



GHG-Emissions of NWB Bank Loan Portfolio

Reporting year 2020



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Official Partner
Tilburg University

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Executive summary

Since the 2015 Paris Climate Conference, the banking sector has been involved in contributing to the realization of the ambitions of the Paris Agreement. Banks play a crucial role. Given the scale of the climate challenge and the crucial role of the banking industry, and the financial sector in general, in facilitating the net zero carbon transition, the Partnership for Carbon Accounting Financials (PCAF) was created.

The first method for carbon accounting for Dutch financials was launched in November 2017 followed by updates in 2018 and in 2019. Measuring and disclosing the GHG emissions associated with the lending and investment activities of financial institutions is the foundation to create transparency **and** accountability. But PCAF is not only about measuring the carbon footprint of a financial institutions portfolio. It's also about setting targets, developing strategies, and taking action by these institutions to align their portfolio with the Paris Climate Agreement and by monitoring on an annual basis if organizations are making progress towards achieving the science based targets set by themselves.

NWB Bank committed itself to PCAF in January 2019. In 2019, NWB Bank asked Het PON & Telos, official partner of Tilburg University, to measure the GHG emission associated with the bank's loan portfolio, using the PCAF methodology.

NWB bank and the other promotional bank, BNG bank, have expressed the wish to continue their participation in PCAF. So the 2020 version of the annual reports of both banks contains more accurate calculations of the GHG emissions based on the PCAF methodology. The more accurate calculation is the result of the wish of both banks to investigate if quality improvements of the applied PCAF methodology are possible. Het PON & Telos has been asked to explore these possibilities. The results of this exploration leading to a more accurate calculation, have been presented in a separate methodology report, released in October 2020¹, and available on the website of NWB bank. The investment in further quality improvements of the methodology can be seen as a next, extended contribution from NWB Bank and BNG bank to the development of the PCAF methodology.

Current report contains the GHG emissions of the loan portfolio of NWB Bank. The climate impact has been (re)calculated based on the newly adapted PCAF methodology. The approach is in line with the harmonised approach for the financial sector in the Netherlands 2019².

Available data on CO₂ equivalent emissions (representing the targeted Greenhouse Gasses-GHG), or estimated emissions by using impact data and appropriate emission factors, were used to calculate the impact of different sectors of NWB Bank's loan portfolio. The impact

¹ Mulder, R., Roover, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

² Mulder, R., Roover, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

data include direct (scope 1) as well as indirect emissions (scope 2 and 3 if available). Besides the calculation of the GHG emissions, a ratio between outstanding loan portfolio per client and the total balance sheet of the respective client was used for the attribution of NWB Bank loans to the total assets of GHG emitting clients. This results in the attributed GHG emissions for NWB Bank's loans.

Current report contains the GHG emissions of two time periods: reporting year 2019 and 2020. That makes it possible for the bank to monitor the development of the GHG emissions over time. For reporting year 2019, the loan portfolio of 31-12-2018 was used and for reporting year 2020, the loan portfolio of 31-12-2019 was used. In this loan portfolio long-term loans and advances (nominal value) were taken into account and for local governments the interest-bearing securities (nominal value) were also included. For the calculation of GHG emissions the most recent available data was used, see the methodology approach report, released in October 2020³.

At this time, it is practically impossible for banks to measure the GHG-emissions for the whole loan portfolio, due to a lack of sufficient data. For NWB Bank it has been possible, because of its unique position in the market, to cover 94.5% of its loan portfolio in this GHG emission reporting, as illustrated in Table S1⁴. The coverage rate decreased with 0.6% in comparison to last year. This is due to the fact that the sectors currently not in scope are growing faster than the sector that are in scope. An overview of total CO₂ equivalent emissions for the loan portfolio of NWB Bank for reporting year 2019 and 2020 is given in Table S2.

Table S.1 Total outstanding loans of NWB Bank and part covered in the GHG assessment for reporting year 2019 and 2020⁵

Sector	Loan portfolio (million EUR)	Part covered with GHG footprint (million EUR)	Coverage rate (%)	Loan portfolio (million EUR)	Part covered with GHG footprint (million EUR)	Coverage rate (%)
	2020	2020	2020	2019	2019	2019
Social Housing sector	30,813	30,790	99.9%	30,265	30,199	99.8%
Local governments	7,071	7,071	100%	6,583	6,583	100%
Water authorities	6,501	6,501	100%	6,327	6,327	100%
Healthcare sector	2,053	1,490	72.6%	2,119	1,494	70.5%
Drinking water utilities	666	582	87.3%	477	408	85.5%
Regional governments	225	225	100%	247	247	100%
Educational institutions	70	64	91.4%	73	67	91.6%
Residual	2,037	-	0.0%	1,554	-	0.0%
Total	49,436	46,723	94.5%	47,644	45,325	95.1%

³ Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

⁴ In the PCAF report 2019 the coverage rate was 93%. In current report the coverage rate is higher due to developments in the methodology in comparison to the PCAF report 2019.

⁵ Long-term loans and advances (nominal value), including interest-bearing securities (nominal value) for the local governments. Reference dates for reporting year 2020 is 31-12-2019, and for reporting year 2019 is 31-12-2018

As can be seen in Table S2, the NWB Bank loan portfolio of reporting year 2020 has a total emission of 1,595 kiloton CO₂-equivalent. This is 135 kiloton less than the total emissions of reporting year 2019. This decrease was mainly due to a reduction of GHG emissions for the social housing sector (-88 kiloton CO₂-equivalent) and for the water authorities (-46 kiloton CO₂-equivalent). The social housing sector improved the energy labels of rental homes and the water authorities invested in sustainable energy projects in the Netherlands. The reduction of 135 kiloton CO₂-equivalent is a great accomplishment, because the part of the loan portfolio covered by the GHG footprint calculation has grown from 45 to 47 billion euro. The emission intensity (ton CO₂-eq/million euro) has decreased from 38.2 to 34.1 ton per million euro.

Table S.2. Emission intensities for reporting year 2019 and 2020

Sector	Part covered with GHG footprint (million EUR)	Attributed emissions (ton CO ₂ -eq)	Emission intensity (ton CO ₂ -eq / million EUR)	Part covered with GHG footprint (million EUR)	Attributed emissions (ton CO ₂ -eq)	Emission intensity (ton CO ₂ -eq / million EUR)	Data quality (score 1-5)
	2020	2020	2020	2019	2019	2019	
Social Housing sector	30,790	753,366	24.5	30,199	841,201	27.9	2.5
Local governments	7,071	414,891	58.7	6,583	417,096	63.4	3
Water authorities	6,501	326,577	50.2	6,327	372,266	58.8	2
Healthcare sector	1,490	85,178	57.2	1,494	86,925	58.2	2.5
Drinking water utilities	582	4,799	8.2	408	2,722	6.7	2
Regional governments	225	7,354	32.8	247	7,457	30.2	3
Educational institutions	64	2,671	41.8	67	2,452	36.8	1.75
Total	46,723	1,594,836	34.1	45,325	1,730,120	38.2	

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1 Introduction

Since the 2015 Paris Climate Conference, the financial sector has been involved in contributing to the realization of the ambitions of the Paris Agreement. Banks play a crucial role. Not only because they represent most of the available capital globally, but also because the largest banks are still investing heavily in the fossil fuel sector, since the Paris Climate Agreement nearly \$2 trillion. This is equivalent to \$2.4 billion for every working day since the end of 2015, with no downward trend and no assessment of the carbon impact of that finance.⁶

1.1 A Partnership for Carbon Accounting Financials: PCAF⁷

Given the scale of the climate challenge and the crucial role of the banking industry, and the financial sector in general, in facilitating the net zero carbon transition, the Partnership for Carbon Accounting Financials (PCAF) was created. Initially a Dutch initiative of eleven, later fourteen Dutch financial institutions under the leadership of ASN Bank. The initiative was launched via a Dutch Carbon Pledge calling on the negotiators at the Paris Climate Summit in 2015 to take ambitious steps while the committed financial institutions take their share in delivering an essential shift to a low carbon economy, starting with measuring and disclosing the Greenhouse Gas Emissions (GHG) emissions of their loans and investments.

“We ask global leaders during the 21st session of the Conference of the Parties to the UNFCCC to take effective measures to keep global warming under safe levels. As financial institutions we want to take responsibility as well and come with new and meaningful steps. The annual measuring and disclosure of the carbon footprint of investments, with the aim of using this information to identify and set carbon footprint reduction targets, is still at an early stage. Our initiative, consisting of leaders of different segments of the Dutch financial sector, intends to experiment with annual carbon foot printing, disclosure and target setting for investments. These elements are key in planning and developing investment strategies towards a low carbon society. We want to share and learn from practice and find solutions for dilemma’s. We hope this will stimulate the development and adaptation of carbon foot printing and target setting in the financial sector on a larger scale for all their investments. Our goal is to form a group of leading financial institutions that cooperate in a bottom up initiative on achieving transparency and uniformity in carbon foot printing and target setting.”⁸

The November 28th 2015 original Dutch Carbon pledge of ABN-AMRO, MN, APG, ASN Bank, ACTiAM, FMO, PME, PMT, PGGM, SNS and Triodos Bank⁸

⁶ <https://carbonaccountingfinancials.com/about>

⁷ Based on <https://carbonaccountingfinancials.com/about>

⁸ cited in PCAF Netherlands, Accounting for and steering carbon: harmonised approach for the financial sector, This report was commissioned by PCAF Netherlands and compiled, edited and reviewed by Navigant Version 24-1-2021 1:00 PM

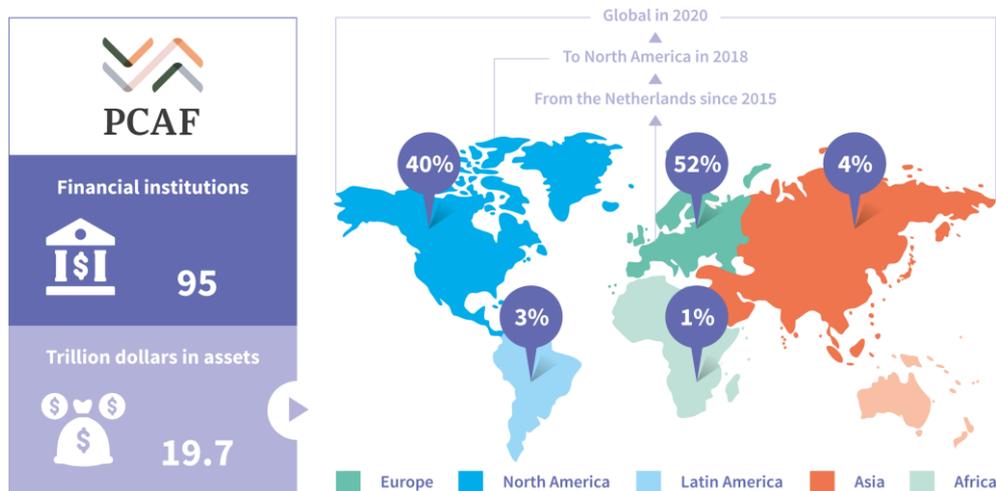
Since then, more financial institutions from the Netherlands have joined forces to develop and implement open-source methodologies to measure the GHG emissions of all asset classes within their loans and investments portfolios. At the beginning of 2019, NWB Bank formally committed themselves to the initiative.

As mentioned above the first step on “this long and windy road” was set in 2015 when the Dutch PCAF was launched aiming to develop a methodology for the different types of asset classes within financial institutions. A first method for carbon accounting for financials was launched in November 2017. Updates were published in 2018 and in 2019.⁹

In 2018, PCAF expanded to North America. Led by Amalgamated Bank, 12 financial institutions have adapted the PCAF carbon accounting methodologies to the North American context. And on 4th of March 2019, leaders of 28 banks of the Global Alliance for Banking on Values (GABV) decided to assess and disclose the GHG emissions of their loans and investments by using the PCAF approach.

Due to the increasing interest of financial institutions worldwide in transparent and harmonised assessment of the GHG emissions of their loans and investments, ABN AMRO, Amalgamated Bank, ASN Bank, Global Alliance for Banking on Values (GABV) and Triodos Bank decided to launch the global initiative. The globalization of PCAF addresses banks and investors across the world.

At the end of 2020, 95 institutions are partners within PCAF with over 19 trillion dollars in assets. More than half of it concentrated in Europe and 40% in North-America.¹⁰



⁹ Accounting GHG emissions and taking action: harmonised approach for the financial sector in the Netherlands PCAF The Netherlands, report 2019

¹⁰ See <https://carbonaccountingfinancials.com/financial-institutions-taking-action#overview-of-institutions> for an overview of all the following financial institutions that have committed and disclosed the greenhouse gas emissions associated with their portfolio of loans and investments.

1.2 From CO₂ equivalent footprint to action

Given the key role financial institutions play in the global economy, the partners in PCAF also see a role for themselves in facilitating the transition of this global economy in line with the Paris Climate Agreement. A first step in this direction was developing a system of harmonised and transparent carbon accounting.



The first method for carbon accounting for Dutch financials was launched in November 2017 followed by updates in 2018 and in 2019. Measuring and disclosing the GHG emissions associated with the lending and investment activities of financial institutions is the foundation to create transparency and accountability. But PCAF is not only about measuring the carbon footprint of a financial institutions portfolio. It is also about setting targets, developing strategies, and taking action by these institutions to align their portfolio with the Paris Climate Agreement and by monitoring on an annual basis if one is making progress towards achieving the science based targets set by themselves.

In a recent report¹¹ the Science Based Targets initiative (SBTi) has outlined a pilot version of an approach how to align the investment and lending activities of Financial Institutions with the Paris Climate Agreement by target setting in these areas. The SBTi has adopted an asset class-specific approach to enable robust and meaningful targets and has selected three methods that link financial institutions' investment and lending portfolios with climate stabilization pathways, each of which can be used for one or more asset classes:

- *Sectoral Decarbonization Approach (SDA)*: Emissions-based physical intensity targets are set for real estate and mortgage-related investments and loans, as well as for the power generation, cement, pulp and paper, transport, iron and steel, and buildings sectors within corporate instruments.
- *SBTi Portfolio Coverage Approach*: Engagement targets are set by financial institutions to have a portion of their investees set their own SBTi-approved science-based targets such that the financial institution is on a linear path to 100 percent portfolio coverage by 2040.
- *The Temperature Rating Approach*: Financial institutions can use this approach to determine the current temperature rating of their portfolios and take actions to align their portfolios to ambitious long-term temperature goals by engaging with portfolio companies to set ambitious targets.

¹¹ SBT (2020), Financial Sector Science-Based Targets Guidance. Pilot Version

The report of the SBTi can be seen as a first, necessary step to develop a system for financial institutions to setting (ambitious) targets for their investment and lending activities. This should be combined with setting targets for reducing the emissions of their operations (scope 1 and 2) and for the scope 3 categories as well.

By setting targets financial institutions are expressing their own ambitions how to contribute to the realization of the Paris Climate Agreement. This should be followed by a clear and transparent strategy how to realize these targets combined with a monitoring system that has two crucial functions. In the first place by showing (hopefully) progress in achieving the targets set by the financial institution but also by acting as a kind of mirror of reflection by showing which strategies and actions are successful in reducing GHG emissions and which not. This could be part of a learning strategy not only for PCAF partners for others in the world as well.

1.3 NWB Bank and PCAF

As mentioned above, NWB Bank committed itself to PCAF in January 2019. In 2019, NWB Bank asked Het PON & Telos, official partner of Tilburg University, to measure the GHG emission associated with the bank's public loan portfolio, using the PCAF methodology. The public sector loans methodology was not yet covered by the PCAF approach at that time. Therefore a new methodology for this specific sector had to be developed.

In the first half of 2019 this methodology was developed and the methodology have been discussed with the chairman of the Dutch PCAF group. In line with the open source nature of PCAF, this new methodology has been made publicly available by adding it to the 2019 PCAF Harmonised approach for the financial sectors in the Netherlands.¹²

During the second half of 2019, the necessary data were collected and the calculations were made for creating a NWB Bank loan portfolio carbon footprint, using the PCAF methodology. This was in collaboration with the BNG Bank, who has a similar loan portfolio, and therefore a similar interest in this development. The results were presented at the beginning of 2020¹³, and were published on the NWB Bank website.

NWB bank and the other promotional bank, BNG bank, have expressed the wish to continue their participation in PCAF. So the 2020 version of the annual reports of both banks contains more accurate calculations of the GHG emissions based on the PCAF methodology. The more accurate calculation is the result of the wish of both banks to investigate if quality improvements of the applied PCAF methodology are possible. Het PON & Telos has been asked to explore these possibilities. The results of this exploration leading to a more accurate calculation, have been presented in a separate methodology approach report, released in October 2020¹⁴, and available on the website of NWB bank.

¹² PCAF, The Netherlands., (2019). Accounting GHG emissions and taking action: Harmonised approach for the financial sector in the Netherlands. Navigant, 2019. p90-91.

¹³ See NWB (2020), Annual report 2019, page 7 and 9.

¹⁴ Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

The investment in further quality improvements of the methodology can be seen as a next, extended contribution from NWB Bank and BNG bank to the development of the PCAF methodology.

In this report the Loan Portfolio climate impact of NWB Bank has been (re)calculated based on the newly adapted PCAF methodology. The approach is in line with the harmonised PCAF approach for the financial sector in the Netherlands 2019¹⁵.

¹⁵ PCAF, The Netherlands., (2019). Accounting GHG emissions and taking action: Harmonised approach for the financial sector in the Netherlands.

2 Applying PCAF methodology for NWB Bank

This report describes the outcome of the Greenhouse Gas emissions assessment of the NWB Bank loan portfolio. The total coverage in the 2020 PCAF reporting includes the vast majority of loans in NWB Bank's portfolio. Impact data have been calculated per sector and client.

Compared to the 2019 PCAF report for NWB Bank, a few approaches have been improved. The approaches for the municipalities, water authorities and education sectors have for example been revised, resulting in more trustworthy estimates and outcomes. In addition, a new approach has been developed for the drinking water utilities.

Another addition compared to the 2019 NWB Bank PCAF report, is that this 2020 report contains the GHG emissions of two time periods: reporting year 2019 and 2020. That makes it possible for the bank to monitor the development of the GHG emissions over time. For reporting year 2019, the loan portfolio of 31-12-2018 was used and for reporting year 2020, the loan portfolio of 31-12-2019 was used. In this loan portfolio long-term loans and advances (nominal value) were taken into account and for local governments the interest-bearing securities (nominal value) were also included. For the calculation of GHG emissions the most recent available data was used to take the most recent developments in climate action into consideration, see the methodology approach report, released in October 2020¹⁶.

The data used in this study have a high level of reliability. They come from trustworthy governmentally provided sources like the Dutch national statistics office (CBS) and RIVM. Other sources are several umbrella organizations such as DUO (education), Aedes (housing associations) and Vewin (drinking water utilities).

For an elaborated description of the methodology and data used to calculate the CO₂ equivalent footprint following the Dutch PCAF Principles, please consult the methodology approach report, released in October 2020¹⁷.

2.1 PCAF methodology

The methodology used in this study, is based on the GHG Protocol and the harmonised approach for the financial sector in the Netherlands¹⁸ (PCAF The Netherlands, report 2019). The report has four overall reporting guidelines:

¹⁶ Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

¹⁷ Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

¹⁸ <https://carbonaccountingfinancials.com/regional-implementation-team/pcaf-europe>

- Purpose: Meet the specific carbon footprint goals of the financial institution; for instance, because the financial institution is working towards a specific carbon footprint target or to monitor the effectiveness of its wider strategic goals in this area.
- Frequency: At least disclose annually, in line with the financial reporting cycle.
- Form of reporting: In publicly available reports such as (semi) annual reports, website.
- Past performance: Disclose the carbon footprint of multiple comparable time periods (e.g., years).

2.2 Scopes

The GHG Protocol is the basis for carbon accounting. In line with PCAF and the GHG Protocol, the methodology used in this report is respecting basic accounting principles of Completeness, Consistency, Transparency, Prudence, Balance and Accuracy. The GHG protocol defines three different scopes all entities may report about separately (see Figure 1). In the present report these scopes are defined from the perspective of the reporting financial institution i.c. NWB Bank and focusses on all the direct and indirect greenhouse gas emissions NWB Bank is responsible for outside of its own walls by financing different type of organizations. In the PCAF methodology scope 1, 2, and 3 refer to the scopes from the viewpoint of the investee, project, company, or government.

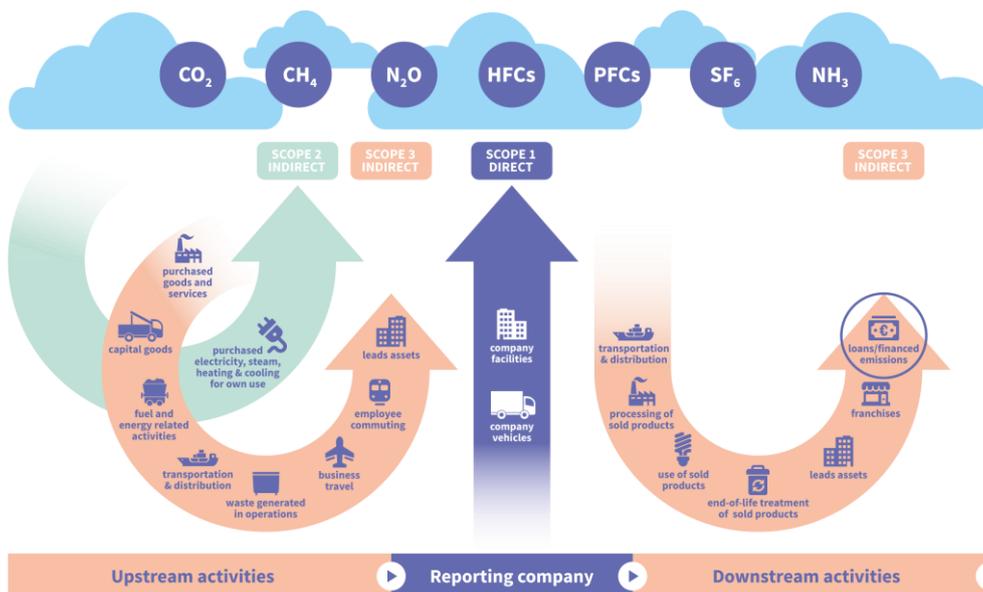


Figure 1. The scope definitions from the GHG Protocol (Image created from GHG Protocol).

According to the GHG Protocol Corporate Value Chain Accounting and Reporting Standard, the carbon footprint of any financial institution should include:

- Scope 1: All direct GHG emissions, such as natural gas use, and fuel for company vehicles of the investee, project, company, or government.
- Scope 2: Indirect emissions from the consumption of purchased electricity, heat or steam of the investee, project, company, or government.

- Scope 3 covers other indirect emissions such as the extraction and production of purchased materials and fuels, outsourced activities, business travel, waste disposal, etc. of the investee, project, company, or government.

Disclosure of total generated emissions data is mandatory for scope 1 and 2. Disclosure of emissions intensity data (ton CO₂ eq per million EUR) for scope 1 and 2 is voluntary. For scope 3 emissions, disclosure of total generated data is mandatory when relevant and available (i.e., recommended by the methodology). Disclosure of scope 3 emissions intensity data (ton CO₂ eq per million EUR) is voluntary. Institutions should explain why they are not able to provide this information.

2.3 NWB Bank loan portfolio

The NWB Bank loan portfolio consists of different market sectors. These sectors cover the long-term loans and advances (nominal value) and for the local governments also the interest-bearing securities (nominal value). At the start of 2020, NWB Bank had a total loan portfolio of 49 billion Euro. An overview of these sectors is given in Table 2.1.

Table 2.1. Overview of NWB Bank loan portfolio 2019-2020¹⁹

Sector	Loan portfolio (million EUR)	Percentage of all loans	Loan portfolio (million EUR)	Percentage of all loans
	2020	2020	2019	2019
Social housing sector	30,813	62.3%	30,265	63.5%
Local governments	7,071	14.3%	6,583	13.8%
Water authorities	6,501	13.2%	6,327	13.3%
Healthcare sector	2,053	4.2%	2,119	4.4%
Drinking water utilities	666	1.3%	477	1.0%
Regional governments	225	0.5%	247	0.5%
Educational institutions	70	0.1%	73	0.2%
Residual	2,037	4.1%	1,554	3.3%
Total	49,436	100%	47,644	100%

As seen in table 2.1, the social housing sector is the largest sector in the NWB Bank loan portfolio, followed by the municipalities (local governments), and water authorities.

¹⁹ The loan portfolio of 2020 is from 31-12-2019 and the loan portfolio of 2019 is from 31-12-2018

2.4 Attribution

The footprint of NWB Bank is calculated based on the emissions of individual organizations. The individual emissions of an organization are multiplied by the proportional share of the outstanding loan amount with NWB Bank in the total balance sheet of that client. In the end, all individual organizations are aggregated, using the following formula:

$$\sum CO_2eq \times \frac{\text{Outstanding loan}}{\text{Total balance sheet}}$$

2.5 Emission factors

For the development of the carbon footprint of clients from NWB Bank, CO₂ emission factors were used to transform energy into kilograms CO₂ equivalent. The emission factors used in this publication are published at www.CO2emissiefactoren.nl. The list of emission factors is prepared by a collaboration of Milieu Centraal, Stimular, SKAO, Connekt and The National Government of The Netherlands. The aim of this list is to present the emission factors on a scientific, and uniform matter. PCAF The Netherlands has embraced this list of widely accepted grid emission factors, and recommends using this for the Dutch context.

www.CO2emissiefactoren.nl gives three different options for every emission factor. Well-to-wheel (WTW), Tank to Wheel (TTW), and Well to Tank (WTT). PCAF has chosen to use the grid emission factor related to direct emissions, expressed under column TTW. These are only the emissions produced by the end user. It does not include the emissions caused by the energy production phase (WTT).

For more information about the used emission factors, see the methodology approach report, released in October 2020²⁰.

2.6 Data quality²¹

An important element of carbon accounting is the quality of data on emissions of loans and investments. Different asset classes present unique challenges and opportunities with respect to emissions data. This section provides some overarching principles about the quality and preferred hierarchy of emissions data, with more detailed guidance provided on specific asset classes in the next chapters.

²⁰ Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

²¹ Text from: Accounting GHG emissions and taking action: harmonised approach for the financial sector in the Netherlands PCAF The Netherlands, report 2019.

High quality emissions data is defined as follows:

- Emissions data is consistent, both across entities and across time;
- Emissions data reflects the underlying emissions generating activities of the entity and are not impacted by unrelated factors;
- Emissions data is accompanied by a relevant level of assurance.

It is possible that emissions data does not meet all the criteria listed above, and that this is dependent on the specific properties of the loan and investment, such as: type of loan/investment, the sector or market best practice. To comply with PCAF’s reporting guidance, participating institutions are asked to publish the existing PCAF hierarchy of data quality table below. The table is a guide to disclose data quality scores in total and per asset class.

The following data scoring is used to score and improve data quality of the network sector. The data quality presented in each chapter is valid for both calculated years.

Table 2.2 Data quality definitions for the quality score estimates

Data quality (highest to lowest)	Description
1	Actual energy consumption, converted to CO ₂ eq-emissions using verified emission factors and detailed activity data specific to the type of energy consumed
2	Actual energy consumption, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
3	Modeled regional activity data based on robust assumptions, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
4	Modeled activity data in a country, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
5	Highly modeled activity or uncertain activity data in a country, converted to CO ₂ eq-emissions using default emissions factors for energy from undefined fuel source

3 Social housing sector

The social housing sector is the largest sector within the loan portfolio of the NWB Bank. The sector is accountable for 62.3% of the total loan portfolio of the NWB Bank. Within this sector, 99.9% of the outstanding loans is related to social housing associations. Only 0.1% of the loans is provided to other organizations, related to social housing associations. These organizations can be active in management of real estate or real estate development.

3.1 Coverage

It was possible to calculate the CO₂ equivalent footprint for 99.9% of the loan portfolio within the social housing sector. Emissions were based on scope 1 and 2 activities. An overview of the social housing sector is given in Tables 3.1 and 3.2.

Table 3.1 Coverage rate for the social housing sector for reporting year 2020

Social housing sector	Loan portfolio (million EUR)	Percentage of sector	Percentage of all loans	Coverage rate (loan portfolio)
Social housing associations	30,790	99.9%	62.3%	100.0%
Others	23	0.1%	0.0%	0.0%
Total	30,813	100.0%	62.3%	99.9%

Table 3.2 Coverage rate for the social housing sector for reporting year 2019

Social housing sector	Loan portfolio (million EUR)	Percentage of sector	Percentage of all loans	Coverage rate (loan portfolio)
Social housing associations	30,199	99.8%	63.4%	100.0%
Others	66	0.2%	0.1%	0.0%
Total	30,265	100.0%	63.5%	99.8%

The coverage rate has increased by 0.1% over the past year.

3.2 Methodology and data used

For an elaborated description of the methodology and data used to calculate the CO₂ equivalent footprint following the Dutch PCAF Principles, please consult the methodology approach report, released in October 2020²².

²² Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

3.2.1 Attribution

The CO₂ equivalent footprint of the NWB Bank for the social housing sector is calculated based on the emissions of individual social housing associations. The individual emissions of a certain housing type are multiplied by the proportional share of the outstanding loan amount with NWB Bank in the total balance sheet of that client. In the end, all emissions of social housing associations are aggregated for each housing type and subsequently for all housing types together, using the following formula:

$$\sum CO_2eq \times \frac{\text{Outstanding loan}}{\text{Total balance sheet}}$$

As a basic attribution principle, the lender accounts for a portion of the GHG emissions of the financed company determined by the ratio between the lender's exposure and the enterprise value of the company (in this asset class total balance sheet of the company). For this, the actual outstanding exposure is used. This means adjusting the numerator of the attribution factor annually (end-of-year exposure), resulting in the attribution to decline to 0 at the end of the lifetime of the loan (when it is fully repaid).

Different methods were used to calculate different components of the covered emissions. The coverage per scope is described below, based on the different scopes defined by PCAF. For a more detailed methodology description, see the Methodological Approach Report, released in October 2020²³.

3.2.2 Scopes covered

Emissions for energy use of financed rental homes (scope 1 and 2) are covered in the approach for this sector. This is in line with the commercial real estate and residential mortgages approach in the PCAF methodology. There are plans within the PCAF Platform to explore the possibilities of adding scope 3 to this approach, but these are not finalized yet, and therefore not been taken into account in this study.

Scope 1: Natural gas use

The exact use of natural gas per social housing association is unknown. Therefore, an estimation had to be made. To make this estimation as accurate as possible, multiple calculation factors were used. CO₂ equivalent emissions caused by natural gas use have been estimated by the energy-labels of the rental homes, the type of rental unit, the geographic location, and the floor surface of the rental unit.

Scope 2: District heating

No exact district heating statistics per social housing association are known. To make a reliable estimation, multiple calculation factors were used. CO₂ equivalent emissions caused by district heating per social housing association have been estimated by the energy-labels of the rental homes, the type of rental home, the geographic location, the floor surface of the rental home, and the percentage of district heating houses per municipality.

²³ Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

Scope 2: Electricity use

The exact use of electricity per social housing association is unknown. Estimations have been made using multiple calculation factors. CO₂ equivalent emissions caused by electricity use per social housing association have been estimated by the type of rental home, the geographic location, the floor surface of the rental home, the estimated number of residents per rental home, and the electricity use per type of rental home.

3.3 Data quality

The CO₂ equivalent emissions per rental home are ideally calculated using energy consumption data per client account. When this is not available, other methods were used. This of course will increase the need to use estimations, and the uncertainty level of the calculations.

The method in this study uses energy labels, number of residents, and floor area per type of social house, converted to CO₂ equivalent emissions using emission factors for energy from undefined fuel source (except for gas use, where the energy source is natural gas). This is in compliance with data quality level 3. However, instead of country level averages, municipal averages were used. This makes the calculation more precise, because of the geographical differences in the Netherlands in energy use. In addition, we were able to subtract an estimate of energy used within district heating. Therefore, the natural gas use estimate is even more precise.

Table 3.3 Data quality definitions for the social housing sector

SCORE	DESCRIPTION
Score 1	Actual energy consumption, converted to CO ₂ eq-emissions using verified emissions factors specific to the type of energy consumed
Score 2	Actual energy consumption, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
Score 3	Estimated energy consumption based on energy performance/energy label and floor area per type of social house in a country, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
Score 4	Estimated energy consumption per type of social house in a country and floor area, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
Score 5	Average energy consumption per social house in a country, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source

Given the considerations above, the data quality score is estimated at 2.5. It is not as precise as data quality level 2, but it is better than data quality level 3.

3.4 Results

The results of the CO₂ equivalent footprint of the NWB Bank loan portfolio for the social housing sector for reporting year 2019 and 2020 are shown in Table 3.4.

Table 3.4 GHG emissions of the NWB Bank social housing sector

Source of emissions	Scope	CO ₂ EQ. (total)		CO ₂ EQ. (relative)	CO ₂ EQ. (total)		CO ₂ EQ. (relative)	Data quality score
		Ton/year	%	Ton/million EUR	Ton/year	%	Ton/million EUR	
		2020	2020	2020	2019	2019	2019	
Direct CO ₂ -emissions								
Natural gas use	Scope 1	504,345	66.9%	16.4	563,630	67.0%	18.7	2.5
Indirect CO ₂ emissions by energy use								
Electricity use	Scope 2	226,225	30.0%	7.3	252,796	30.1%	8.4	2.5
District heating	Scope 2	22,796	3.0%	0.7	24,775	2.9%	0.8	2.5
Total		753,366	100.0%	24.5	841,201	100.0%	27.9	2.5

Table 3.5 Percentage of the outstanding loans compared to the total balance sheet of the social housing sector for reporting year 2019 and 2020

Housing sector	Loan portfolio / Total balance sheet (%)	
	2020	2019
Social housing sector	9.5%	10.4%

Between reporting year 2019 and 2020 the CO₂ equivalent expressed as ton per year decreased for all scopes. The total CO₂ equivalent expressed as ton per year decreased with 87,835 ton. This large decrease is mainly caused by a decrease in scope 1 natural gas use, which decreased with 59,285 ton. Natural gas use decreased because the percentage of houses with a more energy efficient energy label increased. It is also possible that natural gas use decreased because the number of houses without a gas connection increased. The total CO₂ equivalent expressed as ton per million euro decreased with 3.4 ton per million euro. In conclusion, absolute and relative GHG emissions decreased for the social housing sector between reporting year 2019 and 2020.

The percentage of the outstanding social housing loans at the NWB Bank compared to the total balance sheet of the social housing sector decreased by 0.9% (Table 3.5).

4 Water authorities sector

The water authorities sector covers 13.2% of the total loan portfolio of the NWB Bank. More information about these loans are given in table 4.1.

4.1 Coverage

It was possible to provide 100% of the loan portfolio within the water authorities sector with a CO₂ equivalent footprint. Emissions are based on scope 1, 2 and 3 activities mapped by Arcadis in the climate monitor water authorities 2019²⁴. An overview of the water authorities sector is given in table 4.1.

Table 4.1 Coverage rate for the water authorities sector for reporting year 2019 and 2020

Water authorities	Loan portfolio (million EUR)	Percentage of sector	Percentage of all loans	Coverage rate (loan portfolio)
2020	6,501	100%	13.2%	100%
2019	6,327	100%	13.3%	100%

The water authorities loan portfolio increased over the last year by 174 million euro. This sector remains a relatively large part of the NWB Bank loan portfolio, with 13.2% of all loans.

4.2 Methodology and data used

Data was used from the climate monitor water authorities¹ (Arcadis, 2020). This monitor is developed by Arcadis for the Union of Water Authorities (Unie van Waterschappen) and the NWB Bank. This monitor describes the emissions in the three scopes in detail, and per individual water authority.

The 'klimaatmonitor waterschappen' (Arcadis, 2020) uses the emission factors from www.CO2emissiefactoren.nl, as advised by PCAF. The only difference is that the monitor uses the well to wheel (WTW) factors, and not the tank to wheel factors (TTW). The PCAF harmonised approach prescribes to use the TTW values. Therefore, the CO₂ equivalent emissions are recalculated, based on the raw values of the fuel, warmth, and electricity use in the report.

²⁴ Arcadis (2020). Klimaatmonitor Waterschappen: verslagjaar 2019.

Water authorities use a lot of electricity in their processes. This electricity is mainly green and from sources outside of The Netherlands accompanied with a Guarantee of Origin (GoO). For footprint calculations, it is now customary to convert green electricity from foreign sources acquired with GoO's with a emission factor for grey electricity. This assumption is based on new insights and the fact that GoO's do not contribute to the greening of the Dutch electricity production.²⁵ This approach differs from the approach in the 'klimaatmonitor waterschappen' (Arcadis, 2020), and therefore the outcomes are different as well.

There are a few exceptions to be made due to a lack of information on certain emission factors as provided in the monitor. For a elaborated description of the methodology and data used to calculate the CO₂ equivalent footprint following the Dutch PCAF Principles, please consult the methodology report, released in October 2020²⁶.

4.2.1 Attribution

The footprint of the NWB Bank for the water authorities sector is calculated based on the emissions of individual organizations. The emissions of the individual organizations are multiplied by the proportional share of the outstanding loan amount with NWB Bank in the total balance sheet of that client. In the end, all emissions of the individual water authorities are aggregated, using the following formula:

$$\sum CO_2eq \times \frac{\text{Outstanding loan}}{\text{Total balance sheet}}$$

Different methods were used to calculate different components of the covered emissions. The coverage per scope is described below, based on the different scopes defined by PCAF. For a more detailed methodology description, see the Methodology Approach Report, released in October 2020²⁷.

²⁵ <https://www.co2emissiefactoren.nl/lijt-emissiefactoren/>

²⁶ Mulder, R., Rovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

²⁷ Mulder, R., Rovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

4.2.2 Scopes Covered

The 'klimaatmonitor waterschappen' covers all three scopes in detail. Table 4.2 shows the underlying themes of the scopes. For a more elaborate overview of scopes and coverage, see the 'klimaatmonitor waterschappen' (Arcadis, 2020).

Table 4.2 covered scopes

Emission	Scope
Natural gas installations and buildings	Scope 1
Diesel installations and buildings	Scope 1
Other fuels installations and buildings	Scope 1
Fuel company vehicles	Scope 1
Fuel freight transport	Scope 1
Process emissions drainage biogas	Scope 1
Electricity installations and buildings	Scope 2
Warmth installations and buildings	Scope 2
Fuel private cars	Scope 3
Fuel commuter traffic	Scope 3
Public transport	Scope 3
Fuel business flights	Scope 3
Diesel outsourced sewage sludge transport	Scope 3
Diesel outsourced maintenance water systems	Scope 3
Diesel outsourced freight transport	Scope 3
Purchase of metal salts	Scope 3
Purchase of polymer	Scope 3

Source: Arcadis 2020²⁸

4.3 Data quality

The method for water authorities is scaled into data quality level 2, because of the detailed underlying information provided in the Arcadis (2020) study. The data is however not audited. Especially the data on energy consumption is of high liability. The transport data is more model based and is therefore scaled as quality level 2.5.

Table 4.3 Data quality definitions for the public sector

Data quality	Description
1	Actual energy consumption, converted to CO ₂ eq-emissions using verified emission factors and detailed activity data specific to the type of energy consumed
2	Actual energy consumption, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
3	Modeled regional activity data based on robust assumptions, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
4	Modeled activity data in a country, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
5	Highly modeled activity or uncertain activity data in a country, converted to CO ₂ eq-emissions using default emissions factors for energy from undefined fuel source

²⁸ <https://www.uvw.nl/waterschappen-bereiken-energie-en-klimaatambities-2020/>

4.4 Results

The results of the CO₂ equivalent footprint of the NWB Bank loan portfolio of water authorities for reporting year 2019 and 2020 are shown in Table 4.4.

Table 4.4 GHG emissions of the NWB Bank water authorities sector

Source of emissions	Scope	CO ₂ EQ. (total)		CO ₂ EQ. (relative)	CO ₂ EQ. (total)		CO ₂ EQ. (relative)	Data quality score
		Ton/year	%	Ton/million EUR	Ton/year	%	Ton/million EUR	
		2020	2020	2020	2019	2019	2019	
Direct CO ₂ -emissions								
Fuel for water treatment management	Scope 1	3,962	1.2%	0.6	3,861	1.0%	0.6	2
Fuel for water systems	Scope 1	3,589	1.1%	0.6	3,349	0.9%	0.5	2
Other fuel use	Scope 1	1,419	0.4%	0.2	1,664	0.4%	0.3	2
Transport fuel	Scope 1	12,657	3.9%	1.9	12,348	3.3%	2.0	2.5
Biogas discharge	Scope 1	475	0.1%	0.1	479	0.1	0.1	2
Indirect CO ₂ emissions by energy use								
Electricity use	Scope 2	225,808	69.1%	34.7	271,761	73.0%	43.0	1
Warmth	Scope 2	2,056	0.6%	0.3	2,248	0.6%	0.4	2
Other indirect CO ₂ emissions								
Fuel commuting, maintenance and transport	Scope 3	42,833	13.1%	6.6	43,011	11.6%	6.8	2.5
Purchase of metal salts and polymer	Scope 3	33,780	10.3%	5.2	33,545	9.0%	5.3	2
Total		326,577	100.0%	50.2	372,266	100.0%	58.8	2

Between reporting year 2019 and 2020 the CO₂ equivalent expressed as ton per year decreased for most scopes. In total the decrease was 45,689 ton. This large decrease was almost entirely due to a decrease of 45,953 ton for scope 2 electricity use. This sector has invested in renewable energy projects in the Netherlands. The CO₂ equivalent expressed as ton per million euro decreased with 8.6 ton per million euro. In conclusion, the absolute and relative GHG emissions decreased between reporting year 2019 and 2020.

Table 4.5 Percentage of the loan portfolio compared to the total balance sheet of the water authorities in reporting year 2019 and 2020

Water authorities	Loan portfolio / Total balance sheet (%)	
	2020	2019
Water authorities	68.9%	67.8%

The percentage of the loan portfolio at the NWB Bank compared with the total balance sheet of the water authorities increased by 0.9% (Table 4.5). The overall influence of the NWB Bank in terms of financial dependency is large for this sector.

5 Local governments sector: Municipalities

The municipalities sector covers 13.8% and 14.3% of the total loan portfolio of the NWB Bank for reporting year 2019 and 2020, respectively. This means that the Municipality sector is the second largest sector within the total loan portfolio of the NWB Bank. The municipality sector consists of Dutch municipalities.

5.1 Coverage

It was possible to provide 100% of the loan portfolio within the Municipality sector with a CO₂ equivalent footprint. Emissions are based on scope 1, 2 and 3 activities. An overview of the municipality sector is given in Table 5.1. The municipality loan portfolio increased with 488 million euro over the past year.

Table 5.1 Coverage rate of NWB Bank municipality sector for reporting year 2019 and 2020

Municipality sector	Loan portfolio (x million EUR)	Percentage of all loans	Coverage rate (loan portfolio)
2020	7,071	14.3%	100%
2019	6,583	13.8%	100%

5.2 Methodology and data used

The methodology and data used to calculate the CO₂ equivalent footprint following the Dutch PCAF Principles are described in the methodology approach report, released in October 2020²⁹.

5.2.1 Attribution

The footprint of the NWB Bank for the municipality sector is calculated based on the emissions of the individual municipalities. The emissions of the individual municipalities are multiplied by the proportional share of the outstanding loan amount with NWB Bank in the total balance sheet of that client. In the end, all emissions of the individual municipalities are aggregated, using the following formula:

$$\sum CO_2eq \times \frac{\text{Outstanding loan}}{\text{Total balance sheet}}$$

Different methods were used to calculate different components of the covered emissions. The coverage per scope is described below, based on the different scopes defined by PCAF. For a more detailed methodology description, see the Methodology Approach Report, released in October 2020³⁰.

²⁹ Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

³⁰ Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

5.2.2 Scopes covered

In this methodology, scope 1, 2, and 3 are covered.

Scope 1: Natural gas use and fossil fuel use by cars

Scope 1 emissions are the direct GHG emissions of the organization. For the municipalities, these emissions result from the use of natural gas for heating of buildings and the use of fossil fuel use by cars. Unfortunately, the exact figures for these sources are unknown per municipality, therefore some estimations had to be made using multiple calculation factors to achieve the best result possible. See for description of the calculations and used data the methodology approach report, released in October 2020³¹.

Scope 2: Electricity use

Scope 2 emissions include the indirect GHG emissions from consumption of purchased electricity, heat or steam. Because the heat and steam use per municipality is unknown, scope 2 only contains the use of purchased electricity. Unfortunately, the exact figures per municipality are unknown, therefore some estimations had to be made using multiple calculation factors to achieve the best result possible. See for description of the calculations and used data the methodology approach report, released in October 2020³².

Scope 3: Purchased goods and services

Scope 3 covers all other indirect emissions. Some examples of scope 3 activities prominent in government activities include emissions from employee commuting, business travel, and outsourced contractor activities. The scope 3 emissions per municipality are unknown, but they can be estimated by the annual spending of municipalities (IV3/COFOG). See for description of the calculations and used data the methodology approach report, released in October 2020³³.

5.3 Data quality

The following data scoring is used to score and improve data quality of the of the municipality sector.

Table 5.2 Data quality definitions for the public sector

Data quality (highest to lowest)	Description
1	Actual energy consumption, converted to CO ₂ eq-emissions using verified emission factors and detailed activity data specific to the type of energy consumed
2	Actual energy consumption, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source

³¹ Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

³² Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

³³ Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

3	Modeled regional activity data based on robust assumptions, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
4	Modeled activity data in a country, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
5	Highly modeled activity or uncertain activity data in a country, converted to CO ₂ eq-emissions using default emissions factors for energy from undefined fuel source

In this study, the method used for municipalities is based on robust estimations of electricity and natural gas use, converted to CO₂ equivalent emissions using emission factors. For natural gas use, this is a known specific type of energy, but for electricity use, energy comes from undefined sources. This is in compliance with data quality level 3. The scope 3 calculations are based on local actual expenses, and national averages on CO₂ equivalent emissions. Therefore, this is in compliance with data quality level 3.

5.4 Results

The results of the CO₂ equivalent footprint of the outstanding NWB Bank loans to Dutch municipalities for reporting year 2019 and 2020 is given in Table 5.3.

Table 5.3 GHG emissions of the NWB Bank municipality sector

Source of emissions	Scope	CO ₂ EQ. (total)		CO ₂ EQ. (relative)	CO ₂ EQ. (total)		CO ₂ EQ. (relative)	Data quality score
		Ton/year	%	Ton/million EUR	Ton/year	%	Ton/million EUR	
Direct CO ₂ -emissions		2020	2020	2020	2019	2019	2019	
Natural gas use	Scope 1	11,348	2.7%	1.6	11,372	2.7%	1.7	3
Fossil fuel use (cars)	Scope 1	1,127	0.3%	0.16	1,034	0.2%	0.16	4
Indirect CO ₂ emissions by energy use								
Electricity use	Scope 2	36,632	8.8%	5.2	32,616	7.8%	5.0	3
Other indirect CO ₂ emissions								
Purchased goods and services	Scope 3	365,783	88.2%	51.7	372,074	89.2%	56.5	3
Total		414,891	100.0%	58.7	417,096	100.0%	63.4	3

Table 5.4 Percentage of the outstanding loans compared to the total balance sheet of the municipalities for reporting year 2019 and 2020

Municipality sector	Loan portfolio / Total balance sheet (%)	
	2020	2019
Municipalities	10.0%	9.3%

Between reporting year 2019 and 2020 the amount of CO₂ equivalent expressed as ton per year decreased for the scope 1 natural gas use and for scope 3, but increased for scope 1 fossil fuel use by cars and for scope 2 electricity use (Table 5.3). Between reporting year 2019 and 2020 the outstanding amount of loans increased (Table 5.1). This might be an explanation for the increase in the CO₂ equivalent expressed as ton per year for scope 1 fossil fuel use by cars. But it does not seem to be the explanation for the increase in the CO₂ equivalent expressed as ton per year for scope 2 electricity use, because the CO₂ equivalent expressed as ton/million euro increased with 0.2 ton per million euro for this scope, which means that the relative GHG emissions of scope 2 increased.

The CO₂ equivalent expressed as ton/million euro of scope 3 decreased with 4.8 ton. The total CO₂ equivalent expressed as ton/million euro decreased with 4.7 ton. In conclusion, the total absolute and relative GHG emissions of the municipality sector decreased between reporting year 2019 and 2020.

The percentage of the outstanding municipality loans at the NWB Bank compared to the total balance sheet of the municipalities slightly increased with 0.7% between reporting year 2019 and 2020 (Table 5.4).

6 Regional Governments sector: Provinces

Dutch provinces account for 0.5% of the total loan portfolio of the NWB Bank in reporting year 2019 and 2020.

6.1 Coverage

It was possible to provide the province in the loan portfolio with a CO₂ equivalent footprint. Therefore, the coverage rate of this sector is 100%. Emissions are based on scope 1, 2 and 3 activities. An overview of the provinces sector is given in Table 6.1. The province loan portfolio decreased with 22 million euro over the past year.

Table 6.1 Coverage rate of the provinces sector for reporting year 2019 and 2020

Provinces sector	Loan portfolio (x million EUR)	Percentage of all loans	Coverage rate (loan portfolio)
2020	225	0.5%	100%
2019	247	0.5%	100%

6.2 Methodology and data used

The methodology and data used to calculate the CO₂ equivalent footprint following the Dutch PCAF Principles are described in the methodology approach report, released in October 2020³⁴.

6.2.1 Attribution

The footprint of the NWB Bank for the province sector is calculated based on the emissions of the individual provinces. The emissions of the individual provinces are multiplied by the proportional share of the outstanding loan amount with NWB Bank in the total balance sheet of that client. In the end, all emissions of the individual provinces are aggregated, using the following formula:

$$\sum CO_2eq \times \frac{\text{Outstanding loan}}{\text{Total balance sheet}}$$

Different methods were used to calculate different components of the covered emissions. The coverage per scope is described below, based on the different scopes defined by PCAF. For a more detailed methodology description, see the Methodology Approach Report, released in October 2020³⁵.

³⁴ Mulder, R., Roover, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

³⁵ Mulder, R., Roover, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

6.2.2 Scopes covered

In this methodology, scope 1, 2, and 3 are covered.

Scope 1: Natural gas use and fossil fuel use by cars

Scope 1 emissions are the direct GHG emissions of the organization. For the Provinces, these emissions result from the use of natural gas for heating of buildings and the use of fossil fuel use by cars. Unfortunately, the exact figures for these sources are unknown per province, therefore some estimations had to be made using multiple calculation factors to achieve the best result possible. See for description of the calculations and used data the methodology approach report, released in October 2020³⁶.

Scope 2: Electricity use

Scope 2 emissions include the indirect GHG emissions from consumption of purchased electricity, heat or steam. Because the heat and steam use per province is unknown, scope 2 only contains the use of purchased electricity. Unfortunately, the exact figures per province are unknown, therefore some estimations had to be made using multiple calculation factors to achieve the best result possible. See for description of the calculations and used data the methodology approach report, released in October 2020³⁷.

Scope 3: Purchased goods and services

Scope 3 covers all other indirect emissions. Some examples of scope 3 activities prominent in government activities include emissions from employee commuting, business travel, and outsourced contractor activities. The scope 3 emissions per province are unknown, but they can be estimated by the annual spending of provinces (IV3/COFOG). See for description of the calculations and used data the methodology approach report, released in October 2020³⁸.

6.3 Data quality

The following data scoring is used to score and improve data quality of the provinces sector.

Table 6.2 Data quality definitions for the public sector

Data quality (highest to lowest)	Description
1	Actual energy consumption, converted to CO ₂ eq-emissions using verified emission factors and detailed activity data specific to the type of energy consumed
2	Actual energy consumption, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source

³⁶ Mulder, R., Roover, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

³⁷ Mulder, R., Roover, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

³⁸ Mulder, R., Roover, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

3	Modeled regional activity data based on robust assumptions, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
4	Modeled activity data in a country, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
5	Highly modeled activity or uncertain activity data in a country, converted to CO ₂ eq-emissions using default emissions factors for energy from undefined fuel source

In this study, the method used for provinces is based on robust estimations of electricity and natural gas use, converted to CO₂ equivalent emissions using emission factors. For natural gas use, this is a known specific type of energy, but for electricity use, energy comes from undefined sources. This is in compliance with data quality level 3. The scope 3 calculations are based on local actual expenses, and national averages on CO₂ equivalent emissions. Therefore, this is in compliance with data quality level 3.

6.4 Results

The results of the CO₂ equivalent footprint of the outstanding NWB Bank loans to one of the Dutch provinces for reporting year 2019 and 2020 is given in Table 6.3.

Table 6.3 GHG emissions of the NWB Bank provinces sector

Source of emissions	Scope	CO ₂ EQ. (total)		CO ₂ EQ. (relative)	CO ₂ EQ. (total)		CO ₂ EQ. (relative)	Data quality score
		Ton/year	%	Ton/million EUR	Ton/year	%	Ton/million EUR	
Direct CO ₂ -emissions		2020	2020	2020	2019	2019	2019	
Natural gas use	Scope 1	134	1.8%	0.6	166	2.2%	0.7	3
Fossil fuel use (cars)	Scope 1	19	0.2%	0.1	22	0.3%	0.1	4
Indirect CO ₂ emissions by energy use								
Electricity use	Scope 2	546	7.4%	2.4	634	8.5%	2.6	3
Other indirect CO ₂ emissions								
Purchased goods and services	Scope 3	6,656	90.5%	29.6	6,635	89.0%	26.9	3
Total		7,354	100.0%	32.8	7,457	100.0%	30.2	3

Table 6.4 Percentage of the outstanding loans compared to the total balance sheet of the provinces for reporting year 2019 and 2020

Province sector	Loan portfolio / Total balance sheet (%)	
	2020	2019
Provinces	12.9%	15.6%

Between reporting year 2019 and 2020 the amount of the CO₂ equivalent expressed as ton per year decreased for scope 1 natural gas use, fossil fuel use by cars and for scope 2 electricity use. But the CO₂ equivalent expressed as ton per year increased for scope 3 (Table 6.3). In total, the CO₂ equivalent expressed as ton per year decreased with 103 ton. In Table 6.1 was shown that the outstanding loan for the province reduced and this partly explains the reduction in the CO₂ equivalent of scope 1 and 2. However, the reduction of the CO₂ equivalent expressed as ton per million euro for scope 1 natural gas use with 0.2 ton and for scope 2 with 0.4 ton show that the relative GHG emissions for these scopes were reduced between reporting year 2019 and 2020.

The increase in the CO₂ equivalent expressed as ton per year for scope 3 also resulted in an increase in the CO₂ equivalent expressed as ton per million euro of 2.7 ton per million euro. Between reporting year 2019 and 2020 the expenses of the provinces in the task fields and categories that belong to scope 3 increased on average with 56.6 million euros. This is probably an explanation for the increase of GHG emissions for scope 3. Although the CO₂ equivalent expressed as ton per million euro for scope 1 natural gas use and scope 2 electricity use decrease, the total CO₂ equivalent expressed as ton per million euro increased with 2.6 ton per million euro due to the increase in GHG emissions in scope 3. In conclusion, the absolute GHG emissions of the provinces sector decreased, but the relative GHG emissions increased between reporting year 2019 and 2020.

In Table 6.4 it is shown that the percentage of the outstanding amount of loans at the NWB Bank compared to the total balance sheet of the provinces decreased by 2.7% between reporting year 2019 and 2020. This is in agreement with the results shown in Table 6.1. that show a decrease in the outstanding loan.

7 Healthcare sector

The Healthcare sector covers 4.2% of the total loan portfolio of NWB Bank. At the start of 2020, NWB Bank had loans to healthcare institutions with a total value of 2.1 Billion euro.

7.1 Coverage

As shown in Table 7.1, 72.6% of the organizations in the healthcare sector has been provided with a CO₂ equivalent footprint. This means that 27.4% is not covered in the analysis. The main reason for this is lack of adequate data on energy usage, as the Ministry of Health, Welfare, and Sport does not cover all the organizations in its financial statements.

The coverage rate has improved by 2.1% over the past year. This is however related to shifts in clients and loans within NWB Bank's portfolio. The data availability for this sector did not improve.

The healthcare sector loan portfolio decreased over the last year by 66 million euro.

Table 7.1 Coverage rate for the healthcare sector for reporting year 2019 and 2020

Healthcare sector	Loan portfolio (million EUR)	Percentage of all loans	Coverage rate (loan portfolio)
2020	2,053	4.2%	72.6%
2019	2,119	4.4%	70.5%

7.2 Methodology and data used

For a detailed description of the methodology and data used to calculate the CO₂ equivalent footprint following the Dutch PCAF Principles, see the methodology approach report, released in October 2020³⁹.

7.2.1 Attribution

The footprint of the NWB Bank for the healthcare sector is calculated based on the emissions of individual organizations. The emissions of the individual organizations are multiplied by the proportional share of the outstanding loan amount with NWB Bank in the total balance sheet of that client. In the end, all emissions of the individual healthcare organizations are aggregated, using the following formula:

$$\sum CO_2eq \times \frac{\text{Outstanding loan}}{\text{Total balance sheet}}$$

Different methods were used to calculate different components of the covered emissions. The coverage per scope is described below, based on the different scopes defined by PCAF.

³⁹ Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

For a more detailed methodology description, see the methodology approach report, released in October 2020⁴⁰.

7.2.2 Scopes Covered

In this methodology, scope 1, 2 and parts of scope 3 are covered.

Scope 1

Scope 1 emissions are the direct GHG emissions of the organizations. For healthcare organizations, these emissions come from the use of natural gas for heating of buildings, or for disinfection of medical tools. The actual natural gas use per organization is unknown, but the costs of natural gas consumption are mentioned in the financial statements collected by the Ministry of Health, Welfare and Sport. This means that some estimations had to be made to come to the actual CO₂ equivalent emissions, but the estimations were done using an accurate reliable data base.

Natural gas use is estimated by the expenditure on natural gas and the average yearly price index of natural gas. Because natural gas gets cheaper per m³ if one consumes more, averages had to be used to come to estimates. CBS provides these numbers, making it possible to come to reliable estimations.

Subsequently, the emission factor for natural gas has been used to determine the CO₂ equivalent emission of natural gas used in healthcare organizations.

Scope 2

Scope 2 emissions include the indirect GHG emissions from consumption of purchased electricity, heat or steam. Because the heat and steam use per healthcare organization is unknown, scope 2 will be based on the use of purchased electricity.

Electricity use is estimated in roughly the same way as natural gas use. The actual electricity use per organization is unknown, but the costs of electricity consumption are mentioned in the financial statements collected by the Ministry of Health, Welfare and Sport. This means that some estimations had to be made to come to the actual CO₂ equivalent emissions, but the estimations were done using a reliable database.

Furthermore, electricity use is estimated by the expenditure on electricity and the average yearly price index of electricity. Because natural gas prices decrease per kWh if one consumes more, averages had to be used to come to a reliable estimation. CBS provides these numbers, making it possible to come to reliable estimations.

The emission factor for electricity consumption (source undefined) has been used to determine the CO₂ equivalent emission for the healthcare organizations.

Scope 3

⁴⁰ Mulder, R., Roover, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

Scope 3 covers all other indirect emissions. Some examples of scope 3 activities in healthcare include emissions from employee commuting and business travel. No exact data was available, so estimations had to be made.

Estimations were made on the basis of regional commuting and business travel statistics from CBS, and the number of employees per organization. On average, Dutch employees are traveling 7,905 km per year commuting from and to work (CBS, 2019), but these numbers vary geographically. For other corporate business trips, employees travel on average 2844 kilometer a year (CBS, 2019).

From these trips, 73.4% of the distance travelled is done by car, either as driver or passenger. 10% of the distance travelled is done by train, 5.1% per bicycle, 1.9% by bus/tram/metro and 1.6% walking. The rest of the distance covered is done in other ways. Using the location of the healthcare organization, the above mentioned statistics, the emissions factors for mobility, and the total number of employees per organization (in FTE), an estimation was made of the CO₂ equivalent footprint of commuting and business travel.

7.3 Data quality

The GHG emissions per healthcare organization are ideally calculated using actual and audited energy consumption data per client account. When this is not available, other methods were used. This of course will increase the uncertainty level of the calculations. The method used for healthcare organizations in this study is based on robust estimations of electricity and natural gas. These estimations can be made based on actual expenditure on gas and electricity consumption per client. For natural gas use, this is a known specific type of energy, but for electricity use, energy comes from undefined sources. That is why scope 1 has a data quality value of 1.5, and scope 2 has a data quality estimate of 2. Scope 3 level data was estimated based on national averages. Therefore, this method has a data quality score of 4.

Table 7.2 Data quality definitions for the healthcare sector

Score 1	Actual energy consumption, converted to CO ₂ eq-emissions using verified emission factors and detailed activity data specific to the type of energy consumed
Score 2	Actual energy consumption, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
Score 3	Modeled regional activity data based on robust assumptions, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
Score 4	Modeled activity data in a country, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
Score 5	Highly modeled activity or uncertain activity data in a country, converted to CO ₂ eq-emissions using default emissions factors for energy from undefined fuel source

7.4 Results

The results of the CO₂ equivalent footprint of the NWB Bank loan portfolio of healthcare organizations for reporting year 2019 and 2020 are shown in Table 7.3.

Table 7.3 GHG emissions of the NWB Bank healthcare sector

Source of emissions	Scope	CO ₂ EQ. (total)		CO ₂ EQ. (relative)	CO ₂ EQ. (total)		CO ₂ EQ. (relative)	Data quality score
		Ton/year	%	Ton/million EUR	Ton/year	%	Ton/million EUR	
		2020	2020	2020	2019	2019	2019	
Direct CO ₂ -emissions								
Natural gas use	Scope 1	39,350	46.2%	26.4	40,155	46.2%	26.9	1.5
Indirect CO ₂ emissions by energy use								
Electricity use	Scope 2	28,595	33.6%	19.2	29,637	34.1%	19.8	2
Other indirect CO ₂ emissions								
Commuting (car)	Scope 3	16,824	19.8%	11.3	16,742	19.3%	11.2	4
Commuting (bus/tram/metro)	Scope 3	317	0.4%	0.2	299	0.3%	0.2	4
Commuting (train)	Scope 3	92	0.1%	0.1	92	0.1%	0.1	4
Total		85,178	100.0%	57.2	86,925	100.0%	58.2	2.5

Table 7.4 Percentage of the loan portfolio compared to the total balance sheet of the healthcare sector for reporting year 2019 and 2020

Healthcare sector	Loan portfolio / Total balance sheet (%)	
	2020	2019
Healthcare sector	6.9%	7.0%

Between reporting year 2019 and 2020 the CO₂ equivalent expressed as ton per year decreased for scope 1 and scope 2. The total CO₂ equivalent decreased with 1,747 ton. This decrease can be partly explained by a decrease in the loan portfolio between reporting year 2019 and 2020 (Table 7.1). However, the total CO₂ equivalent expressed as ton per million euro also decreased, so the decrease in loan portfolio is not the only reason for the GHG emission reduction. It is also an indication for a better performing healthcare sector, in terms of GHG emissions. The total CO₂ equivalent expressed as ton per million euro decreased with 1 ton per million euro.

The total percentage of the outstanding loans at the NWB Bank compared with the total balance sheet of the healthcare sector remained more or less the same (Table 7.4).

8 Drinking water utilities sector

The drinking water utilities sector is a relatively small but growing sector within the loan portfolio of the NWB Bank. The sector now covers 1.3% of the total loan portfolio of the NWB Bank. Therefore, Het PON & Telos was asked to develop a new approach in order to acquire a CO₂ equivalent footprint for all ten water utilities.

In the Netherlands, there are ten drinking water utilities that produce and distribute water to consumers and companies within their own geographical area. They do this by extracting groundwater or surface water, purifying the water, and distribute it via water distribution networks.

8.1 Coverage

It was possible to calculate the CO₂ equivalent footprint for 87.3% of the loan portfolio within the drinking water utilities sector. Emissions are based on scope 1 and 2 activities. An overview of the network sector is given in Table 8.1

Table 8.1 Coverage rate for drinking water utilities for reporting year 2019 and 2020

Drinking water utilities	Loan portfolio (million EUR)	Percentage of all loans	Coverage rate (loan portfolio)
2020	666	1.3%	87.3%
2019	477	1.0%	85.5%

The coverage rate of the drinking water utilities has increased by 1.8% over the past year. The loan portfolio increased over the last year by 189 million euro, which is roughly 40%.

8.2 Methodology and data used

For a elaborated description of the methodology and data used to calculate the CO₂ equivalent footprint following the Dutch PCAF Principles, see the Methodology approach report, released in October 2020⁴¹.

8.2.1 Attribution

The footprint of the NWB Bank for the drinking water utilities sector is calculated based on the emissions of individual organizations. The individual emissions of an organization are multiplied by the proportional share of the outstanding loan amount with NWB Bank in the total balance sheet of that client. In the end, all individual emissions of network organizations are aggregated, using the following formula:

$$\sum CO_2eq \times \frac{\text{Outstanding loan}}{\text{Total balance sheet}}$$

⁴¹ Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

Different methods were used to calculate different components of the covered emissions. The coverage per scope is described below, based on the different scopes defined by PCAF. For a more detailed methodology description, see the Methodology approach report, released in October 2020⁴².

8.2.2 Scopes Covered

Emissions for energy use of drinking water utilities (scope 1 and 2) are covered in the approach for this sector. The PCAF harmonised approach (2019) states for most sectors that scope 1 and scope 2 should be covered as a minimum requirement, and scope 3 if available and relevant. Unfortunately, no scope 3 emissions are available at the moment, due to data deficiencies.

Scope 1

Scope 1 emissions are the direct emissions of the drinking water utilities:

- CH₄ and CO₂ emitted during the winning and treating of groundwater, based on measurements in impurified and purified water;
- Carbon emissions from natural gas use;
- Emissions from diesel power units;
- Emissions from fuel use of company cars.

Table 8.2 shows the different activities under the direct emissions of scope 1. Methane emissions from the degassing of groundwater are emitted during the process of winning groundwater. Therefore, they are part of scope 1. These emissions do not occur when water is won from surface water. Groundwater makes up for about 65% of all the water won in the Netherlands. The other emissions come from fuel consumption, such as natural gas and diesel/petroleum

Table 8.2 scope 1 GHG emissions per activity of drinking water utilities

Activity	Description	Greenhouse gas
Degassing of groundwater	A part of the Dutch drink water is obtained through the extraction and processing of ground water. Gasses dissolved in the water are released during this process, including methane. Shallow groundwater extraction for use in agriculture or on construction sites is not included in this document, as this water contains no methane. (Jansen et al., 2019)	Methane (CH ₄)
Collection, purification and distribution of water	Emissions of CO ₂ , from stationary combustion sources based on fuel consumption (fuel oil, Gas/diesel oil, lpg, natural gas & petroleum). (Honig et al., 2020)	Carbon dioxide (CO ₂)
Collection, purification and distribution of water	Emissions of CH ₄ , from stationary combustion sources based on fuel consumption (fuel oil, Gas/diesel oil, lpg, natural gas & petroleum). (Honig et al., 2020)	Methane (CH ₄)

8.2.3 Scope 2

⁴² Mulder, R., Roover, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

Scope 2 emissions are the indirect emissions of the drinking water utilities. These include the emissions of electricity use.

For the process of collection, purification, and distribution of drinking water a lot of electricity is used. In 2018, the average electricity use for production and distribution was 0.51 kWh/m³ drinking water (Vewin, 2020). This would mean that the whole sector uses 611 million kWh per year, which would result in a huge CO₂ equivalent footprint. However, Vewin reports that all the energy used by drinking water utilities is renewable. Based on tank to wheel (TTW) emission factors, this results in zero emissions for electricity use, and therefore scope 2 emissions do not exist⁴³.

8.3 Data quality

The following data scoring is used to score and improve data quality for the drinking water utilities sector.

Table 8.3 Data quality definitions for the drinking water utilities sector

Data quality (highest to lowest)	Description
1	Actual energy consumption, converted to CO ₂ eq-emissions using verified emission factors and detailed activity data specific to the type of energy consumed
2	Actual energy consumption, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
3	Modeled regional activity data based on robust assumptions, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
4	Modeled activity data in a country, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
5	Highly modeled activity or uncertain activity data in a country, converted to CO ₂ eq-emissions using default emissions factors for energy from undefined fuel source

The data is acquired by the National Institute for Public Health and the Environment (RIVM), based on surveys, scientific models, and actual emission data. It gives information about national emissions, municipal emissions, and sector and company specific emissions (when available). This data is based on scientific models, and therefore very reliable. The data quality estimate for this method is 2.

⁴³ Wind power, solar power, water power and biomass all have a TTW emission factor of 0 kg CO₂/kWh

8.4 Results

The results of the CO₂ equivalent footprint of the NWB Bank loan portfolio of drinking water utilities for reporting year 2019 and 2020 are shown in Table 8.4.

Table 8.4 GHG emissions of the NWB Bank drinking water utilities sector

Source of emissions	Scope	CO ₂ EQ. (total)		CO ₂ EQ. (relative)	CO ₂ EQ. (total)		CO ₂ EQ. (relative)	Data quality score
		Ton/year	%	Ton/million EUR	Ton/year	%	Ton/million EUR	
		2020	2020	2020	2019	2019	2019	
Direct CO ₂ -emissions								
Collection, purification, degassing and distribution of groundwater	Scope 1	4,715	98.3%	8.1	2,645	97.2%	6.5	2
Collection, purification and distribution of surface water	Scope 1	83	1.7%	0.1	77	2.8%	0.2	2
Total		4,799	100.0%	8.2	2,722	100.0%	6.7	2

Table 8.5 Percentage of the loan portfolio compared to the total balance sheet of the drinking water utilities for reporting year 2019 and 2020

Drinking water utilities	Loan portfolio / Total balance sheet (%)	
	2020	2019
Drinking water utilities	13.3%	9.5%

The total CO₂ equivalent expressed as ton per year increased with 2,119 ton between reporting year 2019 and 2020. The relative emissions in ton/million increased as well with 1.5 ton/million. This can be explained by an increase in the loan portfolio of drinking water utilities that especially invested in the process of groundwater (scope 1). In conclusion, both the absolute GHG emissions and the relative GHG emissions increased between reporting year 2019 and 2020.

The percentage of the outstanding loans at the NWB Bank compared to the total balance sheet of the drinking water utilities increased strongly by 3.8% between reporting year 2019 and 2020 (Table 8.5).

9 Education sector

9.1 Coverage

The education sector accounts for 0.15% and 0.13% of the total loan portfolio of the NWB Bank in reporting year 2019 and 2020, respectively. This sector consists of several subsectors, representing different levels of education. Within the education sector, coverage rate of total loan portfolio is 91.6% and 91.4% for reporting year 2019 and 2020, respectively. Emissions are based on scope 1 and 2 activities. The relevant subsectors and outstanding capital of the NWB Bank within the education sector are given in Table 9.1. The education loan portfolio decreased with 2 million euro over the past year. This sector remains a relative small part of the NWB Bank loan portfolio with 0.13% of all loans.

Table 9.1 Educational subsectors, their outstanding capital and coverage of the GHG emission assessment for reporting year 2019 and 2020

Education sector	Loan portfolio (x million EUR)	Percentage of all loans	Coverage rate (loan portfolio)	Loan portfolio (x million EUR)	Percentage of all loans	Coverage rate (loan portfolio)
	2020	2020	2020	2019	2019	2019
WO	2	0.003%	100	2	0.004%	100
HBO	0	0.000%		0	0.000%	
MBO	3	0.007%	100	3	0.007%	100
VO	20	0.041%	70.5	21	0.044%	70.9
Others*	45	0.090%	100	46	0.097%	100
Total education sector	70	0.141%	91.4	72	0.152%	91.6

*An organization that is not only active in education but also care and other kind of services

9.2 Methodology and data used

Since the different subsectors in the education sector are similar, a general methodology was developed for the different subsectors. The methodology and data used to calculate the CO₂ equivalent footprint following the Dutch PCAF Principles are described in the methodology approach report, released in October 2020⁴⁴.

9.2.1 Attribution

The footprint of the NWB Bank for the education sector is calculated based on the emissions of the individual education organizations. The emissions of the individual education organizations are multiplied by the proportional share of the outstanding loan amount with NWB Bank in the total balance sheet of that client. In the end, all emissions of the individual education organization are aggregated, using the following formula:

⁴⁴ Mulder, R., Roover, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

$$\sum CO_2eq \times \frac{\text{Outstanding loan}}{\text{Total balance sheet}}$$

Different methods were used to calculate different components of the covered emissions. The coverage per scope is described below, based on the different scopes defined by PCAF. For a more detailed methodology description, see the Methodology approach report, released in October 2020⁴⁵.

9.2.2 Scopes covered

In this methodology, scope 1 and 2 are covered.

Scope 1: Natural gas use

Scope 1 emissions are the direct GHG emissions of the different education sectors. These emissions result from the use of natural gas for heating buildings or other purposes.

Scope 2: Electricity use

Scope 2 emissions include the indirect GHG emissions from consumption of purchased electricity, heat or steam. Unfortunately, the heat and steam use per educational organization is unknown. Therefore scope 2 only contains the use of purchased electricity.

Scope 3: Purchased goods and services

Scope 3 covers all other indirect emissions. Some examples of scope 3 activities prominent in education include emissions from employee commuting, business travel, waste processing, and food processing. Unfortunately, insufficient data was available to make an estimation of scope 3 level emissions.

A rough estimation is not desirable as well, because of the large differences between the educational subsectors. A university has a very different commuting workforce than for example a primary school, which operates on a far more local scale. Therefore, scope 3 level emission data was not included in the education sector.

9.3 Data quality

The following data scoring is used to score and improve data quality for the education sector.

Table 9.2 Data quality definitions for the education sector

Data quality (highest to lowest)	Description
1	Actual energy consumption, converted to CO ₂ eq-emissions using verified emission factors and detailed activity data specific to the type of energy consumed
2	Actual energy consumption, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
3	Modeled regional activity data based on robust assumptions, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source

⁴⁵ Mulder, R., Roovert, I. van, Dagevos, J., Verhoeven, L., Wentink C. (2020), Loan Portfolio Climate Impact of BNG Bank & NWB Bank, Methodological approach report 2020

4	Modeled activity data in a country, converted to CO ₂ eq-emissions using emissions factors for energy from undefined fuel source
5	Highly modeled activity or uncertain activity data in a country, converted to CO ₂ eq-emissions using default emissions factors for energy from undefined fuel source

In this study, the method used for educational organizations is based on robust estimations of electricity and natural gas, because estimations can be made based on actual expenditure on energy (gas and electricity consumption) per education organization. For natural gas use, this is a known specific type of energy, but for electricity use, energy comes from undefined sources. That is why scope 1 has a data quality value of 1.5, and scope 2 has a data quality estimate of 2. This results in a data quality score of 1.75 for the education sector.

9.4 Results

The results of the CO₂ equivalent footprint of the outstanding NWB Bank loans to the education sector for reporting year 2019 and 2020 is given in Table 9.3.

Table 9.3 GHG emissions of the NWB Bank education sector for reporting year 2019 and 2020

Source of emissions	Scope	CO ₂ EQ. (total)		CO ₂ EQ. (relative)			Data quality score	
		Ton/year	%	Ton/million EUR	Ton/year	%		Ton/million EUR
		2020	2020	2020	2019	2019	2019	1.75
WO		98	3.7%	1.5	137	5.6%	2.1	
Natural gas use	Scope 1	47	1.8%	0.7	65	2.7%	1.0	1.5
Electricity use	Scope 2	51	1.9%	0.8	72	2.9%	1.1	2
HBO		0	0.0%	0	0	0.0%	0	1.75
Natural gas use	Scope 1	0	0.0%	0	0	0.0%	0	1.5
Electricity use	Scope 2	0	0.0%	0	0	0.0%	0	2
MBO		119	4.4%	1.9	107	4.4%	1.6	1.75
Natural gas use	Scope 1	51	1.9%	0.8	46	1.9%	0.7	1.5
Electricity use	Scope 2	68	2.5%	1.1	61	2.5%	0.9	2
VO		372	13.9%	5.8	434	17.7%	6.5	1.75
Natural gas use	Scope 1	152	5.7%	2.4	182	7.4%	2.7	1.5
Electricity use	Scope 2	220	8.2%	3.4	252	10.3%	3.8	2

Others*		2082	78.0%	32.5	1774	73.4%	26.7	1.75
Natural gas use	Scope 1	1321	49.5%	20.7	979	40.0%	14.7	1.5
Electricity use	Scope 2	761	28.5%	11.9	795	32.4%	11.9	2
Total		2,671	100.0%	41.8	2,452	100.0%	36.8	1.75

*An organization that is not only active in education but also care and other kind of services

Table 9.4 Percentage of the outstanding loans compared to the total balance sheet of the education sector for reporting year 2019 and 2020

Education sector	Loan portfolio / Total balance sheet (%)	Loan portfolio / Total balance sheet (%)
	2020	2019
WO	0.4%	0.5%
HBO		
MBO	2.4%	2.4%
VO	46.3%	45.1%
Others*	41.7%	41.6%
Total education sector	9.0%	9.6%

*An organization that is not only active in education but also care and other kind of services

Between reporting year 2019 and 2020 the amount of the CO₂ equivalent expressed as ton per year decreased for scope 1 and 2 for the subsectors WO and VO (Table 9.3). For these subsectors also the CO₂ equivalent expressed as ton per million euro decreased. For the subsectors MBO and others the CO₂ equivalent expressed as ton per year increased. For the subsector MBO scope 1 and 2 increased both, but for subsector other, only scope 1 natural gas use increased and scope 2 electricity use decreased. The increase in the CO₂ equivalent expressed as ton per year for the subsectors MBO and others resulted in an increase in the total CO₂ equivalent expressed as ton per million euro with 5.0 ton/million. In conclusion, the total absolute and relative GHG emissions of the education sector increased between reporting year 2019 and 2020.

In Table 9.4 it is shown that the total percentage of loan portfolio at the NWB Bank in comparison to total balance sheet for the education sector decreased with 0.6%.

10 Total GHG emissions of NWB Bank for reporting year 2019 and 2020

10.1 Coverage of the GHG emission assessment

In summary, Table 10.1 shows the overview of outstanding loans per sector and the subcategories and the part covered with GHG emission estimates.

Table 10.1 Total outstanding loans of NWB Bank and part covered in the GHG assessment for reporting year 2019 and 2020⁴⁶

Sector	Loan portfolio (million EUR)	Part covered with GHG footprint (million EUR)	Coverage rate (%)	Loan portfolio (million EUR)	Part covered with GHG footprint (million EUR)	Coverage rate (%)
	2020	2020	2020	2019	2019	2019
Social Housing sector	30,813	30,790	99.9%	30,265	30,199	99.8%
Local governments	7,071	7,071	100%	6,583	6,583	100%
Water authorities	6,501	6,501	100%	6,327	6,327	100%
Healthcare sector	2,053	1,490	72.6%	2,119	1,494	70.5%
Drinking water utilities	666	582	87.3%	477	408	85.5%
Regional governments	225	225	100%	247	247	100%
Educational institutions	70	64	91.4%	73	67	91.6%
Residual	2,037	-	0.0%	1,554	-	0.0%
Total	49,436	46,723	94.5%	47,644	45,325	95.1%

The GHG emission estimates according to the PCAF methodology are covering 94.5% of the NWB Bank loans portfolio⁴⁷. Although all the sector specific coverage rates improved over the last year, the general coverage rate has decreased by 0.6%. This is due to the fact that the sectors currently not in scope are growing faster than the sector that are in scope. Even though, this coverage rate is high compared to the outcomes of other financial institutions. The coverage rate can be further improved by enlarging the coverage in for example the public sector.

10.2 Overall results of the NWB Bank GHG-emissions

As can be seen in Table 10.2, the NWB Bank loan portfolio of reporting year 2020 has a total emission of 1,595 kiloton CO₂-equivalent. This is 135 kiloton less than the total emissions of reporting year 2019. This decrease was mainly due to a reduction of GHG emissions for the social housing sector (-88 kiloton CO₂-equivalent) and for the water authorities (-46 kiloton

⁴⁶ Long-term loans and advances (nominal value), including interest-bearing securities (nominal value) for the local governments. Reference dates for reporting year 2020 is 31-12-2019, and for reporting year 2019 is 31-12-2018

⁴⁷ In the PCAF report 2019 the coverage rate was 93%. In current report the coverage rate is higher due to developments in the methodology in comparison to the PCAF report 2019.

CO₂-equivalent). The social housing sector improved the energy labels of rental homes and the water authorities invested in sustainable energy projects in the Netherlands. The reduction of 135 kiloton CO₂-equivalent is a great accomplishment, because the part of the loan portfolio covered by the GHG footprint calculation has grown from 45 to 47 billion euro. The emission intensity (ton CO₂-eq/million euro) has decreased from 38.2 to 34.1 ton per million euro.

Table 10.2. Emission intensities for reporting year 2019 and 2020

Sector	Part covered with GHG footprint (million EUR)	Attributed emissions (ton CO ₂ -eq)	Emission intensity (ton CO ₂ -eq / million EUR)	Part covered with GHG footprint (million EUR)	Attributed emissions (ton CO ₂ -eq)	Emission intensity (ton CO ₂ -eq / million EUR)	Data quality (score 1-5)
	2020	2020	2020	2019	2019	2019	
Social Housing sector	30,790	753,366	24.5	30,199	841,201	27.9	2.5
Local governments	7,071	414,891	58.7	6,583	417,096	63.4	3
Water authorities	6,501	326,577	50.2	6,327	372,266	58.8	2
Healthcare sector	1,490	85,178	57.2	1,494	86,925	58.2	2.5
Drinking water utilities	582	4,799	8.2	408	2,722	6.7	2
Regional governments	225	7,354	32.8	247	7,457	30.2	3
Educational institutions	64	2,671	41.8	67	2,452	36.8	1.75
Total	46,723	1,594,836	34.1	45,325	1,730,120	38.2	

10.3 From CO₂ equivalent footprint to action

These overall positive results can lay the basis for the development of ambitions and science based targets (SBTs). A growing loan portfolio on the one hand, and a decreasing CO₂ footprint on the other hand, is a great result. But these results are gaining relevance in the light of ambitious goals and SBTs. Then, the results can be seen as a progress on the road to goal achievement.



By setting targets financial institutions are expressing their own ambitions how to contribute to the realization of the Paris Climate Agreement. This should be followed by a clear and transparent strategy how to realize these targets combined with a monitoring system that has two crucial functions. In the first place by showing progress in achieving the targets set by the financial institution but also by acting as a kind of mirror of reflection by showing which strategies and actions are successful in reducing GHG emissions and which

are not. This could be part of a learning strategy not only for PCAF partners for others in the world as well.



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Het PON & Telos is a social knowledge organization at the heart of society. We consider it our mission to improve social decision-making. We do this by linking scientific knowledge to practical knowledge. In this process every voice counts. We collect, investigate, analyze, and interpret opinions and facts using stimulating approaches and innovative methods. In doing so, we are always focused on sustainable development: the harmonious connection between social, environmental and economic objectives. In this way we contribute to the quality of society at large, now and in the future.

With a multidisciplinary and creative team of nearly 30 research consultants, we work mainly for local and regional authorities in the Netherlands, but also for corporate bodies, banks, care and welfare institutions, funds, and social organizations. We work closely with civic organizations and other knowledge institutions and are an official partner of Tilburg University. We use our knowledge and insights to advise initiators, policy-makers and managers. This enables them to make informed choices and give a positive impulse to the society of tomorrow.

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