/or numbers of rented homes per corporation are not available, sector averages are used. CBS (Centraal Bureau voor de Statistiek) and AEDES, the association of Housing Corporations in the Netherlands provide data on financial balances[15], the total number of rented homes and the emissions of the total housing corporation sector. These outcomes have a lower data quality:

Calculation method: 2 of 2
Data quality: 2 (Average data calculation method)
Proportional share accounted to ASN Bank: % of total balance of the housing corporation

Activities included in Scope 3 (category 15) of ASN Bank	*Unit*	*Source*	*Calculation*
Scope 1 + 2 emissions of the sector	[tonne CO_2eq]	CBS Statline, AEDES	% of total balance of the sector *
Average Scope 1 + 2 emissions of a rented home	[tonne CO_2eq]		[Scope 1 + 2 emissions of the sector +
Total number of rented homes	#		Average Scope 1 + 2 emissions of a rented home * number of rented homes of housing corporations]
Balance total of the whole sector	[€]		

In the future a calculation method with improved data quality could be implemented. Data that should be collected to be able to use a more advanced method includes:

- Natural gas, heat and electricity consumption per rented home;
- Energy label, surface area and value per rented home.

Debt investments category IV: Green and Sustainability bonds

Green bonds are bonds from which the proceeds are specifically earmarked for investments in projects with environmental benefits. The concept of Green Bonds has gained a lot of traction in the last couple of years and the market has been growing rapidly. Green Bonds can contain environmentally friendly projects which include energy savings and renewable energy projects, but also projects related to biodiversity conservation and sustainable land use.[16] [17] The environmental benefits of the Green Bonds can lead to net avoided GHG emissions but this is strongly dependent on the type of green project and what is improved or replaced by realising the project.

Following to the rise of green bonds, the category Sustainability bond has been posed for bonds with a hybrid set of objectives, bridging both Green and Social issues. For instance when providing energy savings on buildings for disadvantaged people or sustainable public transport. Sustainability bonds can also lead to avoided GHG emissions. ASN Bank has invested in a number of Green and Sustainability Bonds, most notably FMO's Sustainability Bond, EIB's Climate Awareness Bond and NRW.BANK's Green Bond. It is not common practice yet for Green bond issuers to report on the climate impact of

[15] For a housing corporation the financial balance is equal to all assets (mostly homes) of the corporation.
[16] The Green Bond Principles, 2015; Voluntary Process Guidelines for Issuing Green Bonds, March 27, 2015, www.icmagroup.com.
[17] The Climate Bond Initiative, 2015; The Climate Bonds standard 2.0, October 2015, www.climatebonds.net

the investments they finance, even though more and more issuers are including a detailed GHG calculation in their reporting. For this reason, there are two methodologies for calculating the GHG emissions of investments in Green and Sustainability bonds.

If specific information is available on the (avoided) emissions of the green bonds, the emissions attributed to ASN Bank are easily calculated based on the share of the bonds owned by ASN Bank:

Calculation method: 1 of 2
Data quality: 3 (Debtor specific calculation method)
Proportional share accounted to ASN Bank: % of total value of the green bonds owned by ASN Bank

Activities included in Scope 3 (category 15) of ASN Bank	*Unit*	*Source*	*Calculation*
Scope 1 + 2 emissions of the green bond	[tonne CO_2eq]	Issuer of the bond	% of total balance of the green bonds owned by the ASN Bank * Scope 1 + 2 of the green bond
Total value of the green bond	[€]		

If there is no knowledge on the specific climate impact of the bond, an indication based on the type of investments is used. If it is not clear what the proceeds of the bonds are used for exactly, an estimate has to be made.

Calculation method: 2 of 2
Data quality: 2 (Average data calculation method)
Proportional share accounted to ASN Bank: % of total value of the green bonds owned by ASN Bank

Activities included in Scope 3 (category 15) of ASN Bank	*Unit*	*Source*	*Calculation*
Value invested per project category in the bond	[€]	Issuer of the bond ASN Bank Carbon Profit and loss Tool	% of total balance of the green bonds owned by the ASN Bank * (value invested in project category X * emission factor of category X + value invested in project category Y * emission factor of category Y, etc.)
Emission factor per project type	[kg CO_2eq per €]		
Total value of the green bond	[€]		

The calculation methodology for green bonds can be improved by obtaining more specific information on the types of projects which are financed by the proceeds of the bonds. Even better, the issuers of the green bonds can be engaged on the subject of calculating and reporting the climate impact of their bonds.

Debt investments category V: General loans

The annual GHG emissions of debt investments category V are calculated by taking the proportional share of the Scope 1 and 2 emissions of the listed organisations. This share is determined by the ratio of the financed debt and the total financial balance of the organisation. If available, both the emissions and the total financial balance are taken from the annual reports of the organisations.

For Dutch municipalities, the Central Bureau of Statistics (CBS)[18] provides information on the financial balances. The emissions are reported in a national monitor on sustainability performance of all Dutch municipalities: the klimaatmonitor provided annually by the Ministry of Infrastructure and Environment. For Dutch water boards[19], the CBS provides information on their financial balances and Arcadis published a report on Scope 1, 2 & 3 emissions per water board over 2011: Climate monitor water boards 2012. A new version of this report was published in 2014 (Climate monitor water boards 2014). We track whether this report or the reports of individual water boards will be updated in future years. When both figures are known the emissions caused by ASN Bank' investments can be calculated with a relatively high data quality:

[18] Statistics Netherlands is responsible for collecting and processing data in order to publish statistics to be used in practice, by policymakers and for scientific research. In addition to its responsibility for (official) national statistics, Statistics Netherlands also has the task of producing European (community) statistics. The legal basis for Statistics Netherlands and its work is the Act of 20 November 2003 last amended by the Act of 15 December 2004 governing the central bureau of statistics (Statistics Netherlands).

[19] Dutch water boards (Dutch: waterschappen or hoogheemraadschappen) are regional government bodies charged with managing water barriers, waterways, water levels, water quality and sewage treatment in their respective regions.

Calculation method: 1 of 2
Calculation method: 3 (Debtor specific calculation method)
Proportional share accounted to ASN Bank: % of total balance of the organization

Activities included in Scope 3 (category 15) of ASN Bank	*Unit*	*Source*	*Calculation*
Scope 1 + 2 emissions of the investment	[tonne CO_2eq]	Annual Report	% of total balance of the organization *
Balance of the organisation	[€]		[Scope 1+2 emissions of the investment]

This calculation method is among others applied to banks, provinces & municipalities, water boards, healthcare & elderly care, education, and culture & recreation.
For the organisations where balance totals and/or emissions are not available, or where workability is a problem (for example, for the thousands of small loans to small companies), sector averages are used to calculate the emissions from these investments. Data from CBS on the financial balances and emissions of whole sectors are used for Dutch organisations. The outcomes have a lower data quality than the method above:

Calculation method: 2 of 2
Data quality: 2 (Average data calculation method)
Proportional share accounted to ASN Bank: % of total balance of the sector

Activities included in Scope 3 (category 15) of ASN Bank	*Unit*	*Source*	*Calculation*
Scope 1 + 2 emissions of the whole sector	[tonne CO_2eq]	CBS Statline	% of total balance of the sector * [Scope 1+2 emissions of the whole sector]
Balance total of the whole sector	[€]		

Increasing workability for footprinting loans to small companies

De Volksbank has a large number of relatively small loans to small companies in its portfolio. For these assets, the specific approach of acquiring debtor specific data (calculation method 1) was not considered appropriate due to the time-consuming data gathering process. Therefore, for the sake of workability, for these assets the simpler sectoral approach (calculation method 2) was used. This approach assumes that the emissions per invested million euro are the same within a sector. This simpler approach is considered appropriate because of the relatively small total asset value of these loans.

Method on project investments prevails over equity/debt investment

In general, the calculation of the footprint of ASN Bank will be more accurate if the purpose of the investment is known and taken into account. For instance in case of loans to organisations, it is valuable to define if this loan is funding a specific project or whether it is a general corporate debt. If it is possible to label this loan to a specific project or activity, this would be leading and the indirect emissions could be calculated according to the calculation method of project finance. This means calculating the specific emissions of this particular project, rather than a share of the total emissions of the organisation (invested in).

However, a prerequisite for this approach is that there must be a clear link between the investment and the specific activity/project it is invested in. This is because the calculated emissions might be very different using the different methods. For example: when providing a loan to a housing association with the aim to renovate their homes, this should be considered as project financing and therefore the emissions caused or saved (avoided) by the renovation are relevant. In this case the methodology for project financing prevails over debt investment for housing associations.

Emissions of projects during construction

To assess the GHG impact of projects with GHG reductions during the initiation phase of the project, data is needed of combusted fuels used by vehicles during construction, energy use of equipment used during construction etc. Since the effort for acquiring this information is large and the contribution to the overall carbon footprint of ASN Bank is relatively small, it has been decided not to include these emissions in the methodology. This holds for investments in (the initiation of) specific projects (solar PV projects; CHP projects; sustainable buildings: insulation & new buildings; heat networks, on/offshore wind).

Emissions from projects without GHG emissions reductions

Due to the nature of the project financing of ASN, this type of project investment occurs only sporadically. Examples are the construction of new offices and energy efficient housing. Although these projects might be more energy efficient than alternatives, they still lead to emissions. The following methodology is used to calculate the emissions of these projects:

Calculation method: 1 of 1
Data quality: 4 (Project specific data & calculation method)
Proportional share accounted to ASN Bank: % of total costs of the project

Activities included in Scope 3 (category 15) of ASN Bank	*Unit*	*Source*	*Calculation*
Share of Scope 1 & 2 emissions during project	[tonne CO_2eq]	ASN; IEA; SKAO; GHG project protocol	% of total project costs * [A m^3 natural gas* EF Natural gas+ B1 liter diesel * EF Diesel + B2 liter petrol * EF Petrol… + C1 kWh fossil electricity * EF NL Supply Mix Fossil+ C2 kWh green electricity * EF green electricity+ D GJ heat * EF district heating]
Natural gas used during project	[m^3]		
Fuel used during project	[litre]		
Electricity consumed during project	[kWh]		
Heat consumed during project	[GJ]		

The emissions of newly constructed utility buildings

For newly built utility buildings, the emissions have been calculated based on information from the "Cijfers en Tabellen" publication from AgencyNL. This publication contains the estimated electricity and natural gas consumption of different types of buildings of several types. It is assumed that all utility buildings are office buildings. It was also assumed that the office buildings financed by ASN Bank belong to the 20% most energy efficient buildings in the Netherlands. Since the AgencyNL publication is from 2007 (no more recent figures are available, unfortunately), we feel that this is a conservative estimate. The emissions are calculated by multiplying the floor area of the office space with the electricity and natural gas consumption per square meter and multiplying this with the emission factors for electricity and natural gas. [Netherlands Enterprise Agency, 2007]

Project Investments: Emissions from projects with emission reductions (e.g. renewable energy or energy savings measures)

As stated before, ASN Bank invests in projects that avoid the emissions of greenhouse gases into the atmosphere. According to the GHG Protocol, emission reductions, or "avoided emissions" should be reported separately from Scope 1, 2 and 3. This section elaborates about the methodology for calculating these emission reductions.

The emissions of newly constructed homes

It is assumed that the construction costs of new homes are equal to the average construction costs for a rental home, which is € 90,000 according to Statistics Netherlands (CBS, 2014). It is assumed that all newly built homes have an energy label of A, with an annual gas consumption of 1,379 m3 per year and electricity consumption of 3,811 kWh per year. Using an emission factor for electricity of 468 gram per kWh and 1,788 gram per m^3, this results in emissions of 4.25 tonnes CO_2eq per year. This means an emission factor of 4.25 tonnes per 90,000 euro, or 47.2 tonnes CO_2eq per million euro.

The yearly avoided GHG emissions of project investments should be calculated by taking the proportional share of the total project value financed by ASN Bank. In this methodology the following types of projects are taken into account: solar PV projects, CHP projects, sustainable buildings, insulation & new buildings, heat networks and on- and offshore wind and biomass. The calculation can be based on filling in the (avoided) emissions of the project, but also by filling the amount of electricity or natural gas saved or produced by the project. If a project produces heat, the amount of natural gas avoided can be used as input for this calculation.

Technology specific calculation methods

For the following technologies, we use the following specific calculation methods.

- Bio digestion: the expected production of electricity in kWh is used, so not the actual values.
- Solar energy: the average expected amount of electricity produced per year in kWh. If this is not possible, because there is partial finance and it is not known which share is financed by ASN Bank, initial investment value and emission factors are used.
- Wind on land and sea: the P90 predictions for the expected amount of electricity produced are used. If this is not available, a calculation based on initial investment value and emission factors is used.
- Heat cold storage: In collaboration with Vaanster an average emission factor was derived based on specific production values from a large number of heat cold storage projects.
- For the projects in the Energiefonds Overijssel, unless specific information is available or the project is obviously electricity related, it is assumed that they save or produce gas. The amount of gas saved/produced is calculated based on the produced energy in TJ, assuming that the energy would be generated with a boiler with a conversion efficiency of 90%.

Calculation method: 1 of 2
Data quality: 3 (Debtor specific calculation method)
Proportional share accounted to ASN Bank: % of market value of the project

Activities included in Scope 3 (category 15) of ASN Bank	*Unit*	*Source*	*Calculation*
Electricity saved or produced by the project	[kWh]	Fund	
Natural gas saved or produced by the project	[m^3]	manager	% of total investment of project*(kWh
Scope 1 + 2 of the project	[tonne CO_2eq]	at ASN	electricity*EF electricity+m3 natural
		Bank or	gas*EF natural gas+ Scope 1+2 of
Total market value of the project	[€]	project	project)
		website	

If this information is not available, an emission factor for the type of project is used.

Calculation method: 2 of 2
Data quality: 2 (Average data calculation method)
Proportional share accounted to ASN Bank: % of total market value of the projects

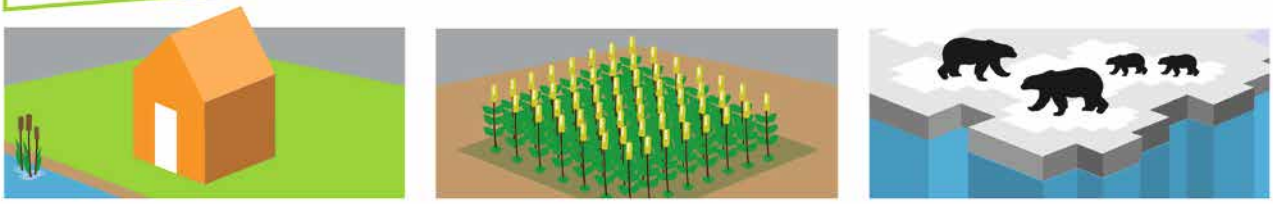
Activities included in Scope 3 (category 15) of ASN Bank	*Unit*	*Source*	*Calculation*
Total market value of the project	[€]	ASN Bank Carbon Profit and loss Tool	Market value of the project*emission factor for the type of project
Emission factor based on the category of the project, which is based on the average performance ASN Bank projects in that category	[tonne CO_2eq per €]		

Managed investments and client services

Some financial services of ASN Bank are not yet included in this methodology. These are ASN Venture Capital Fund and ASN-Novib Microcredit Fund. Because calculating the emissions for these kind of services still has some methodological challenges, we have not yet included them in the methodology. However, it is estimated that these activities would have a relatively small effect on the total outcome.

Furthermore the GHG Protocol lists these emissions as "optional" and therefore gives room to not take these managed investments into account.

If all Financial Institutions would achieve Net Climate Neutrality for their investments this would mean an enormous step in **mitigating climate change**.



More information?

www.asnbank.nl/klimaatneutraal

Join us to improve the methodology:

sustainability@asnbank.nl

In cooperation with:

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A production of:

asn bank

Sources:
- ASN Bank Carbon Profit and Loss Methodology
- ASN Bank Klimaatbeleid (2013)

Illustrations:
Robin de Boer

Appendix A: Influence

The ASN Bank Carbon Profit and loss Methodology and Tool will be used to steer the investment strategy in order to achieve climate neutrality by 2030. Through its investments ASN Bank has the possibility to influence the (operational) scopes of the clients or projects with the aim to reduce their impact. The span of control however varies according to the type of investment and the share of ASN Bank's investment related to the total financial balance of the client. ASN Bank can induce reductions in corporate value chain emissions by for example promoting carbon efficiency amongst its clients or by setting conditions to their debt investment.

To develop an investment strategy towards climate neutrality and acquire a better understanding of influence (engagement) possibilities, an influence factor can be incorporated in the footprint methodology. The following influence levels could be taken into account and translated into scores (1 to 4).

Much influence

4. High influence	e.g.	Renewable energy projects
3. Average influence	e.g.	Housing association
2. Little influence		
1. No influence	e.g.	Public loan

No influence

Investments with a high influence score can be influenced by ASN Bank by developing and implementing a value chain mechanism or engagement strategy. An example of a value chain mechanism is the CO_2-Performanceladder developed by ProRail and currently coordinated by the Foundation SKOA [20].

The CO_2-Performanceladder is a procurement tool to encourage companies to be aware of their CO_2eq emissions (and those of their suppliers), and to be permanently on the lookout for new ways to save energy, use materials efficiently, and to use renewable energy. It encourages companies to actually carry out improvement measures and to share the knowledge they have acquired in the process, and to look for yet more ways of cutting emissions, with colleagues, research institutes, NGO's and government bodies.

The main advantages of such a value chain mechanism are:

- Showing leadership inspires other parties to act and increases your impact;
- First mover advantage and showing leadership;
- Less financial risk: carbon efficient clients are more resilient, profitable and sustainable;
- Regular updates on carbon emission data give more insight in performance of ASN Bank's investments.

Based on this CO_2-Performanceladder we developed the ladder below for ASN Bank to include in its investment strategy. Investments that perform according to higher levels of this CO_2-Performanceladder can benefit from better investment conditions.

CO_2 Performance Ladder for ASN: Levels with regard to energy consumption awareness and CO_2 emission.

Level 5	Distinctive level of GHG reduction and supply chain responsibility has been achieved
Level 4	Elaboration of stakeholder dialogue & supply chain responsibility
Level 3	Organization has attained the goals established
Level 2	Policy implementation & continuous improvements
Level 1	Preparation & baseline measurement

[20] Independent Foundation for Climate Friendly Procurement and Business. CO_2 Performance Ladder: Working together to cut CO_2. 2010. More information can be found at: www.skao.nl

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