Accountability report for underlying data method of impact measurement BNG bank

Reporting year 2022

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1 Introduction

1.1 Reading guide

This report describes the accountability for the underlying data of the methodology of the impact measurements of the BNG Bank loan portfolio. This is the second measurement, thus the scores for reporting year 2021 and 2022 will be compared to see if there is any progress during the reporting years. Some comments about these calculations are described in paragraph 1.3. Additional information can be found in the method description, and the theoretical framework is illustrated in the method report impact measurement by the BNG bank which is published separately by Anita de Horde and Anne Dijkstra. The loan portfolio of the BNG Bank consists out of several sectors, four sectors are part of this study, namely municipalities, social housing associations, healthcare institutions, and educational institutions. BNG Bank targets five SDGs on which she measures impact. The five SDGs are good health and well-being (SDG 3), quality education (SDG 4), affordable and clean energy (SDG 7), sustainable cities and communities (SDG 11), and climate action (SDG 13).

In the chapters below an extensive description of the indicators per sector will be provided. First, the municipality sector is described containing 22 indicators. Second, the social housing sector is described containing 8 indicators. Third, the educational institutions are described containing 4 indicators. Followed by the healthcare sector which consists of 3 indicators.

1.2 Score per indicator

Each indicator is represented by a single total score. This total score is being calculated in one of two methods, namely:

1. Total sum is calculated by adding the numbers for the different customers within the loan portfolio.
2. Total average is calculated by taking the arithmetic mean over the numbers for the customers within the loan portfolio.

In all the basic files an overview is given of which method of calculating the total score is used per indicator.

1.3 Calculations to measure the positive impact

As mentioned before, this is the second measurement of the total scores on the SDGs per indicator per sector for the BNG Bank loan portfolio. The starting point is last year's scores of the reporting year 2021; the 0-measurement. The reporting year 2022 (1-measurement) is outlined in this report and both scores are used to measure the impact for the four mentioned sectors. For the first step, a percentage change is calculated for all the individual customers per indicator per sector of the BNG Bank loan portfolio. The following formula is

used for the first step: ((1-measurement score – 0-measurement score) / 0-measurement score)* 100.

In the method report impact measurement by the BNG bank which is published separately by Anita de Horde and Anne Dijkstra it has been described that the impact of each customer depends on the proportion of loan relative to total outstanding loans per sector. A customer with a larger loan should weigh more heavily. Therefore, the second step will measure a weighted difference between the 0-measurement and 1-measurement for every customer on every indicator, taking its share of the loan relative to total loan portfolio of that sector into account. Accordingly, the percentage of the outstanding loan per customer is calculated: (loan of the customer / sum of outstanding loans in that sector) * 100. Next, this percentage is used – in combination with the unweighted difference from step 1 – to calculate the weighted differences between the 0-measurement and the 1-measurement: percentage of outstanding loan * percentage change between the 0-measurement and 1-measurement. For indicators with a percentages as measurement unit we use a different in percentage points instead of percentage development. This is due to the change of extreme values in this measurement method.

The third step is to calculate the impact per indicator. This is the sum of all the individual weighted differences between the 0-measurement and the 1-measurement. This is also a weighted sum, because the four sectors have different outstanding loans at the BNG Bank. For every sector there is a percentage given to weight its indicators. The exact numbers and explanation of these numbers and calculation can be found in the method report impact measurement by the BNG bank.

Finally, the positive impact per sector is calculated using the weighted impact per indicator. The impact per indicator can be an improvement or a deterioration and is added up or subtracted to each other. For example, there are 3 indicators in the given sector and two of them make an improvement but the third impact declines. The positive impact for this sector is as follows: impact indicator 1 + impact indicator 2 – impact indicator 3.

There are some important details regarding the calculations, such as missing values or the value of zero in one or both measurements, no new data availability or changes in the loan portfolio of the BNG Bank. These details need some further explanation. Among some indicators there are missing values in one or both measurements whereby those customers do not have an impact score on these indicators. The missing values are counted and reported in the calculation sheets.

In addition, there are customers that have a score of zero in the 0-measurement and for the 1-measurement a score that is higher than zero. In these cases the formula does not work, because a division by zero is not possible. This results in zero impact, while there definitely is impact. These cases got a difference of 100 percent and this percentage is used for the following calculation steps. In the calculation sheets, these adjustments are colored. For the sector municipalities this is the case for the indicators ‘number of inhabitants with access to public transport’ for 20 municipalities and for the indicator ‘percentage zero-

emission busses' for 5 municipalities. For the sector education, this is the case for the indicator 'investments in school buildings' for 2 educational institutions.

Subsequently, there are indicators without new data which resulted in an impact of zero for the whole indicator because the scores are not updated. This is the case for the indicators 'public green spaces' and 'total registration time for social housing' for the sector municipalities and for the indicator 'presence of solar panels' for the social housing associations.

Finally, there are some changes in customers of the BNG Bank between reporting year 2021 and 2022. For the sector municipalities, 3 municipalities were not in the loan portfolio that has been used for the 0-measurement, but were in the loan portfolio that has been used for the 1-measurement. For the social housing sector, 8 social housing associations were in het loan portfolio that has been used for the 0-measurement, but were not in the loan portfolio that has been used for the 1-measurement. For the education sector, 4 educational institutions were not in de loan portfolio that has been used for the 0-measurement but were in the loan portfolio that has been used for the 1-measurement and for 7 educational institutions the opposite was true. For the healthcare sector, 7 healthcare institutions were not in de loan portfolio that has been used for the 0-measurement but were in the loan portfolio that has been used for the 1-measurement and for 20 healthcare institutions the opposite was true. All these associations and institutions are not included in the calculations, because they have only a valid score during the 0-measurement or during the 1-measurement.

Sector	SDG	Name	Year 0	Year 1	Unit	Comment
Municipality	3.8	Average waiting times in mental health care	2022 (jan)	2022 (sept)	# weeks	Average waiting time in weeks
	3.8	Number of people outside Treek-norm on waiting list for nursing home care	2021	2022	# persons	Total persons waiting
	3.8	Average waiting times curative care 'Treek-norm'	2021	2022	# weeks	Average waiting time in weeks
	3.9	Nitrogen oxides (NOx) emissions	2019	2020	kg	Total emissions best illustrates changes in years
	3.9	Fine Particle (PM2.5) emissions	2019	2020	kg	Total emissions best illustrates changes in years
	3.9	Fine Particle (PM10) emissions	2019	2020	kg	Total emissions best illustrates changes in years
	3.9	Non-methane volatile organic compounds (NMVOS) emissions	2019	2020	kg	Total emissions best illustrates changes in years
	7.2	Total renewable energy	2019	2020	TJ	Total energy best illustrates changes in years
	7.2	Total renewable electricity	2019	2020	TJ	Total electricity best illustrates changes in years
	7.2	Total renewable heat	2019	2020	kWh	Total heat best illustrates changes in years
	7.2	Capacity of solar panels per inhabitant	2020	2021	Wp	Average capacity per inhabitant best illustrates changes in years
	11.1	Skewed rent	2019	2020	% households	Total percentage best illustrates the magnitude of skewed rent
	11.1	Total registration time for social housing	2020	-	# months	Average number of months best illustrates actual waiting times
	11.1	Total amount of housing stock	2020	2021	# residences	Total sum best illustrates the number of residences that have been build
	11.2	Number of inhabitants with access to public transportation	2021	2022	# persons	Total sum best illustrates the number of people that have access to public transport and changes in years
	11.6	Percentage zero-emission buses	2020	2021	% buses	Total percentage best illustrates the development towards a zero-emission bus fleet
	11.6	Total amount of sorted household waste	2020	2021	kg	Total sum best illustrates changes in years of the amount of sorted household waste
	11.6	Total amount of residual household waste	2020	2021	kg	Total sum best illustrates changes in years of the amount of residual waste
	11.7	Public green space	-	2021	% surface area	Total percentage of surface area best illustrates the availability in public green space and developments between years
	13.2	GHG emissions per municipality	2020	2021	CO2-eq	Total emissions best illustrates changes in years
Education	4a	Investments in school buildings and grounds	2020	2021	Euro	Total investments best illustrates the magnitude per year

	13.2	GHG emissions per education institution	2020	2021	CO2-eq	Total emission best illustrates changes in years
	7.3	Energy consumption educational buildings – electricity	2020	2021	kWh	Total consumption best illustrates changes in years
	7.3	Energy consumption educational buildings – natural gas	2020	2021	m3	Total consumption best illustrates changes in years
Social housing association	7.3	Energy consumption per social housing association – electricity	2020	2020	kWh	Total consumption best illustrates changes in years
	7.3	Energy consumption per social housing association – natural gas	2020	2020	m3	Total consumption best illustrates changes in years
	7.2	Presence of solar panels for social housing associations	-	2021	% houses	Total percentage of houses with solar panels best illustrates changes in years
	11.1	Financial accessibility social housings association	2020	2021	% residences	Original data is only available in percentages, therefore the total score is the average of the percentages
	11.1	Amount of housing stock social houses per social housing association	2019	2020	# residences	Total sum best illustrates the number of residences that become available
	11.1	Total allocations within income limits	2019	2020	# allocations	Total allocations best illustrates the magnitude per year
	11.1	Conformity of dwellings and target group	2020	2021	% match	Original data is only available in percentages, therefore the total score is the average of the percentages
	13.2	GHG emissions per social housing association	2019	2020	CO2-eq	Total emission best illustrates changes in years
Healthcare institution	7.3	Energy consumption for healthcare institutions – electricity	2020	2021	kWh	Total consumption best illustrates changes in years
	7.3	Energy consumption for healthcare institutions – natural gas	2020	2021	m3	Total consumption best illustrates changes in years
	13.2	GHG emissions per healthcare institution	2020	2021	CO2-eq	Total emission best illustrates changes in years

2 Municipalities

2.1 General factsheet

Topic	Description
Portfolio covered	96.2% of BNG bank's portfolio is covered for this customer group. This percentage is an indication of the completeness of the dataset. It is calculated by looking at the collected data for all indicators for the customers in the loan portfolio of the BNG Bank. The percentage is lower than 100% if there are missing data. The missing data are either not available or it was not possible to collect or calculate these data correctly.
Indicators	- Average waiting times in mental healthcare - Number of people outside the Treek-norm on a waiting list for nursing home care - Average waiting times curative care 'Treek-norm' - Nitrogen oxides (NOx) emissions - Fine Particle (PM2.5) emissions - Fine Particle (PM10) emissions - Non-methane volatile organic compounds (NMVOS) emissions - Total renewable energy - Total renewable electricity - Total renewable heat - Capacity of solar panels per inhabitant - Skewed rent - Total registration time for social housing - Total amount of housing stock - Number of inhabitants with access to public transportation - Percentage zero-emission buses - Total amount of residual household waste - Total amount of sorted household waste - Public green space - Flood risk - Green roofs - GHG emissions per municipality
Limitations	Some clients have a score of zero in the 0-measurement and for the 1-measurement a score that is higher than zero. In these cases the formula (of percentage increase/decrease) does not work, because a division by zero is not possible. This results in zero impact, while there definitely is impact.. These cases got a difference of 100 percent and this percentage is used for the following calculation steps. In the calculation sheets, these adjustments are colored. For the sector municipalities this is the case for the indicators 'number of inhabitants with access to public transport' for 20 municipalities and for the indicator 'percentage zero-emission busses' for 5 municipalities

2.2 Factsheets per indicator

2.2.1 Average waiting times in mental healthcare

Topic	Description
Data	Waiting times in mental healthcare per municipality
Calculation steps	The average waiting time in weeks of 16 types of client groups within the mental healthcare sector is calculated per healthcare-office region. The average waiting time for the healthcare-office region is then attributed to the municipalities within that healthcare-office region.
Limitations	The data is not available on the municipality level, therefore data per healthcare-office region is used and attributed to the municipalities within that healthcare-office region. The waiting times data does not include data of mental healthcare providers that have less than 10 practitioners employed. The dataset also does not contain data on independent practitioners.
SDG	SDG 3.8
Data quality estimate	3 – Average data that is peer/(sub)sector specific. The data of the regional division of municipalities and healthcare office-regions is only used to assign data to the municipality. The data on the waiting times within the mental healthcare sector comes with above mentioned limitations, therefore the data quality estimate score is 3.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Regional division of municipalities and healthcare office-regions 2022
Data file	Gebieden_in_Nederland_2022_Zorgkantoorregio's.csv
Data Source	Dutch Central Bureau of Statistics
Years	2021&2022
Last update	23-08-2022
Date of download	20-09-2022
Link to webpage	https://opendata.cbs.nl/#/CBS/nl/dataset/85067NED/table
Filters used to obtain the datafile	Onderwerp: Codes en namen van gemeente; Code Lokalisering van gemeenten; Zorgkantoorregio's; Code, Naam Regio's: Gemeenten van het jaar 2022
Internal location	\Klantgroepen\Gemeenten\SDG_3_8_Wachttijden zorg\Ruwe data – overig\Gebieden_in_Nederland_2022_Zorgkantoorregio's.csv
Data quality estimate	1 – Audited data or actual primary data. This data contains the division of the healthcare-office regions as made by the Dutch government.
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\ SDG_3_8_Wachttijden zorg\Printscreens\IndelingZorgkantoorregios.png

Topic	Description
Data	Factsheet Waiting times mental healthcare
Data file	Data bij factsheet GGZ wachttijden juni 2022.xlsx
Data Source	Vektis
Years	2021&2022
Last update	02-09-2022
Date of download	20-09-2022
Link to webpage	https://www.vektis.nl/intelligence/publicaties/factsheet-wachttijdinformatie-ggz
Filters used to obtain the datafile	Not applicable
Internal location	\Klantgroepen\Gemeenten\ SDG_3_8_Wachttijden zorg\Ruwe data – overig\Data bij factsheet GGZ wachttijden juni 2022.xlsx
Data quality estimate	3 - Average data that is peer/(sub)sector-specific. The data contains waiting times within the mental healthcare sector and is delivered to Vektis by mental healthcare providers themselves. Vektis cannot verify this data. Providers with less than 10 practitioners do not have to deliver their data, as well as independent practitioners. The data may therefore contain an over- or underestimation.
Unit of measurement	(Average) number of weeks
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\ SDG_3_8_Wachttijden zorg\ Printscreens\WachttijdenGGZ.png

2.2.2 Number of people outside the Treek-norm on waiting list for nursing home care

Topic	Description
Data	Number of people outside the Treek-norm on nursing home waiting lists per municipality
Calculation steps	The number of people on the waiting lists for nursing homes outside the 'Treek-norm' is calculated per healthcare-office region. The number of people on the waiting lists is then attributed to the municipalities within that healthcare-office region.
Limitations	The data is not available on the municipality level, therefore data per healthcare-office region is used and attributed to the municipalities within that healthcare-office region. The number of people on the waiting list does not indicate how long people are on the waiting list.
SDG	SDG 3.8
Data quality estimate	2 – Non-audited data, or other primary data. Healthcare offices publish quarterly an overview of the number of people waiting for a place in a nursing home. Zorgverzekeraars Nederland combines these overviews. Healthcare offices register these numbers themselves and are not checked by others.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Regional division of municipalities and healthcare office-regions 2022
Data file	Gebieden_in_Nederland_2022_Zorgkantoorregio's.csv
Data Source	Dutch Central Bureau of Statistics
Year	2021&2022
Last update	23-08-2022
Date of download	20-09-2022
Link to webpage	https://opendata.cbs.nl/#/CBS/nl/dataset/85067NED/table
Filters used to obtain the datafile	Onderwerp: Codes en namen van gemeente; Code Lokalisering van gemeenten; Zorgkantoorregio's; Code, Naam Regio's: Gemeenten van het jaar 2022
Internal location	\Klantgroepen\Gemeenten\SDG_3_8_Wachttijden zorg\Ruwe data – overig\Gebieden_in_Nederland_2022_Zorgkantoorregio's.csv
Data quality estimate	1 – Audited data or actual primary data. This data contains the division of the healthcare-office regions as made by the Dutch government.
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\ SDG_3_8_Wachttijden zorg\Printscreens\IndelingZorgkantoorregios.png

Topic	Description
Data	Number of people on waiting lists for nursing homes
Data file	Wachttijden verpleeghuizen.xlsx (from: Totaal Q1 2022 Rapport wachtlijsten verpleeghuiszorg.pdf)
Data Source	Zorgverzekeraars Nederland
Years	First quarter of 2021 and First quarter of 2022
Last update	2022
Date of download	04-10-2022
Link to webpage	https://zn.nl/zorgkantoren/wachtlijsten-langdurige-zorg
Filters used to obtain the datafile	No filters used
Internal location	\Klantgroepen\Gemeenten\SDG_3_8_Wachttijden zorg\Ruwe data – overig\ Wachtenden verpleegzorg.xlsx
Data quality estimate	2 - Non-audited data, or other primary data. Healthcare offices publish quarterly an overview of the number of people waiting for a place in a nursing home. Zorgverzekeraars Nederland combines these overviews.
Unit of measurement	Number of people
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\SDG_3_8_Wachttijden zorg\Printscreens\WachtendenZorg.png

2.2.3 Average waiting times curative care 'Treek-norm'

Topic	Description
Data	Waiting times curative care per care institution
Calculation steps	For every hospital or clinic, the average number of days that patients have to wait for the diagnostics, the treatment and outpatient care is calculated. Then the average number of days for the hospital or clinic in total is calculated.
Limitations	Dataset only includes data on hospitals and medical clinics
SDG	SDG 3.8
Data quality estimate	2 Non-audited data, or other primary data. The data is collected as part of the 'Regeling Aanleveren wachttijden medisch-specialistische zorg'. The aim of this regulation is to make waiting times in the medical specialist care sector accessible to both patient and healthcare insurance companies.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Waiting times medical specialist care
Data file	Dataset Wachttijden medisch-specialistische zorg 6 september 2022.xlsx
Data Source	Nederlandse zorgautoriteit
Years	Jan2022&Sept2022
Last update	06-09-2022
Date of download	14-09-2022
Link to webpage	https://puc.overheid.nl/nza/doc/PUC_651798_22/1/
Filters used to obtain the datafile	Not applicable
Internal location	\Klantgroepen\Gemeenten\SDG_3_8_Gemiddelde wachttijden ziekenhuizen\Ruwe data – overig\Dataset Wachttijden medisch-specialistische zorg 06 september 2022.xlsx
Data quality estimate	2 Non-audited data, or other primary data. The data is collected as part of the 'Regeling Aanleveren wachttijden medisch-specialistische zorg'. The aim of this regulation is to make waiting times in the medical specialist care sector accessible to both patient and healthcare insurance companies.
Unit of measurement	Average number of days
Selections	Not applicable
Data missing	Dataset only contains data on hospitals and clinics
Print Screens	\Klantgroepen\Gemeenten\SDG_3_8_Gemiddelde wachttijden ziekenhuizen\Printscreens\WachttijdenCuratieveZorg_2022-09-14 1.png \Klantgroepen\Gemeenten\SDG_3_8_Gemiddelde wachttijden ziekenhuizen\Printscreens\WachttijdenCuratieveZorg_2022-09-14 2.png \Klantgroepen\Gemeenten\SDG_3_8_Gemiddelde wachttijden ziekenhuizen\Printscreens\WachttijdenCuratieveZorg_2022-09-14 3.png

2.2.4 Nitrogen oxides (NOx) emissions

Topic	Description
Data	Emission to air of nitrogen oxides (NOx) including nitrogen dioxide in kg. Data on nitrogen oxide emissions per municipality obtained from RIVM: http://www.emissieregistratie.nl
Calculation steps	Step 1: Source-data Source data has been collected for the years 2019 (0-measurement) and 2020 (1-measurement). Calculation steps on the original dataset with emission-data have not been performed. The original dataset 346 regions, i.e. 345 municipalities (2022) and one region (region code 9999, Noordzee) that does not match any municipality. This last region will be neglected in the results.
Limitations	The most recent emission data available is of 2020. Emission data from region Noordzee is excluded from this calculation as it cannot be assigned to specific municipalities. The total of the emissions in the calculated dataset is therefore an underestimation of the total emission of the Netherlands. Emission data in the Netherlands is measured in kilograms per municipality. The international standard unit is µg/m^3. The data has not been recalculated to the international standard.
SDG	SDG 3.9
Data quality estimate	3 – Average data that is peer/(sub)sector-specific.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Emission of NOx in kg per municipality
Data file	Emissies_totaal.csv
Data Source	RIVM (www.emissieregistratie.nl)
Years	2019&2020
Last update	01-07-2022
Date of download	22-07-2022
Link to webpage	https://data.emissieregistratie.nl/export
Filters used to obtain the datafile	Stof: Fijnstof (PM10), Fijnstof (PM2.5), NMVOS, Stikstofoxiden (als NO2) Jaar: 2019, 2020 Per locatie; gebiedsindeling: Gemeenten
Internal location	Klantgroepen\Gemeenten\SDG_3.9_Emissies lucht (NOx, PM2.5, PM10, NMVOS)\Berekening 1-meting\Emissies_totaal.csv
Data quality estimate	3 Data is collected by RIVM on basis of organization reports and calculations of emissions in processes. The uncertainty factor is relatively large, however, approximately 18% on the scale of the Netherlands and somewhat larger per municipality. For further information see: https://www.emissieregistratie.nl/over-emissieregistratie/kwaliteit-van-de-emissiecijfers
Unit of measurement	Kg
Selections	Decimal point (.)
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_3.9_Emissies lucht (NOx, PM2.5, PM10, NMVOS)\Printscreens\Schermafbeelding 2022-07-22_luchtemissies_RTI.png

2.2.5 Fine Particle (PM2.5) emissions

Topic	Description
Data	Emission to air of fine particles smaller than 2.5 microns, PM2.5, in kg. Data on fine particle emissions per municipality obtained from RIVM: http://www.emissieregistratie.nl
Calculation steps	Step 1: Source-data Source data has been collected for the years 2019 (0-measurement) and 2020 (1-measurement). Calculation steps on the original dataset with emission-data have not been performed. The original dataset 346 regions, i.e. 345 municipalities (2022) and one region (region code 9999, Noordzee) that does not match any municipality. This last region will be neglected in the results.
Limitations	The most recent emission data available is of 2020. Emission data from region Noordzee is excluded from this calculation as it cannot be assigned to specific municipalities. The total of the emissions in the calculated dataset is therefore an underestimation of the total emission of the Netherlands. Emission data in the Netherlands is measured in kilograms per municipality. The international standard unit is µg/m^3. The data has not been recalculated to the international standard.
SDG	SDG 3.9
Data quality estimate	3 – Average data that is peer/(sub)sector-specific.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Emission of fine particles (PM2.5) in kg per municipality
Data file	Emissies_totaal.csv
Data Source	RIVM (www.emissieregistratie.nl)
Years	2019&2020
Last update	01-07-2022
Date of download	22-07-2022
Link to webpage	https://data.emissieregistratie.nl/export
Filters used to obtain the datafile	Stof: Fijnstof (PM10), Fijnstof (PM2.5), NMVOS, Stikstofoxiden (als NO2) Jaar: 2019, 2020 Per locatie; gebiedsindeling: Gemeenten
Internal location	Klantgroepen\Gemeenten\SDG_3.9_Emissies lucht (NOx, PM2.5, PM10, NMVOS)\Berekening 1-meting\Emissies_totaal.csv
Data quality estimate	3 Data is collected by RIVM on basis of organization reports and calculations of emissions in processes. The uncertainty factor is relatively large, however, approximately 42% on the scale of the Netherlands and somewhat larger per municipality. For further information see: https://www.emissieregistratie.nl/over-emissieregistratie/kwaliteit-van-de-emissiecijfers
Unit of measurement	Kg
Selections	Decimal point (.)
Data missing	Not applicable

Print Screens	In folder: Klantgroepen\Gemeenten\SDG_3.9_Emissies lucht (NOx, PM2.5, PM10, NMVOS)\Printscreens\Schermafbeelding 2022-07-22_luchtemissies_RTI.png

2.2.6 Fine Particle (PM10) emissions

Topic	Description
Data	Emission to air of fine particles smaller than 10 microns, PM10, in kg. Data on fine particle emissions per municipality obtained from RIVM: http://www.emissieregistratie.nl
Calculation steps	Step 1: Source-data Source data has been collected for the years 2019 (0-measurement) and 2020 (1-measurement). Calculation steps on the original dataset with emission-data have not been performed. The original dataset 346 regions, i.e. 345 municipalities (2022) and one region (region code 9999, Noordzee) that does not match any municipality. This last region will be neglected in the results.
Limitations	The most recent emission data available is of 2020. Emission data from region Noordzee is excluded from this calculation as it cannot be assigned to specific municipalities. The total of the emissions in the calculated dataset is therefore an underestimation of the total emission of the Netherlands. Emission data in the Netherlands is measured in kilograms per municipality. The international standard unit is µg/m^3. The data has not been recalculated to the international standard.
SDG	SDG 3.9
Data quality estimate	3 – Average data that is peer/(sub)sector-specific.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Emission of fine particles (PM10) in kg per municipality
Data file	Emissies_totaal.csv
Data Source	RIVM (www.emissieregistratie.nl)
Years	2019&2020
Last update	01-07-2022
Date of download	22-07-2022
Link to webpage	https://data.emissieregistratie.nl/export
Filters used to obtain the datafile	Stof: Fijnstof (PM10), Fijnstof (PM2.5), NMVOS, Stikstofoxiden (als NO2) Jaar: 2019, 2020 Per locatie; gebiedsindeling: Gemeenten
Internal location	Klantgroepen\Gemeenten\SDG_3.9_Emissies lucht (NOx, PM2.5, PM10, NMVOS)\Berekening 1-meting\Emissies_totaal.csv
Data quality estimate	3 Data is collected by RIVM on basis of organization reports and calculations of emissions in processes. The uncertainty factor is relatively large, however, approximately 29% on the scale of the Netherlands and somewhat larger per municipality. For further information see: https://www.emissieregistratie.nl/over-emissieregistratie/kwaliteit-van-de-emissiecijfers
Unit of measurement	Kg
Selections	Decimal point (.)

Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_3.9_Emissies lucht (NOx, PM2.5, PM10, NMVOS)\Printscreens\Schermafbeelding 2022-07-22_luchtemissies_RTI.png

2.2.7 Non-methane volatile organic compounds (NMVOS) emissions

Topic	Description
Data	Emission to air of non-methane volatile organic compounds, NMVOS, in kg. Data on fine particle emissions per municipality obtained from RIVM: http://www.emissieregistratie.nl
Calculation steps	Step 1: Source-data Source data has been collected for the years 2019 (0-measurement) and 2020 (1-measurement). Calculation steps on the original dataset with emission-data have not been performed. The original dataset 346 regions, i.e. 345 municipalities (2022D) and one region (region code 9999, Noordzee) that does not match any municipality. This last region will be neglected in the results.
Limitations	The most recent emission data available is of 2020. Emission data from region Noordzee is excluded from this calculation as it cannot be assigned to specific municipalities. The total of the emissions in the calculated dataset is therefore an underestimation of the total emission of the Netherlands. Emission data in the Netherlands is measured in kilograms per municipality. The international standard unit is µg/m^3. The data has not been recalculated to the international standard.
SDG	SDG 3.9
Data quality estimate	3 – Average data that is peer/(sub)sector-specific.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Emission of NMVOS in kg per municipality
Data file	Emissies_totaal.csv
Data Source	RIVM (www.emissieregistratie.nl)
Years	2019&2020
Last update	01-07-2022
Date of download	22-07-202
Link to webpage	https://data.emissieregistratie.nl/export
Filters used to obtain the datafile	Stof: Fijnstof (PM10), Fijnstof (PM2.5), NMVOS, Stikstofoxiden (als NO2) Jaar: 2019, 2020 Per locatie; gebiedsindeling: Gemeenten
Internal location	Klantgroepen\Gemeenten\SDG_3.9_Emissies lucht (NOx, PM2.5, PM10, NMVOS)\Berekening 1-meting\Emissies_totaal.csv
Data quality estimate	3 Data is collected by RIVM on basis of organization reports and calculations of emissions in processes. The uncertainty factor is relatively large, however, approximately 46% on the scale of the Netherlands and somewhat larger per municipality. For further information see: https://www.emissieregistratie.nl/over-emissieregistratie/kwaliteit-van-de-emissiecijfers
Unit of measurement	Kg
Selections	Decimal point (.)
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_3.9_Emissies lucht (NOx, PM2.5, PM10, NMVOS)\Printscreens\Schermafbeelding 2022-07-22_luchtemissies_RTI.png

2.2.8 Total renewable energy

Topic	Description
Data	Total renewable energy in TJ Data on renewable energy obtained from Klimaatmonitor: https://klimaatmonitor.databank.nl/jive
Calculation steps	No calculations. Data directly from Klimaatmonitor. For the determination of the amount of renewable energy that is generated per municipality with several techniques, the total amount of generated renewable energy per province or RES-region is being used, as published by CBS (orderd by Rijkswaterstaat). The amounts per municipality are not being published by CBS because of the traceability to individual installations. This is why the provincial or the regional amounts of renewable energy has been divided by the municipalities within a province or region on the basis of the installed capacity per municipality or a different relevant distribution code. The data on the provincial level apply to: • Wind onshoresince 2002; • Geothermic since 2014; • Biomass boilers since 2014; • Biogas since 2014; • Bio-WKK since 2019 (total nationwide before then) Data and comments can be find in the file: \Klantgroepen\Gemeenten\SDG_7.2_Hernieuwbare energie\Ruwe data\Totaal bekende hernieuwbare energie - 2020 - Gemeenten.xlsx
Limitations	The most recent data on renewable energy that is available is of 2020.
SDG	SDG 7.2
Data quality estimate	4 – Non-audited data, or other primary data. Both klimaatmonitor as well as CBS data are highly reliable, but not audited and thereby score 4.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Totaal bekende hernieuwbare energie (TJ) per gemeente in 2020
Data file	Totaal bekende hernieuwbare energie - 2020 - Gemeenten.xlsx
Data Source	Klimaatmonitor
Years	2019&2020
Last update	8-2022
Date of download	22-08-2022
Link to webpage	https://klimaatmonitor.databank.nl/jive (Klimaatmonitor - Totaal bekende hernieuwbare energie (databank.nl))
Filters used to obtain the datafile	Onderwerp: Hernieuwbare energie – Totaal bekende hernieuwbare energie Niveau: Gemeente – alle gemeenten Jaar: Meest recente - 2020
Internal location	\Klantgroepen\Gemeenten\SDG_7.2_Hernieuwbare energie\Ruwe data\Totaal bekende hernieuwbare energie - 2020 - Gemeenten.xlsx
Data quality estimate	2

	Klimaatmonitor obtains information from different sources. In the case of renewable energy, most information is provided by CBS, however several other sources are used to supplement this data. For more information see https://klimaatmonitor.databank.nl/content/overzicht-bronnen-en-methoden
Unit of measurement	TJ
Selections	Not applicable
Data missing	Not applicable
Print Screens	Klantgroepen\Gemeenten\SDG_7.2_Hernieuwbare energie\Printscreens\Totaal bekende hernieuwbare energie 2020 Gemeenten.PNG

2.2.9 Total renewable electricity

Topic	Description
Data	Total renewable electricity in kWh Data on renewable electricity obtained from Klimaatmonitor: https://klimaatmonitor.databank.nl/jive
Calculation steps	The total renewable electricity (in TJ) per municipality is multiplied by the conversion factor of TJ to kWh, which is 277 777.778 to calculate the total renewable energy in kWh. For the determination of the amount of renewable electricity that is generated per municipality with several techniques, the total amount of generated renewable electricity per province or RES-region is being used, as published by CBS (ordered by Rijkswaterstaat). The amounts per municipality are not being published by CBS because of the traceability to individual installations. This is why the provincial or the regional amounts of energy is being divided by the municipalities within a province or region on the basis of the installed capacity per municipality or a different relevant distribution code. The data on the provincial level apply to: • Wind onshoresince 2002; • Geothermic since 2014; • Biomass boilers since 2014; • Biogas since 2014; • Bio-WKK since 2019 (total nationwide before then) Data, calculation steps and comments can be find in the file: \Klantgroepen\Gemeenten\ SDG_7.2_Hernieuwbare energie\Ruwe data
Limitations	The most recent data on renewable energy that is available is of 2020.
SDG	SDG 7.2
Data quality estimate	4 – Non-audited data, or other primary data. Both klimaatmonitor as well as CBS data are highly reliable, but not audited and thereby score 4.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Totaal bekende hernieuwbare elektriciteit (TJ) per gemeente in 2020
Data file	Totaal bekende hernieuwbare elektriciteit - 2020 - Gemeenten.xlsx
Data Source	Klimaatmonitor
Years	2019&2020
Last update	08-2022
Date of download	22-08-2022
Link to webpage	https://klimaatmonitor.databank.nl/jive (Klimaatmonitor - Totaal bekende hernieuwbare elektriciteit (databank.nl))
Filters used to obtain the datafile	Onderwerp: Hernieuwbare energie – Totaal bekende hernieuwbare elektriciteit Niveau: Gemeente – alle gemeenten Jaar: Meest recente - 2020
Internal location	Klantgroepen\Gemeenten\SDG_7.2_Hernieuwbare energie\Ruwe data\Totaal bekende hernieuwbare elektriciteit - 2020 – Gemeenten.xlsx
Data quality estimate	2

	Klimaatmonitor obtains information from different sources. In the case of renewable electricity, most information is provided by CBS, however several other sources are used to supplement this data. For more information see https://klimaatmonitor.databank.nl/content/overzicht-bronnen-en-methoden
Unit of measurement	TJ
Selections	Not applicable
Data missing	Not applicable
Print Screens	Klantgroepen\Gemeenten\SDG_7.2_Hernieuwbare energie\Printsceens\Totaal bekende hernieuwbare elektriciteit 2020 Gemeenten.PNG

2.2.10 Total renewable heat

Topic	Description
Data	Total renewable heat in TJ Data on renewable energy obtained from Klimaatmonitor: https://klimaatmonitor.databank.nl/jive
Calculation steps	No calculations. Data directly from Klimaatmonitor. For the determination of the amount of renewable heat that is generated per municipality with several techniques, the total amount of generated renewable heat per province or RES-region is being used, as published by CBS (ordered by Rijkswaterstaat). The amounts per municipality are not published by CBS because of the traceability to individual installations. This is why the provincial or the regional amounts of energy is being divided by the municipalities within a province or region on the basis of the installed capacity per municipality or a different relevant distribution code. The data on the provincial level apply to: • Wind onshore since 2002; • Geothermic since 2014; • Biomass boilers since 2014; • Biogas since 2014; • Bio-WKK since 2019 (total nationwide before then) Data and comments can be find in the file: \Klantgroepen\Gemeenten\SDG_7.2_Hernieuwbare energie\Totaal bekende hernieuwbare warmte - 2020 – Gemeenten – per inwoner.xlsx
Limitations	The most recent data on renewable heat that is available is of 2020.
SDG	SDG 7.2
Data quality estimate	4 – Non-audited data, or other primary data. Both klimaatmonitor as well as CBS data are highly reliable, but not audited and thereby score 4.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Total known renewable heat (TJ) per municipality in 2020
Data file	Totaal bekende hernieuwbare warmte - 2020 - Gemeenten.xlsx
Data Source	Klimaatmonitor
Years	2019&2020
Last update	08-2022
Date of download	24-08-2022
Link to webpage	https://klimaatmonitor.databank.nl/jive (Klimaatmonitor - Totaal bekende hernieuwbare warmte (databank.nl))
Filters used to obtain the datafile	Onderwerp: Hernieuwbare energie – Totaal bekende hernieuwbare warmte Niveau: Gemeente – alle gemeenten Jaar: Meest recente - 2020
Internal location	Klantgroepen\Gemeenten\SDG_7.2_Hernieuwbare energie\Ruwe data\ Totaal bekende hernieuwbare warmte - 2020 - Gemeenten.xlsx
Data quality estimate	2

	Klimaatmonitor obtains information from different sources. In the case of renewable heat, most information is provided by CBS, however several other sources are used to supplement this data. For more information see https://klimaatmonitor.databank.nl/content/overzicht-bronnen-en-methoden
Unit of measurement	MJ
Selections	Not applicable
Data missing	Not applicable
Print Screens	Klantgroepen\Gemeenten\SDG_7.2_Hernieuwbare energie\Printscreens\Totaal bekende hernieuwbare warmte 2020 Gemeenten.PNG

2.2.11 Capacity of solar panels per inhabitant

Topic	Description
Data	Capacity of solar panels per inhabitant
Calculation steps	The unit of downloaded data is Watt peak (Wp) per inhabitant. CBS publishes the capacity of solar panels since 2016. The total capacity of solar panels for the Netherlands can deviate from the total of all Dutch municipalities. The reason is that not all systems can be assigned to a municipality due to missing or flawed location data. Klimaatmonitor calculates the capacity of solar panels per inhabitant using CBS data as follows: pV (capacity) / inhabitants * 1000 Data, calculation steps and comments can be find in the file: \Klantgroepen\Gemeenten\SDG_7.2_Zonnestroom\Vermogen zonnepanelen per inwoner - 2021 - Gemeenten.xlsx
Limitations	The most recent data is of 2021
SDG	SDG 7.2
Data quality estimate	2 – Non-audited data, or other primary data. Both klimaatmonitor as well as CBS data are highly reliable, but not audited and thereby score 2.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Capacity of solar panels per inhabitant in 2021
Data file	Vermogen zonnepanelen per inwoner - 2021 - Gemeenten.xlsx
Data Source	Klimaatmonitor
Years	2020&2021
Last update	19-08-2021
Date of download	31-08-2022
Link to webpage	https://klimaatmonitor.databank.nl/jive
Filters used to obtain the datafile	Onderwerp: Resultaten en randvoorwaarden - Hernieuwbare energieinstallaties – Zonnepanelen - Aantal installaties - Vermogen zonnepanelen per inwoner Niveau: Gemeente – alle gemeenten. N.B. For the calculation of total score: Nederland Jaar: Meest recente - 2021
Internal location	Klantgroepen\Gemeenten\SDG_7.2_Vermogen zonnepanelen\Ruwe data\Vermogen zonnepanelen per inwoner - 2021 - Gemeente.xlsx and Vermogen zonnepanelen per inwoner - 2021 - Nederland.xlsx
Data quality estimate	2 Klimaatmonitor obtains information from different sources. In the case of solar panels, most information is provided by CBS, however several other sources are used to supplement this data. For more information see https://klimaatmonitor.databank.nl/content/overzicht-bronnen-en-methoden
Unit of measurement	Watt peak (Wp)
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\Printscreens\Vermogen zonnepanelen per inwoner - gemeenten.PNG

2.2.12 Skewed rent

Topic	Description
Data	Number of households who are not appropriate housed (skewed rent) in social housings
Calculation steps	The percentage of households that are housed in a residence with a monthly rent that does not match the household income. This only concerns households in residences of social housing associations. A household lives in appropriate housing when the household income matches the monthly rent. There are two forms of skewness; expensive skewness and cheap skewness. Cheap skew occurs if the taxable household income is higher than or equal to €42,436 per year and the household is housed in a house with a rent lower than or equal to the liberalization limit (€720.47) per month. A household is expensively skewed if it belongs to the rent allowance target group (based on income) and lives in a home with a rent above the capping limit (aftoppingsgrens). The capping limit is €607.46 per month for households with one or two persons and €651.03 per month for households with three or more persons. All amounts refer to the year 2019 in both measurements. Both types of skewness are measured in this indicator.
Limitations	Not applicable
SDG	SDG 11.1
Data quality estimate	2 – Non-audited data, or other primary data. The data is consulted from the 'Lokale monitor wonen (LMW)'. This is an initiative from several parties (Woonbond, Aedes, VNG, G4 and G40). The data used in this monitor are registration data from the central bureau of statistics in the Netherlands.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Households in association housing
Data file	Huishoudens in corporatiewoningen - 2020.xlsx
Data Source	Lokale monitor wonen (Dutch Central Bureau of Statistics)
Years	2019&2020
Last update	08-06-2022
Date of download	12-09-2022
Link to webpage	https://www.waarstaatjegemeente.nl/dashboard/dashboard/Lokale-Monitor-Wonen/
Filters used to obtain the datafile	Onderwerpen: huishoudens in corporatiewoningen Gebieden: Gemeenten van het jaar 2022 Periode 2020
Internal location	\Klantgroepen\Gemeenten\SDG_11_1_Scheefhuur\Ruwe data\huishoudens in corporatiewoningen.xlsx
Data quality estimate	2–This data contains the number of households living in an associated house.
Unit of measurement	households
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\SDG_11_1_Scheefhuur\Printscreens\Huishoudens in corporatiewoningen 12-09-2022.png

Topic	Description
Data	Households living in a suitable house
Data file	Passend wonen in corporatiewoning.xlsx
Data Source	Lokale monitor wonen (Dutch Central Bureau of Statistics)
Years	2019&2020
Last update	12-09-2022
Date of download	08-06-2022
Link to webpage	https://www.waarstaatjegemeente.nl/dashboard/dashboard/Lokale-Monitor-Wonen/
Filters used to obtain the datafile	Onderwerpen: Passend wonen in een corporatiewoning Scheefheidhuurwoningen: Passend gehuisvest Gebieden: Gemeenten van het jaar 2022 Periode 2020
Internal location	\Klantgroepen\Gemeenten\SDG_11_1_Scheefhuur\Ruwe data\Passend wonen in corporatiewoningxlsx
Data quality estimate	2 –This data contains the number of households living in an associated house which is suitable with their income
Unit of measurement	households
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\SDG_11.1_Scheefhuur\Printscreens\Passend gehuisvest.png

Topic	Description
Data	Regional division of municipalities 2022
Data file	Gemeenten alfabetisch 2022.xlsx
Data Source	Dutch Central Bureau of Statistics
Year	2022
Last update	01-01-2022
Date of download	14-09-2022
Link to webpage	https://www.cbs.nl/nl-nl/onze-diensten/methoden/classificaties/overig/gemeentelijke-indelingen-per-jaar/indeling-per-jaar/gemeentelijke-indeling-op-1-januari-2022
Filters used to obtain the datafile	Not applicable
Internal location	\Klantgroepen\Gemeenten \SDG_11_1_Scheefhuur\Ruwe data\Gemeenten alfabetisch 2022.xlsx
Data quality estimate	1 – Regional division of municipalities as stated by the Dutch government
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\SDG_11_1_Scheefhuur\Printscreens\Gemeenten alfabetisch 2022.PNG

2.2.13 Total registration time for social housing

Topic	Description
Data	Total registration time for social housing
Calculation steps	No calculations were done on the original data set. The data is delivered by social housing associations themselves. The data is used to calculate a weighted average for the total registration time for social housing. Only municipalities where more than 70% of the data was available, are available in this dataset.
Limitations	Data is available for 231 municipalities and the most recent data available is of 2020
SDG	SDG 11.1
Data quality estimate	2 – Non-audited data, or other primary data. Data is not audited, but is supplied by social housing associations themselves and therefore reliable.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Total registration time for social housing per municipality
Data file	0-meting wachttijden sociale huurwoningen 2020.xlsx
Data Source	NOS op 3
Year	2020
Last update	24-4-2021
Date of download	25-1-2022
Link to webpage	https://app.nos.nl/op3/socialehuur/#/
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Gemeenten\SDG_11.1_Wachttijden sociale huurwoningen
Data quality estimate	2 – Non-audited data, or other primary data. Data is not audited, but is supplied by social housing associations themselves and therefore reliable.
Unit of measurement	Months
Selections	Not applicable
Data missing	Data for 121 municipalities is missing, as social housing associations did not deliver (enough) data to make the calculations
Print Screens	Klantgroepen\Gemeenten\SDG_11.1_Wachttijden sociale huurwoningen\Printscreens

Topic	Description
Data	Regional division of municipalities 2022
Data file	Kopie van gemeenten-alfabetisch-2022.xlsx
Data Source	Dutch Central Bureau of Statistics
Year	2021
Last update	1-1-2022
Date of download	11-09-2022

Link to webpage	https://www.cbs.nl/nl-nl/onze-diensten/methoden/classificaties/overig/gemeentelijke-indelingen-per-jaar/indeling-per-jaar/gemeentelijke-indeling-op-1-januari-2022
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Gemeenten\Basisbestanden\Gemeentelijke indeling\Gemeenten alfabetisch 2022.xlsx
Data quality estimate	1 – Regional division of municipalities as stated by the Dutch government
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	Klantgroepen\Gemeenten\Basisbestanden\Gemeentelijke indeling\Indeling gemeenten 2022.PNG

2.2.14 Total amount of housing stock

Topic	Description
Data	Amount of newly build homes
Calculation steps	None. Redistribution (herindeling) to municipalities of 2021 has been applied. Since 2012 the data are based on the Basisregistraties Adressen en Gebouwen (BAG).
Limitations	Most recent data available is of 2021
SDG	SDG 11.1
Data quality estimate	2 - Primary data, not audited

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Total amount of housing stock
Data file	Woningvoorraad.xlsx
Data Source	CBS
Years	2020&2021
Last update	18-08-2022
Date of download	24-08-2022
Link to webpage	https://opendata.cbs.nl/#/CBS/nl/dataset/81955NED/table
Filters used to obtain the datafile	Onderwerp Bouwen en wonen Woningvoorraad Nieuwbouwwoningen Perioden Jaren 2021 Regio's Gemeenten per provincie (select all)
Internal location	Klantgroepen\Gemeenten\SDG_11_1_Aantal nieuwbouwwoningen_2021\Woningvoorraad.xlsx
Data quality estimate	2 - primary data
Unit of measurement	Total amount of housing stock
Selections	Not applicable
Data missing	Not applicable
Print Screens	Klantgroepen\Gemeenten\SDG_11_1_Aantal nieuwbouwwoningen_2021\Printscreens\Woningvoorraad 2021.png

2.2.15 Number of inhabitants with access to public transportation

Topic	Description
Data	Number of inhabitants that reside within 700 m of a station or stop that is serviced at least twice an hour. Data on public transportation obtained from gtfs OVapi: http://gtfs.ovapi.nl/ Data on inhabitants on a (hectare) grid obtained from CBS: https://www.cbs.nl/nl-nl/dossier/nederland-regionaal/geografische-data/kaart-van-100-meter-bij-100-meter-met-statistieken Data on municipality boundaries obtained from Nationaal Georegister: Nationaal georegister - bestuurlijke grenzen: gemeenten (https://www.nationaalgeoregister.nl/geonetwork/srv/dut/catalog.search#/metadata/e2ac0716-1fcc-4f7c-b704-d8c2ef8dffd6?tab=general)
Calculation steps	The calculation steps are performed in three ways, by 1) R-script, 2) in QGIS, 3) in Excel 1) R-script: Select only those stops or stations that are serviced at least twice an hour on weekdays between 7am and 8pm. These are regularly serviced stops. Data from GTFS concerning public transportation schedules are downloaded. An R-script is used to perform the following steps and calculations (N.B. for more precise description of the steps review the R-script "R script regularly serviced public transport stops"): From the data only tram, underground, train, and bus services are subtracted. In the schedules only the weekdays are taken into account of which 20 randomly selected days per weekday are selected as a subsample. Public transport schedules for these 100 days are loaded and only the times between 7am and 8pm are taken into consideration. Within this timeframe the script counts the number of times a means of public transport, i.e. a bus, tram, train, or underground, services a stop or station. This calculation is done for all stops and stations. The number of times a stop or station is serviced is divided by the number of days (100) and the number of hours per day (13) to calculate how often a stop is serviced per hour on weekdays. Only those stops or stations that are frequented at least twice an hour are taken into consideration. These stops are saved to file busmetrotramtreinhaltenMin2PerUur_2022_subsam100.csv 2) QGIS: Calculate the number of inhabitants that live within 700 meters of the regularly serviced stops. Those inhabitants have access to public transportation. Data from CBS (CBS vierkant) and geographical information of municipalities is combined with the regularly serviced stops from step 1 to calculate the number of inhabitants per municipality that live within 700 meters of regularly serviced public transport stops and the total inhabitants per municipality. Research indicates that 700 meters is approximately the maximum distance inhabitants travel by foot to a public transport stop, except for the larger stations or public transport hubs. The following steps were performed to calculate these data (N.B. for a more precise description of the steps review "QGIS public transportation script.docx"). Use the file created in step 1 to create an 700 meter buffer around regularly serviced Public Transport stops. Combine information on geographic location of municipalities with CBS vierkantstatistieken to create a 100m grid of points containing the municipality code and the number of inhabitants that live around that point. Select the points with municipality and inhabitant data that are located within the 700 meter bufferzone around the regularly serviced Public Transport stops. Calculate the number of inhabitants per municipality that live within 700 meters of a regularly serviced Public Transport stop. Save these to file (inhabitantsaccesstoPT_permunicipality2022.csv) 3) Excel: Clear out the whitelines in the .csv-file. Join the resulting data with municipality data on the basis of the gemeentecode and set the value for inhabitants of

	municipalities that are not present in the dataset to 0. Save this to file (numb_perc_inhabpermunic_accessPT2022.csv)
Limitations	The public transportation data regards schedules for the coming year (2022); it is thus not based on actual results of the past year.
SDG	SDG 11.2
Data quality estimate	2 – Non-audited data, or other primary data

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Public transportation information (o.a. routes, stops, stop_times, trips) of buses, trams, undergrounds, trains and ferries in the Netherlands.
Data file	In Folder: gtfs-openov-nl agency.txt calendar_dates.txt feed_info.txt routes.txt shapes.txt stop_times.txt stops.txt trips.txt
Data Source	GTFS OVapi
Years	20191&2022
Last update	31-08-2022 (frequently updated)
Date of download	01-09-2022
Link to webpage	http://gtfs.ovapi.nl/
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Gemeenten\SDG_11.2_Toegang OV\Ruwe data\
Data quality estimate	2 Data is provided by General Transit Feed Specification (gtfs.org), an organization that stimulates open data for public transportation organizations. The different Dutch organizations for public transport provide the data for the gtfs.ovapi.nl platform. This data is provided on the basis of best-effort, thus there is no service level agreement. See gtfs.ovapi.nl/README for more information.
Unit of measurement	Several units (date, time, location, number)
Selections	Not applicable
Data missing	Not applicable
Print Screens	Klantgroepen\Gemeenten\SDG_11.2_Toegang OV\Printscreens\

Topic	Description
Data	Data on inhabitants of the Netherlands on a 100 x 100m grid
Data file	cbs_vk100_2021_v1.gpkg
Data Source	Statis
Year	2021
Last update	01-03-2022
Date of download	11-10-2022

Link to webpage	https://www.cbs.nl/nl-nl/dossier/nederland-regionaal/geografische-data/kaart-van-100-meter-bij-100-meter-met-statistieken
Filters used to obtain the datafile	Year: 2021 (most recent)
Internal location	Klantgroepen\Gemeenten\Basisbestanden\cbs_vk100_2021_v1.gpkg
Data quality estimate	2
Unit of measurement	Number of inhabitants
Selections	Not applicable
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_11.2_Toegang OV\Printscreens\

Topic	Description
Data	Data on geographic location of Dutch municipalities
Data file	Gemeentegebieden2022.gpkg
Data Source	PDOK / Nationaal Georegister / kadaster
Year	2022
Last update	24-03-2022
Date of download	11-10-2022
Link to webpage	https://service.pdok.nl/kadaster/bestuurlijkegebieden/wfs/v1_0?request=GetCapabilities&service=WFS
Filters used to obtain the datafile	Year: 2022
Internal location	Klantgroepen\Gemeenten\Basisbestanden\Gemeentegebieden2022.gpkg
Data quality estimate	2
Unit of measurement	Multipolygon
Selections	Not applicable
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_11.2_Toegang OV\Printscreens\

2.2.16 Percentage zero-emission buses

Topic	Description
Data	The data is obtained from CROW: https://crow.databank.nl/jive?cat_open_code=cgdggibcigwZhegg&var=sb_rap
Calculation steps	To calculate the % of zero emission buses, the amount of buses on hydrogen and electricity was divided by the total amount of buses in a municipality (concession area)
Limitations	The municipality data is based on the data from the concession areas, meaning that municipalities belonging to a specific concession area have the same amount of buses. This is a logical inference, as buses are not confined to specific municipalities, but drive around the concession area. Which municipalities belongs to which concession area is shown in the datafile.
SDG	SDG 11.6
Data quality estimate	2 – Non-audited data, or other primary data.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Percentage zero emission buses
Data file	Emissievrije bussen 2021(indeling 2021).csv
Data Source	CROW
Years	2020&2021
Last update	20-07-2022
Date of download	31-10-2022
Link to webpage	https://crow.databank.nl/viewer/?cat_open_code=cgdggibcigwZhegg&var=sb_rap
Filters used to obtain the datafile	Mobiliteitscore Schone Bussen Aantallen Elektrisch Waterstof Totaal
Internal location	Klantgroepen\Gemeenten\SDG_11.6_Emissievrije bussen\Emissievrije bussen heringedeeld 1 meting
Data quality estimate	2 – Non-audited data, or other primary data.
Unit of measurement	% zero-emission buses
Selections	Not applicable
Data missing	Not applicable
Print Screens	Klantgroepen\Gemeenten\SDG_11.6_Emissievrije bussen\Printscreen

2.2.17 Total amount of residual household waste

Topic	Description
Data	The data is obtained from CBS: https://opendata.cbs.nl/statline/#/CBS/nl/dataset/83452NED/table?ts=1638976050279
Calculation steps	To calculate the amount of residual household waste per municipality, the amount of residual household waste per inhabitant was multiplied by the number of inhabitants of the municipality. Missing data in 2021 is filled with data from 2020. All calculation steps were done in SQL. Non-segregated household waste is waste that is collected by municipalities at households including waste of small stores and businesses that is collected at the same time and in the same way as that from households. Thus, a (small) part of the collected waste does not originate from households.
Limitations	Data is not final yet and may slightly change per year
SDG	SDG 11.6
Data quality estimate	2 - Non-audited data, or other primary data

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Amount of residual household waste
Data file	Restafval_2021.xlsx
Data Source	Dutch Central Bureau of Statistics (CBS)
Years	2019&2020 and 2020&2021
Last update	29-09-2022
Date of download	04-10-2022
Link to webpage	https://opendata.cbs.nl/#/CBS/nl/dataset/83452NED/table?searchKeywords=gemeentelijk%20afval
Filters used to obtain the datafile	Afvalsoort: Gemengd huishoudelijk afval; Overig huishoudelijk afval Regio's: alle gemeenten Perioden: 2020 2021 Onderwerp: Hoeveelheid huishoudelijk afval
Internal location	\Klantgroepen\Gemeenten\SDG_11_6_Afval\Ruwe data – overig\Restafval_2021.xlsx
Data quality estimate	2
Unit of measurement	Kg per inhabitant
Selections	Not applicable
Data missing	Missing data filled with 2020 data. If 2020 data was missing, data not filled.
Print Screens	\Klantgroepen\Gemeenten\SDG_11.6_Afval\Printscreens\Restafval 2021.png

Topic	Description
Data	Number of inhabitants per municipality 2021
Data file	Bevolking_op_1_januari_2021.csv
Data Source	Dutch Central Bureau of Statistics
Year	2021
Last update	30-05-2022
Date of download	24-11-2022
Link to webpage	https://opendata.cbs.nl/#/CBS/nl/dataset/03759ned/table?dl=39E0B
Filters used to obtain the datafile	Not applicable
Internal location	\Klantgroepen\Gemeenten \Basisbestanden\Bevolking_op_1_januari_2021.csv
Data quality estimate	1 – Number of inhabitants per municipality as stated by the Dutch government
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\Basisbestanden\Bevolking op 1 januari 2021.png

Topic	Description
Data	Regional division of municipalities 2021
Data file	Gemeenten alfabetisch 2021.xlsx
Data Source	Dutch Central Bureau of Statistics
Year	2021
Last update	01-01-2022
Date of download	14-09-2022
Link to webpage	https://www.cbs.nl/nl-nl/onze-diensten/methoden/classificaties/overig/gemeentelijke-indelingen-per-jaar/indeling-per-jaar/gemeentelijke-indeling-op-1-januari-2021
Filters used to obtain the datafile	Not applicable
Internal location	\Klantgroepen\Gemeenten \Basisbestanden\Gemeentelijke indeling\Gemeenten alfabetisch 2021.xlsx
Data quality estimate	1 – Regional division of municipalities as stated by the Dutch government
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\Basisbestanden\Printscreens\Gemeentelijke indeling\Gemeenten alfabetisch 2021.PNG

2.2.18 Total amount of sorted household waste

Topic	Description
Data	The data is obtained from CBS: https://opendata.cbs.nl/statline/#/CBS/nl/dataset/83452NED/table?ts=1638976050279
Calculation steps	To calculate the amount of sorted household waste per municipality, the amount of sorted household waste per inhabitant was multiplied by the number of inhabitants of the municipality. Missing data in 2021 is filled with data from 2020. All calculation steps were done in SQL. Sorted household waste is waste that is collected at households by municipalities including waste of small stores and businesses that is collected at the same time and in the same way as that from households. E.g. the amount of textile, used paper, and cardboard, which are collected by schools, associations and charities is often collected at the same time and in the same way as that from households. Thus, a (small) part of the collected waste does not originate from households.
Limitations	Data is not final yet and may slightly change per year
SDG	SDG 11.6
Data quality estimate	2 - Non-audited data, or other primary data

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Amount of sorted household waste
Data file	Grof_en_fijn_afval_2021.xlsx
Data Source	Dutch Central Bureau of Statistics (CBS)
Years	2019&2020 and 2020&2021
Last update	29-09-2022
Date of download	04-10-2022
Link to webpage	https://opendata.cbs.nl/#/CBS/nl/dataset/83452NED/table?searchKeywords=gemeentelijk%20afval
Filters used to obtain the datafile	Afvalsoort: Gescheiden ingezameld fijn afval; Gescheiden ingezameld grof afval Regio's: alle gemeenten Perioden: 2020 2021 Onderwerp: Hoeveelheid huishoudelijk afval
Internal location	\Klantgroepen\Gemeenten\SDG_11_6_Afval\Ruwe data – overig\Grof_en_fijn_afval_2021.xlsx
Data quality estimate	2
Unit of measurement	Kg per inhabitant
Selections	Not applicable
Data missing	Missing data filled with 2020 data. If 2020 data was missing, data not filled.
Print Screens	\Klantgroepen\Gemeenten\SDG_11_6_Afval\Printscreens\Grof en Fijn afval 2021.png

Topic	Description
Data	Number of inhabitants per municipality 2021
Data file	Bevolking_op_1_januari_2021.csv
Data Source	Dutch Central Bureau of Statistics
Year	2021
Last update	30-05-2022
Date of download	24-11-2022
Link to webpage	https://opendata.cbs.nl/#/CBS/nl/dataset/03759ned/table?dl=39E0B
Filters used to obtain the datafile	Not applicable
Internal location	\Klantgroepen\Gemeenten \Basisbestanden\Bevolking_op_1_januari_2021.csv
Data quality estimate	1 – Number of inhabitants per municipality as stated by the Dutch government
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\Basisbestanden\Bevolking op 1 januari 2021.png

Topic	Description
Data	Regional division of municipalities 2021
Data file	Gemeenten alfabetisch 2021.xlsx
Data Source	Dutch Central Bureau of Statistics
Year	2021
Last update	01-01-2022
Date of download	14-09-2022
Link to webpage	https://www.cbs.nl/nl-nl/onze-diensten/methoden/classificaties/overig/gemeentelijke-indelingen-per-jaar/indeling-per-jaar/gemeentelijke-indeling-op-1-januari-2021
Filters used to obtain the datafile	Not applicable
Internal location	\Klantgroepen\Gemeenten\Basisbestanden\Gemeentelijke indeling\Gemeenten alfabetisch 2021.xlsx
Data quality estimate	1 – Regional division of municipalities as stated by the Dutch government
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\Basisbestanden\Printscreens\Gemeentelijke indeling\Gemeenten alfabetisch 2021.PNG

2.2.19 Public green space

Topic	Description
Data	Public green space
Calculation steps	No calculations were done on the original data set. The percentage of trees and low greens of the total surface of the public space. The map presents an image of the locations of public green space in the Netherlands. All trees, bushes and low vegetation are being presented in a grid map with a resolution of 10 x 10 meters. The percentage of vegetation is expressed in the color green per grid cel. This map is a composition of the maps "Bomen in Nederland", "Struiken in Nederland", and "Lage vegetatie in Nederland", but vegetation in agricultural areas is being included as well.
Limitations	No limitations
SDG	SDG 11.7
Data quality estimate	2 – Non-audited data, or other primary data.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Public green space
Data file	Openbaar groen 2021 heringedeeld.csv
Data Source	Climate Adaptation Services via Waarstaatjegemeente.nl
Year	2021
Last update	2021
Date of download	11-1-2022
Link to webpage	https://www.waarstaatjegemeente.nl/jive?workspace_guid=50c9fe92-c238-458d-83a1-a63892e41d40
Filters used to obtain the datafile	Duurzame leefomgeving: Klimaatadaptatie Klimaatadaptatie: Openbaar groen Percentage: Oppervlakte openbare ruimte groen totaal zonder agrarisch In m^2: Oppervlakte openbare ruimte groen
Internal location	\Klantgroepen\Gemeenten\SDG_11.7_Openbaar groen\Openbaar groen 2021 heringedeeld.csv
Data quality estimate	2 – This data contains the number of squared meters and percentage of greenery in public space per municipality. This data is collected by Climate Adaptation Services
Unit of measurement	Surface area percentage (surface area in m^2)
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\SDG_11.7_Openbaar groen\Oude data\Openbaar groen WSJG - 05-10-2022.png

Topic	Description
Data	Regional division of municipalities 2021
Data file	Kopie van gemeenten-alfabetisch-2021.xlsx
Data Source	Dutch Central Bureau of Statistics
Year	2021
Last update	1-1-2021
Date of download	12-1-2022
Link to webpage	https://www.cbs.nl/nl-nl/onze-diensten/methoden/classificaties/overig/gemeentelijke-indelingen-per-jaar/indeling-per-jaar/gemeentelijke-indeling-op-1-januari-2021
Filters used to obtain the datafile	Not applicable
Internal location	\Klantgroepen\Gemeenten\Basisbestanden\Gemeentelijke indelingen\Gemeenten alfabetisch 2021.xlsx
Data quality estimate	1 – Regional division of municipalities as stated by the Dutch government
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\Basisbestanden\Gemeentelijke indeling\Indeling gemeenten 2021.PNG

2.2.20 Flood risk

Topic	Description
Data	Flood risk
Calculation steps	For this indicator, potential victims have been calculated for areas that have a medium flood risk, i.e. probability of 1 / 100 per year which is approximately once in a lifetime. To calculate the number of potential victims of such a flood event, the map with flood data has been combined with the number of inhabitants per hectare (CBS). The map with calculated flood risk does not change in time, however the number of inhabitants within that area does vary per year.
Limitations	No limitations
SDG	SDG 13.1
Data quality estimate	3 – Average data that is peer/(sub)sector-specific.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Flood risk
Data file	0- en 1-meting overstromingsrisico.csv
Data Source	Risicokaart.nl
Year	2014-2021
Last update	2021
Date of download	5-2022
Link to webpage	https://www.atlasleefomgeving.nl/kaarten
Filters used to obtain the datafile	Not applicable
Internal location	\Klantgroepen\Gemeenten\SDG_13.1_Overstromingsrisico\0- en 1-meting overstromingsrisico.csv
Data quality estimate	3 – This data has been modeled on the basis of probability calculations combined with CBS inhabitants data.
Unit of measurement	Number of victims per inhabitants (by flood with risk of medium probability)
Selections	Not applicable
Data missing	Not applicable
Print Screens	Not applicable

Topic	Description
Data	Regional division of municipalities 2021
Data file	Gemeenten alfabetisch 2021.xlsx
Data Source	Dutch Central Bureau of Statistics
Year	2021
Last update	01-01-2022
Date of download	14-09-2022
Link to webpage	https://www.cbs.nl/nl-nl/onze-diensten/methoden/classificaties/overig/gemeentelijke-indelingen-per-jaar/indeling-per-jaar/gemeentelijke-indeling-op-1-januari-2021

Filters used to obtain the datafile	Not applicable
Internal location	\Klantgroepen\Gemeenten\Basisbestanden\Gemeentelijke indeling\Gemeenten alfabetisch 2021.xlsx
Data quality estimate	1 – Regional division of municipalities as stated by the Dutch government
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	\Klantgroepen\Gemeenten\Basisbestanden\Printscreens\Gemeentelijke indeling\Gemeenten alfabetisch 2021.PNG

2.2.21 Green roofs

Topic	Description
Data	Green roofs
Calculation steps	Results have been aggregated and reclassified to the 2022 municipality classification. Calculation steps on the source data have been performed by Readar by means of automatic detection through machine learning. Manual checks have been performed by Readar. Calculation steps (for a more thorough explanation of the calculations see " Klantgroepen\Gemeenten\SDG_13.1_Groene daken\Ruwe data - overig\20221104_Levering_groenedaken_rapportage.pdf"): Step 1: Flat roof surface of buildings larger than 50 m^2 have been calculated on the basis of LiDAR data (AHN3+AHN4). Step 2: By means of automatic detection, green roofs have been identified on the basis of aerial photos. Step 3: Manual checks have been performed to check whether automatic detection correctly recognized green roofs. Step 4: An additional calculation on the basis of vegetation index provided by the aerial photos has been performed to get correct green roof surface areas. Step 5: Calculated data has been assigned to municipalities on the basis of BAG building data and CBS Buurten en Wijken data. Data used by Readar for the calculations: Aerial photos (source: Kadaster, via Nationaalgeoregister.nl): 2020, 25cm RGB+N, and 2021, 08cm TrueOrtho RGB LiDAR data (source: AHN, https://www.ahn.nl/): AHN4 hoogtedata where available, AHN3 hoogtedata where AHN4 data is not available BAG pandinformatie (source: Kadaster) CBS buurten en wijken (source: CBS)
Limitations	No limitations
SDG	SDG 13.1
Data quality estimate	2 – Non-audited data, or other primary data. **Score** / **Quality requirement** 1 – Audited data or actual primary data 2 – Non-audited data, or other primary data 3 – Average data that is peer/(sub)sector-specific 4 – Proxy data on the basis of region or country 5 – Estimated data with very limited support

Topic	Description
Data	Green roofs
Data file	0- en 1-meting groene daken heringedeeld.csv
Data Source	Readar
Years	2020&2021
Last update	2021
Date of download	04-11-2022
Link to webpage	https://readar.com/
Filters used to obtain the datafile	Not applicable
Internal location	\Klantgroepen\Gemeenten\ SDG_13.1_Groene daken\0- en 1-meting groene daken heringedeeld.csv
Data quality estimate	2 – data has been calculated on the basis of aerial photos and BAG information of Kadaster, AHN data and CBS Buurten en Wijken data. Calculations have an uncertainty factor.
Unit of measurement	Surface area percentage (surface area in m^2)
Selections	Not applicable
Data missing	Not applicable
Print Screens	Not applicable

2.2.22 GHG emissions per municipality

Topic	Description
Data	***Data to calculate scope 1 and 2 GHG emissions*** For scope 1 natural gas use and scope 2 electricity use, data of 2021 has been used. For scope 1 fossil use by company vehicles, the calculation has been made with partial use of 2020 data. The data used in this approach come from multiple sources. Data regarding the number of employees working for SBI-code 8411 and the data about the number of employees working for the total public administration and government services sector comes from Lisa. Lisa is the national information system for jobs in the Netherlands and contains a database with data of all locations where paid work is done. This data was purchased on the municipality level. The data is supplied in the 2021 municipality division and therefore all other used data has been recalculated to the 2021 municipality division. Data regarding the number of employees working for the provincial government organization comes from A&O fonds provincies. A&O fonds provincies is an organization that provides practical tools, knowledge, and subsidies for governments. This data is available on the aggregation level of provinces. Data about the supply of energy to the sector public administration and government services comes from the Dutch Central Bureau of Statistics (CBS). The data covers the supply of electricity and natural gas to businesses and other utility buildings. The data is based on the connection register of the energy network and is therefore reliable. Data is divided by sector and region. Data about the number of company vehicles owned by companies per sector comes from the Dutch Central Bureau of Statistics (CBS). The data originally comes from motor vehicle registration (RDW) and is therefore reliable. Data about the number of kilometers driven with a vehicle per year comes from the Dutch Central Bureau of Statistics (CBS) and covers the average kilometers per year of a passenger vehicle with a Dutch registration. The original data comes from the online kilometer registration (OKR) of the RDW and is therefore reliable. ***Data to calculate scope 3 GHG emissions*** Data about the standard business classification (‘standaard bedrijfsindeling’) comes from the Dutch Central Bureau of Statistics (CBS). CBS uses the standard business classification to classify business units by their main activity. Data about GHG emissions by the Dutch economy to the air also comes from the Dutch Central Bureau of Statistics (CBS). The data contains emissions of harmful substances to the air. The data is based on the environmental accounts. Environmental accounts links the system of national accounts and environmental statistics. Environmental accounts include both physical and monetary data on the environment. The main sources for the environmental accounts are the environmental statistics (mainly emission registrations), the energy statistics (mainly Dutch energy balance) and the national accounts. Data on GHG emissions by the Dutch economy is two years behind and is most recent data is from 2020. Therefore, for scope 3 data from the years 2019 and 2020 have been used for the calculations of reporting years 2021 and 2022, respectively. The national accounts contain data on the monetary value of all produced goods and services in the Netherlands. These data come from the Dutch Central Bureau of Statistics (CBS). Because the GHG emissions by the Dutch economy are divided by the monetary value of all produced goods and services in the Netherlands, data of the monetary value of all produced goods and services in the Netherlands of the years 2019 and 2020 have been used for the calculations of reporting years 2021 and 2022, respectively.

	Data on the expenses of municipalities come from the Dutch Central Bureau of Statistics (CBS). The municipalities are the source for these data themselves. They deliver the data directly to CBS in an uniform prescribed format. CBS does not check or edit these data. The OECD has developed the Classification of the Function of Government (COFOG) which classifies government expenditure data from the System of National Accounts by the purpose for which the funds are used. Municipal budgets are divided into 48 tasks (second level), clustered in 9 divisions (first level). The tasks indicate the purpose of the expenditure. The following tasks are included: management and support; safety; traffic, transport and water management; economy; education; sport, culture and recreation; social domain; public health and environment; public housing, spatial planning and urban renewal. The expenditures are also classified by economic categories. This indicates the type of expenditure. The following categories are included: salaries and social charges; taxes; goods and services; transfers; interest and dividends; financial transactions; settlements.
Calculation steps	**Scope 1 natural gas and scope 2 electricity** For the sector public administration and government services, the supply of natural gas and electricity is known (CBS) at the aggregation level of municipalities and includes both municipalities and other governmental authorities. To calculate scope 1 and 2 for municipalities, several calculation steps have been made. The number of employees that work for the total public administrations and government services sector is known for each municipality, as well as the number of employees that work for a general government administration per municipality. General government administrations include municipalities, as well as provinces and ministries (also known as SBI-code 8411). Therefore, we have subtracted the number of employees working for the provincial government organization from the total number of employees working for general government administrations for all provincial capitals except for the municipality of The Hague. For the municipality of The Hague, we have used the number of employees working for the municipality according to their website, because also the national government and therefore a lot of the ministries are located in the municipality of The Hague. The supply of natural gas and electricity for the public administration and government services sector is known per municipality (CBS). The percentage of number of employees working for each municipality (SBI-code 8411) relative to the number of employees working for the total public administration and government services sector in each municipality has been multiplied by the supply of natural gas and electricity for the public administration and government services sector. This results in the supply of natural gas and electricity for the municipality as an organization. The amount of natural gas per municipality has been multiplied by the emission factor for natural gas (1.785 kg CO_2-eq / m^3) and the amount of electricity has been multiplied by the emission factor for electricity (Unknown source; 0.405 kg CO_2-eq / kWh). The amount of GHG emissions has been divided by the factor 1000, to result in ton GHG emissions for scope 1 (natural gas) and scope 2 (electricity). The emission factors that have been used for the calculations of the GHG emissions in current report are taken from CO2emissiefactoren.nl[1] from either the year 2019, 2020, or 2021 depending on the data year. **Scope 1 fossil fuel for company vehicles** Scope 1 emissions also include the fossil fuel emissions of company vehicles. This calculation has also started with the number of employees that work for the total public administrations and government services sector as well as the number of

[1] https://www.co2emissiefactoren.nl/wijzigingen-overzicht/

employees that work for a general government administration (SBI-code 8411), both per municipality.

The number of company vehicles used in the total public administration and government services sector is known (CBS Statline). To calculate the total number of company vehicles for the municipalities, the number of company vehicles used by the total public administration and government services sector has been multiplied by the average percentage of employees working at municipalities.

The total number of company vehicles for Dutch municipalities has been multiplied by the percentage of employees working for that municipality, relative to all employees working for Dutch municipalities to result in the number of company vehicles per municipalities. This has been multiplied by the number of kilometers driven per company vehicle (all fuel types) and multiplied by the emission factor for passenger transport, car, fuel type unknown, weight class unknown (0.163 kg CO2-eq / km). The GHG emissions have been divided by the factor 1000, to result in ton GHG emissions for company vehicles.

The final calculated values for scope 1 and 2 have been reallocated to the municipality division of 2021, for all years calculated.

Scope 3 other indirect emissions

For the calculation of scope 3 only one economic category is relevant: "Goods and Services". This category describes the expenses of municipalities for goods and services for which they pay, either in a purchase or in hire construction. A number of subcategories can be distinguished. The following categories have been used in the calculation of scope 3:

Category 3.1 describes expenses on the purchase or sale of areal positions;

Category 3.2 are the purchases of sustainable goods and services. These are goods with a lifespan longer than one year;

Category 3.5 describes the insourced employees;

Category 3.8 contains other goods and services, such as tools, food, and other expenses.

To calculate the GHG emissions for scope 3 for municipalities, it is necessary to have a value per subcategory mentioned above (3.1, 3.2, 3.5, and 3.8) that links GHG emissions (per kg) to expenses (in Euro). To come to this value per category (in kg CO_2/Euro) as a first step, the most appropriate production sector(s) (the standard business format; SBI codes; CBS) has to be linked to the four mentioned categories. In a next step, using the environmental accounts, the expenses have been linked to the emission data.

First, we had a closer look at the description of the 4 mentioned categories (3.1, 3.2, 3.5, and 3.8).[2] According to the detailed description, the most appropriate production sector(s) have been linked to the category (Table 2-1). Category 3.1 has been linked to only one sectoral production category, whereas categories 3.2, 3.5, and 3.8 have been linked to multiple sectoral production categories. The share of each production sector per subcategory is unknown. Therefore, the share of each production sector per category has been assumed by the researchers of Het PON & Telos. The weighing has been done based on an estimate of the relative share of the various relevant industries in the expenditure per subcategory (Table 2-2).

Table 2-1. The categories with the linked sectoral production category

Category	SBI code
3.1	Rental and trading real estate (L)
3.2	Industry (C); construction industry (F); wholesale and retail, and repair of motor vehicles (G); rental and trading of real estate (L); consultancy, research, rental of movable property, other

[2] https://findo.nl/content/30---Goederen-en-diensten

	services (M/N); public administration, public services and compulsory social security (O).
3.5	Consultancy, research, rental of movable property, other services (M/N); public administration, public services and compulsory social security (O).
3.8	Extraction of minerals (B); industry (C); production, distribution and trading of electricity, natural gas, steam and chilled air (D); water collection and distribution; waste and waste water management and remediation (E); rental of movable property and other services (N); public administration, public services and compulsory social security (O).

Table 2-2. The share of each production sector per subcategory

Category	Share per SBI code
3.1	100% L
3.2	20% C-F-G-L 10% M/N 10% O
3.5	50% M/N 50% O
3.8	20% B-C-D-E 10% N 10% O

Based on the method described above the composition per production sectors has been known per subcategory (in %)(A). Using the environmental accounts, the total GHG emissions has been known per production sector (in kg) and the annual monetary value per production sector has been known (in Euro). So per production sector the kg GHG emissions per Euro has been calculated (B). Knowing A and B for each subcategory the specific kg GHG emissions per Euro expenditure (C) has been calculated.

For reporting year 2022, this resulted in the values for kg CO_2 per Euro (C) presented in Table 2-3. To have insight in how this has changed over the years also the values used for reporting years 2021 and 2019 are shown.

Table 2-3 The kg CO_2 equivalent per euro that is used in the calculation

	2022	2021	2019
Category 3.1	0.006 kg CO_2-eq / Euro	0.007 kg CO_2-eq / Euro	0.009 kg CO_2-eq / Euro
Category 3.2	0.20 kg CO_2-eq / Euro	0.21 kg CO_2-eq / Euro	0.22 kg CO_2-eq / Euro
Category 3.5	0.03 kg CO_2-eq / Euro	0.03 kg CO_2-eq / Euro	0.03 kg CO_2-eq / Euro
Category 3.8	0.47 kg CO_2-eq / Euro	0.48 kg CO_2-eq / Euro	0.52 kg CO_2-eq / Euro

The IV3 spending database of all municipalities has been used (CBS, Statline). From this database the categories 3.1, 3.2, 3.5, and 3.8 have been selected. Only the positive expenditures have been taken into account. The expenditure of the municipality per sub-function and category has been multiplied by the kg CO_2-eq per Euro (C). This has resulted in kg GHG emissions per expenditure (D). Per municipality these values for all the subfunctions x subcategories have been added up to result in scope 3 per municipality in kg. This has been divided by 1000 to result in ton GHG emissions. Finally, the GHG emissions have been calculated per municipality.

The expenses on natural gas use and electricity are use supposedly also included in the spending on category 3.8. Therefore in the end, the scope 1 (natural gas)

	and scope 2 (electricity) emissions have been subtracted from the total scope 3 emissions to avoid double counting. To calculate the emission factors for category 3.1, 3.2, 3.5, and 3.8 data of the years 2017, 2019, and 2020 have been used for reporting years 2019, 2021, and 2022, respectively. However, expenditure of the municipalities, outstanding loans, and total balance sheet of the municipalities have been used of the years 2018, 2020, and 2021 for reporting years 2019, 2021, and 2022, respectively.
Limitations	A risk of double counting arises from that local and regional government related collaborations, companies, and projects might be included in the financial and emission reporting of municipalities and provinces. This can only be assessed by individual entities, and this has not been corrected for in this report. Limitations of the current method are that the supplies of natural gas and electricity for the municipality as organization are unknown. It is therefore calculated according to the estimated number of employees working for the general government administrations per municipality and the total number of employees working for the total public administration and government services sector per municipality. The general government administrations include municipalities, as well as provinces and ministries amongst others (also known as SBI-code 8411). We corrected the number of employees working for the general government administrations for the provincial capitals, but not for other municipalities that might contain employees of other governments than municipalities. There is also no data registered about company vehicles (number of vehicles, type of vehicle, type of fuel etc.) per municipality. The best possible result is achieved by using the current model(s). Many municipalities are working on making their operations more sustainable. Part of this development is making their vehicle fleet more sustainable. For example, municipalities are purchasing more electric cars when they replace cars. In the calculation method in this project, this development is not visible. As a result, the GHG emissions caused by company vehicles are a relative rough estimate and may deviate from the actual situation due to developments in the field of making the municipalities vehicle fleet more sustainable. Besides cars, municipalities also own other means of transport, such as scooters and (electric) bikes. The use of these means of transport is not included in the calculated GHG emissions for company vehicles. An uncertainty in the scope 3 method described under calculations earlier in this factsheet is that the exact share of each production sector per category is unknown. It was not possible to specify this by more detailed information from several municipalities. Therefore, a share was assumed by the researchers of Het PON & Telos. Another limitation is the possible double counting in scope 1 and 2 in comparison to scope 3. However, by using the current model(s), the best result possible is achieved. As described in the section “calculation steps” the GHG emissions of scope 1 and 2 are subtracted from the GHG emissions of scope 3 because it is assumed that the expenses on natural gas use and electricity use are also included in the spending on category 3.8. The emission factor used in the calculations for scope 3 (kg CO_2-eq / Euro) has been calculated with data from the years 2017, 2019, and 2020 for reporting years 2019, 2021, and 2022, respectively, because more recent data was not available.
SDG	SDG 13.2
Data quality estimate	*Scope 1 natural gas and scope 2 electricity: data quality score 4.* The GHG emissions are calculated based on energy supply to the public administration and government services sector at the aggregation level of municipalities. This is not only energy supply to the municipalities, but also other governmental authorities. Therefore, data is used on the basis of region and data quality score is 4.

	Scope 1 vehicle fleet: data quality score 5. The GHG emissions are calculated based on average vehicle information. Vehicle make, model, and type are unknown and distance traveled is based on local or regional statistical data. Therefore, data quality score is 5. See option 3b in Table 5-10 on page 94 of the report The global GHG accounting & reporting standard for the financial industry.[3] *Scope 3: data quality score 4.* The GHG emissions are calculated based on economic activity. The expenses made in the categories 3.1, 3.2, 3.5, and 3.8 were multiplied by a value for kg CO_2-eq / Euro. The value for kg CO_2-eq / Euro has been calculated based on proxy data on the basis of country. Therefore, the data quality is score 4.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Number of employees working for the public administrations and government services sector
Data file	LISA-statistiek_(ordernr_202200020)_sector O.xlsx
Data Source	Lisa; het werkgelegenheidsregister van Nederland
Year	2020-2021 Data used from 2021 to calculate scope 1 natural gas use and scope 2 electricity use for reporting year 2022
Last update	June 2022
Date of download	Data purchased on 29-06-2022
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope 1 en 2\Ruwe data\ LISA-statistiek_(ordernr_202200020)_sector O.xlsx
Data quality estimate	2 Data from LISA are based on observations/measurements of all locations of companies. Self-employed persons are taken into account as well. This makes it possible to present an overview of employment on both geographic and sectoral level.
Unit of measurement	Number of employees
Selections	Not applicable
Data transformation	Not applicable
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille \Scope 1 en 2\Printscreens\FW Bestelling LISA-data (ordernummer 202200020).msg

[3] https://carbonaccountingfinancials.com/standard. PCAF (2020). The Global GHG Accounting and Reporting Standard for the Financial Industry. First edition.

Topic	Description
Data	Number of employees working for a general government administration
Data file	LISA-statistiek_(ordernr_202200019)_8411.xlsx
Data Source	Lisa; het werkgelegenheidsregister van Nederland
Year	2020-2021 Data used from 2021 to calculate scope 1 natural gas use and scope 2 electricity use for reporting year 2022
Last update	June 2022
Date of download	Data purchased on 21-06-2022
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille \Scope 1 en 2\Ruwe data\ LISA-statistiek_(ordernr_202200019)_8411.xlsx
Data quality estimate	2 Data from LISA are based on observations/measurements of all locations of companies. Self-employed persons are taken into account as well. This makes it possible to present an overview of employment on both geographic and sectoral level.
Unit of measurement	Number of employees
Selections	Not applicable
Data transformation	Not applicable
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille \Scope 1 en 2\Printscreens\FW Bestelling LISA-data (ordernummer 202200019).msg

Topic	Description
Data	Number of employees working at provinces
Data file	20220926 berekening sbi 8411 zonder provincies.xlsx in sheet: Banen provinciehoofdsteden
Data Source	A & O Fonds Provincies
Year	2020-2021
Last update	June 2022
Date of download	21-09-2022
Link to webpage	https://personeelsmonitorprovincies.onderzoek.nl/ index.cfm?action=main.report
Filters used to obtain the datafile	No filters used
Internal location	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille \Scope 1 en 2\Ruwe data\20220926 berekening sbi 8411 zonder provincies.xlsx
Data quality estimate	2 Data is directly acquired from provinces, using a questionnaire. Data quality is therefore indicated as high.
Unit of measurement	Number of employees
Selections	Not applicable
Data transformation	Not applicable
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille \Scope 1 en 2\Printscreens\Banen provinciehoofdsteden

Topic	Description
Data	Supply of energy to the public administration and government services sector at the aggregation level of municipalities
Data file	20221007 levering aardgas en elektriciteit sector O gemeenten.xlsx
Data Source	CBS Statline
Year	2020-2021
Last update	7-10-2022
Date of download	7-10-2022
Link to webpage	https://opendata.cbs.nl/statline/ #/CBS/nl/dataset/82538NED/table?ts=1601410027649
Filters used to obtain the datafile	Onderwerp: Geleverd aardgas, geleverde elektriciteit Perioden: 2018 - 2020 - 2021 Regio's: Gemeenten per provincie Bedrijfstakken/branches: Bedrijfstakken 1e digit (SBI 2008), O Openbaar bestuur en overheidsdiensten
Internal location	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille \Scope 1 en 2\Ruwe data\
Data quality estimate	4 Highly reliable data, because of the manner of registration. There are multiple control and correction methods used, which can be find here: https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/korte-onderzoeksbeschrijvingen/leveringen-van-elektriciteit-en-aardgas-via-het-openbare-net. The supply of energy is not only to the municipalities, but to the total public administration and government services sector at the aggregation level of municipality. Therefore the data quality score is 4 because it is data on the basis of region.
Unit of measurement	Natural gas: 1000 m^3 Electricity: 1000 kWh
Selections	Not applicable
Data transformation	The data has been transformed from the original municipality division to the 2021 municipality division. The missing values have been replaced with values from previous years, as described in the original data file on tab 'Data voor herindelen' in order to transform the data to the municipality division of 2021.
Data missing	For several municipalities, the data was missing and has been replaced by data from previous or coming years, see the original data file, tab 'Data voor herindelen' for the changes made in the original data.
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope 1 en 2\Printscreens\ 20221007 levering aardgas, elektriciteit via openbaar net sector O gemeenten v1.PNG 20221007 levering aardgas, elektriciteit via openbaar net sector O gemeenten v2.PNG 20221007 levering aardgas, elektriciteit via openbaar net sector O gemeenten v3.PNG

Topic	Description
Data	Number of company vehicles owned by companies in the public administration and government services sector
Data file	20220610 ruwe data bedrijfsautos 2020.xlsx
Data Source	CBS Statline
Year	2019-2020 Data used from 2020 to calculate scope 1 fossil fuel use by vehicles for reporting year 2022

Last update	24-01-2022 (data 2020)
Date of download	10-06-2022 (data 2020)
Link to webpage	https://opendata.cbs.nl/statline/ #/CBS/nl/dataset/81481NED/table?ts=1626174554210
Filters used to obtain the datafile	Onderwerp: Bedrijfsbestelauto's Bedrijfstakken/branches: O Openbaar bestuur en overheidsdiensten Bedrijfsgrootte/leeftijd bestelauto: Totaal Perioden: 2020
Internal location	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille \Scope 1 en 2\Ruwe data In this folder also data from previous year can be found: 2019: 20210601 ruwe data bedrijfsautos 2019.xlsx
Data quality estimate	2 The research method of this data can be find here: https://www.cbs.nl/nl-nl/onze-diensten/methoden/ onderzoeksomschrijvingen/ korte-onderzoeksbeschrijvingen/bezit-en-gebruik-bestelauto-s The additional research report can be find here: https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/ aanvullende%20onderzoeksbeschrijvingen/bezit-en-gebruik-bestelauto-s Data comes from motor vehicle registration (RDW) and data is checked on content, quality and usability by CBS
Unit of measurement	Number of company vehicles
Selections	Not applicable
Data transformation	Not applicable
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope 1 en 2\Printscreens\ 20210601 bedrijfsautos 2019.png 20220610 bedrijfsautos_2020.png

Topic	Description
Data	Average kilometers driven with a passenger vehicle with a Dutch registration per year
Data file	20220610 ruwe data km bedrijfswagens 2020.xlsx
Data Source	CBS Statline
Year	2019-2020 Data used from 2020 to calculate scope 1 fossil fuel use by vehicles for reporting year 2022
Last update	10-11-2022 (data 2020)
Date of download	10-6-2022 (data 2020)
Link to webpage	https://opendata.cbs.nl/statline/ #/CBS/nl/dataset/71107ned/table?ts=1626174732075
Filters used to obtain the datafile	Gewichtsklasse leeggewicht: Totaal Leeftijd voertuig: Totaal Tenaamstelling: Bedrijf Brandstofsoort: Alle brandstofsoorten Onderwerp: Gemiddelde jaarkilometrage Perioden: 2020
Internal location	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope 1 en 2\Ruwe data In this folder also data from previous years can be found: 2019: 20210601 ruwe data km bedrijfswagens 2019.xlsx
Data quality estimate	2

	The research method of this data can be find here: https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/korte-onderzoeksbeschrijvingen/verkeersprestaties-personenauto-s The original data comes from the online kilometer registration (OKR) of the RDW. This data is reliable.
Unit of measurement	Kilometers
Selections	Not applicable
Data transformation	Not applicable
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope 1 en 2\Printscreens\ 20210601 km bedrijfswagens 2019.png 20220610 km bedrijfswagens_2020.png

Topic	Description
Data	Standard business format: description per sectoral production category. The description of the sectoral production categories in this document is used to link categories of municipalities their finances to one or more sectoral production categories.
Data file	2022EP06 SBI Structuur.pdf
Data Source	CBS
Year	2022
Last update	2022
Date of download	31-10-2022
Link to webpage	https://www.cbs.nl/nl-nl/onze-diensten/methoden/classificaties/activiteiten/sbi-2008-standaard-bedrijfsindeling-2008/de-structuur-van-de-sbi-2008-versie-2018-update-2022
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope 3
Data quality	Not applicable
Unit of measurement	Not applicable
Selections	Not applicable
Data transformation	Not applicable
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope3\Printscreens\20223110 SBI codes.PNG

Topic	Description
Data	GHG emissions to the air by the Dutch economy
Data file	05092022 emissies naar lucht 2017 2019 2020.xlsx
Data Source	CBS Statline
Year	2019-2020
Last update	03-12-2021
Date of download	05-09-2022
Link to webpage	https://opendata.cbs.nl/#/CBS/nl/dataset/83300NED/table?dl=5932E
Filters used to obtain the datafile	Onderwerp: Broeikasgassen (klimaatverandering); Broeikasgas-equivalent Perioden: 2017, 2019, 2020 Nederlandse economie: Economische activiteiten A, B, C, D, E, F, G-I, J, K, L, M-N, O-Q, R-U

Internal location	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope 3\Ruwe Data
Data quality estimate	4 The research method used to obtain the data can be find here: https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/korte-onderzoeksbeschrijvingen/milieurekeningen Data is based on environmental accounts. Important sources for the environmental accounts are environmental statistics, such as emission registrations, energy statistics (Dutch energy balance) and a macro economic system used by CBS. It is data on the basis of country and therefore data quality score is 4.
Unit of measurement	GHG emissions: mln kilogram
Selections	Not applicable
Data transformation	Calculations made with the data are described in the section calculation steps of municipalities (scope 3).
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Gemeenten\Scope 3 \Printscreens\20220905 emissies naar lucht 2017 2019 2020.PNG

Topic	Description
Data	The monetary value of all produced goods and services in the Netherlands
Data file	20221028 bbp 2017 2019 2020.xlsx
Data Source	CBS Statline
Year	2019-2020
Last update	24-06-2022
Date of download	28-10-2022
Link to webpage	https://opendata.cbs.nl/#/CBS/nl/dataset/84087NED/table?ts=1601538240382
Filters used to obtain the datafile	Perioden: 2017/2019/2020 Onderwerp: BBP vanuit de productie: Output basisprijzen; intermediair verbruik (-) Bruto toegevoegde waarde basisprijzen; A, B, C, D, E, F, G-I, J, K, L, M-N, O-Q, R-U
Internal location	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope 3\Ruwe data
Data quality estimate	3 Based on registered production statistics. The data quality has increased due to a number of checks and control functions in the method. The research method used to obtain the data can be find here: https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/korte-onderzoeksbeschrijvingen/nationale-rekeningen
Unit of measurement	Mln Euro
Selections	Not applicable
Data transformation	Calculations made with the data are described in the section calculation steps of municipalities (scope 3)
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope 3\Printscreens\20221028 bbp 2017 2019 2020.PNG

Topic	Description
Data	Expenses of all Dutch municipalities per IV3/COFOG code
Data file	20210923 iv3 2020 gemeente.xlsx 20220922 iv3 2021 gemeente.xlsx
Data Source	CBS Statline

Year	2020-2021
Last update	2020: 22-09-2021 2021: 22-09-2022
Date of download	23-09-2021; 22-09-2022
Link to webpage	2020: https://iv3statline.cbs.nl/#/IV3/nl/dataset/45050NED/table?ts=1632405785668 2021: https://iv3statline.cbs.nl/#/IV3/nl/dataset/45054NED/table
Filters used to obtain the datafile	Onderwerp: 2e plaatsing Taakveld/balanspost: alle taakvelden 0 t/m 8 Categorie: Lasten: L3.1 grond, L3.2 Duurzame goederen, L3.5.1. Ingeleend personeel, L3.8 Overige goederen en diensten Verslagsoort: Jaarrekening
Internal location	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope 3\Ruwe data
Data quality estimate	2 High data quality. Data is directly supplied by municipalities from internal accounting systems. Provinces deliver the data to CBS, the data has not been edited by CBS.
Unit of measurement	Euro
Selections	Not applicable
Data transformation	Not applicable
Data missing	2020: Data of municipalities 'Hof van Twente' and 'Renswoude' are missing
Print Screens	In folder: Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope 3\Printscreens\iv3

List of the calculation sheets	Location
20221010 leningportefeuille BNG gemeenten opmaak voor SQL.xlsx	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope 1 en 2\Ruwe data
Aardgas_elektra_gemeente.csv Banen_8411-gemeente.csv Banen_sectorO_gemeente.csv Bedrijfsautos.csv Emissiefactoren_totaaloverzicht.csv KM_bedrijfsautos.csv portefeuilleBNG_gemeente.csv	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope 1 en 2\Brondata voor SQL
PCAF gemeente BNG	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Script + database
BNG gemeente 2020.sql BNG gemeente 2021.sql	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Script + database
20221017_BNG scope 1 en 2 2020.csv 20221017_BNG scope 1 en 2 2021.csv	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\Scope 1 en 2\Data verkregen uit SQL
BNG 20220905 scope 3 gemeente 2020.xlsx BNG 20220905 scope 3 gemeente 2021.xlsx	Klantgroepen\Gemeenten\SDG_13.2_CO2-emissies gemeenteportefeuille\\Scope 3

3 Social housing associations

3.1 General factsheet

Topic	Description
Portfolio covered	86.7% of BNG bank's portfolio is covered for this costumer group. The percentage is in indication of the completeness of the dataset. It is calculated by looking at the collected data for all indicators for the customers in the loan portfolio of the BNG Bank. The percentage is lower than 100% if there are missing data. The missing data are either not available or it was not possible to collect or calculate these data correctly.
Indicators	- Energy consumption per social housing association – electricity (kWh) - Energy consumption per social housing association – natural gas (m^3) - Presence of solar panels for social housing associations - Amount of housing stock social houses per social housing association Financial accessibility social housings - Total allocations within income limits - Conformity of dwellings and target group - GHG emissions per social housing association
Limitations	-

3.2 Factsheets per indicator

3.2.1 Energy consumption per social housing association – electricity (kWh)

Topic	Description
Data	Data on the electricity use is based on register data from the Microdata of the Dutch Central Bureau of Statistics (CBS). The data on electricity use is based on connection registers of energy network companies, based on actual energy consumption and therefore reliable. Electricity use per social housing association house is available in the CBS Microdata and aggregated to the municipality level. Per municipality the electricity use by social housing association houses is known.
Calculation steps	**Electricity use** The use of electricity per social housing association is unknown. Therefore, an estimation had to be made. To make this estimation as accurate as possible, a few calculations had to be made. The CBS Microdata has information on electricity use of all Dutch houses. Within the CBS Microdata database, this dataset has been combined with a dataset that has information about homeowners so only houses owned by social housing associations have been used. The definition of a house used by CBS is: *the smallest unit of use located within one or more buildings and suitable for residential purposes, accessed by a private entrance from the public road, a yard or a shared traffic area. Examples include detached houses, single-family houses, apartment or porch houses, student houses.* *All residential objects in the Basic Registration of Addresses and Buildings (BAG) with at least a residential function and possibly one or more other use functions are considered as a house*. Per municipality, the electricity use for all houses owned by social housing associations has been calculated. Outside the CBS Microdata database, the electricity use per social housing association has been calculated. From the CBS data it is only known how many houses are owned by social housing associations per municipality. The "Inspectie van de leefomgeving en transport" has data on the number of independent and non-independent houses per social housing association per municipality. According to this data the

	percentage of houses owned by the social housing associations has been calculated per municipality. This percentage has been multiplied by the total number of houses owned by all the social housing associations per municipality (CBS data) to result in the number of houses owned per social housing association per municipality. This extra calculation step has been performed because the total number of houses owned by all the social housing associations per municipality from the CBS data did not correspond to the total number of houses owned by all the social housing associations per municipality from the "Inspectie van de leefomgeving en transport". Because the energy consumption data comes from CBS, also the total number of houses owned by all the social housing associations per municipality from CBS has been used to calculate the number of houses owned by social housing associations per municipality. The electricity use per municipality for all houses owned by social housing associations has been multiplied by the ratio of the number of houses of one particular social housing association versus total number of houses of all social housing associations in one municipality. For each social housing association the electricity use per municipality has been added to result in the total electricity use for that particular social housing association.
Limitations	Unfortunately, we have no data available about which house belongs to which social housing association. Therefore, the electricity use per social housing association has to be estimated based on the ratio of the number of houses of one particular social housing association versus total number of houses of all social housing associations in one municipality. The accuracy of the data can be improved when it is known which house belongs to which social housing association. The most recent data on energy consumption of social housing associations available from CBS is from the year 2020. Therefore, the data used for reporting year 2022 is from the year 2020 instead of 2021.
SDG	SDG 7.3
Data quality estimate	3 Primary data on actual building energy consumption is available. The data quality score 2 applies to the overall sector. See option 1b in Table 5-10 on page 87 of the report The global GHG accounting & reporting standard for the financial industry.[4] At the level of individual social housing associations, the data quality score is 3, because it is not known which house belongs to which social housing association.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Electricity use of social housing associations
Data files	Original file: Output microdata aardgas en elektra vebruik.xlsx Edited file: Energieverbruik 2017 2019 en 2020 aangepast voor gebruik in SQL.xlsx
Data Source	CBS Microdata (received by e-mail)

[4] https://carbonaccountingfinancials.com/standard. PCAF(2020). The Global GHG Accounting and Reporting Standard for the Financial Industry. First edition.

Year	2019- 2020
Last update	Not applicable
Date of download	25-8-2022
Link to webpage	https://www.cbs.nl/nl-nl/onze-diensten/maatwerk-en-microdata/microdata-zelf-onderzoek-doen/microdatabestanden/energieverbruik-energiegebruiken-van-woningen
Filters used to obtain the datafile	Not applicable
Internal location	Original file: Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Ruwe data Edited file: Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Voorbewerking data
Data quality estimate	2 Primary data on actual building energy consumption (i.e., metered data) is available. Emissions are calculated using actual building energy consumption and average emission factors specific to the respective energy source. See option 1b in Table 5-10 on page 87 of the report The global GHG accounting & reporting standard for the financial industry.[5]
Unit of measurement	kWh
Selections	Not applicable
Data transformation	To perform the calculations the following transformations have been done: Data of the year 2020 was transformed to the 2021 municipality division.
Data missing	For the years 2017, 2019, and 2020 the following number of social housing associations are missing in the final results of GHG emissions: 2019: 27 from the 312 social housing associations in the loan portfolio; 2020: 24 from the 304 social housing associations in the loan portfolio.
Print Screens	Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Printscreens\ 25-8-2022_output aangepast vrijgegeven_8741_jkrz.msg

Topic	Description
Data	Number of houses owned by housing associations by municipalities
Data file	Original files: dvi2019 H2.xlsx dvi2020 H2.xlsx Edited files: 20221021 aantal woningen 2019.xlsx 20221021 aantal woningen 2020.xlsx
Data Source	Inspectie Leefomgeving en Transport (ilent); Autoriteit Woningcorporaties
Year	2019- 2020
Last update	Not applicable
Date of download	18-10-2022
Link to webpage	https://data.overheid.nl/dataset/verantwoordingsinformatie-woningcorporaties-dvi2020-hfd21
Filters used to obtain the datafile	Filters obtained for 2019 and 2020: DEAB_Indicatie_Ultimo: J & N; Soort_Instelling_Ultimo: TI; EenheidSoort: WoonZelfst & WoonOnzelfst.
Internal location	Original files: Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Ruwe data Edited files: Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Voorberwerking data
Data quality estimate	1 Audited data per social housing association specific.

[5] https://carbonaccountingfinancials.com/standard

Unit of measurement	Number of dwellings
Selections	Not applicable
Data transformation	To perform the calculations the following transformations have been done: Data of the year 2020 was transformed to the 2021 municipality division.
Data missing	Not applicable
Print Screens	Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Printscreens\ 20221018 dvi 2019 H2.png 20221018 dvi 2020 H2.png

List of the calculation sheets	Location
Emissiefactoren_totaaloverzicht.csv Energiedata woco.csv Woningen woningcorporaties per gemeente.csv	Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile\ Brondata voor SQL
PCAF_woco_BNG	Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile\Scripts en database SQL
WOCO BNG 2020.sql WOCO BNG 2021.sql	Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile\Scripts en database SQL
WOCO elektriciteitsverbruik 0-meting en 1-meting.xlsx	Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile

3.2.2 Energy consumption per social housing association – natural gas (m^3)

Topic	Description
Data	Data on natural gas use is based on register data from the Microdata of the Dutch Central Bureau of Statistics (CBS). The data on natural gas use is based on connection registers of energy network companies. It is based on actual natural gas consumption, and therefore reliable. Natural gas use per social housing association house is available in the CBS Microdata and aggregated to the municipality level. Per municipality the natural gas use by social housing association houses is known.
Calculation steps	**Natural gas** The 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, a few calculations had to be made. The CBS Microdata has information on natural gas consumption of all Dutch houses. Within the CBS Microdata database, this dataset has been combined with a dataset that has information about homeowners. For this calculation only houses owned by social housing associations has been used. The definition of a house used by CBS is: *the smallest unit of use located within one or more buildings and suitable for residential purposes, accessed by a private entrance from the public road, a yard or a shared traffic area. Examples include detached houses, single-family houses, apartment or porch houses, student houses.* *All residential objects in the Basic Registration of Addresses and Buildings (BAG) with at least a residential function and possibly one or more other use functions are considered as a house.* Per municipality, the natural gas use for all houses owned by social housing associations has been calculated. Outside the CBS Microdata database, the natural gas use per social housing association has been calculated. From the CBS data it is only known how many houses are owned by social housing associations per municipality. The “Inspectie van de leefomgeving en transport” has data on the number of independent and non-independent houses

	per social housing association per municipality. According to this data the percentage of houses owned by the social housing associations has been calculated per municipality. This percentage has been multiplied by the total number of houses owned by all the social housing associations per municipality (CBS data) to result in the number of houses owned per social housing association per municipality. This extra calculation step has been performed because the total number of houses owned by all the social housing associations per municipality from the CBS data did not correspond to the total number of houses owned by all the social housing associations per municipality from the "Inspectie van de leefomgeving en transport". Because the energy consumption data comes from CBS, also the total number of houses owned by all the social housing associations per municipality from CBS has been used to calculate the number of houses owned by social housing associations per municipality. The natural gas use per municipality for all houses owned by social housing associations has been multiplied by the ratio of the number of houses of one particular social housing association versus total number of houses of all social housing associations in one municipality. For each social housing association the natural gas use per municipality has been added up to result in the total natural gas use for that particular social housing association.
Limitations	Unfortunately, we have no data available about which house belongs to which social housing association. Therefore, the natural gas use per social housing association has to be estimated based on the ratio of the number of houses of one particular social housing association versus total number of houses of all social housing associations in one municipality. The accuracy of the data can be improved when it is known which house belongs to which social housing association. The most recent data on energy consumption of social housing associations available from CBS is from the year 2020. Therefore, the data used for reporting year 2022 is from the year 2020 instead of 2021.
SDG	SDG 7.3
Data quality estimate	3 Primary data on actual building energy consumption is available. The data quality score 2 applies to the overall sector. See option 1b in Table 5-10 on page 87 of the report The global GHG accounting & reporting standard for the financial industry.[6] At the level of individual social housing associations, the data quality score is 3, because it is not known which house belongs to which social housing association.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Natural gas use of social housing associations
Data files	Original file: Output microdata aardgas en elektra verbruik.xlsx Edited file: Energieverbruik 2017 2019 en 2020 aangepast voor gebruik in SQL.xlsx
Data Source	CBS Microdata (received by e-mail)

[6] https://carbonaccountingfinancials.com/standard. PCAF(2020). The Global GHG Accounting and Reporting Standard for the Financial Industry. First edition.

Year	2019- 2020
Last update	Not applicable
Date of download	25-8-2022
Link to webpage	https://www.cbs.nl/nl-nl/onze-diensten/maatwerk-en-microdata/microdata-zelf-onderzoek-doen/microdatabestanden/energieverbruik-energiegebruiken-van-woningen
Filters used to obtain the datafile	Not applicable
Internal location	Original file: Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Ruwe data Edited file: Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Voorbewerking data
Data quality estimate	2 Primary data on actual building energy consumption (i.e., metered data) is available. Emissions are calculated using actual building energy consumption and average emission factors specific to the respective energy source. See option 1b in Table 5-10 on page 87 of the report The global GHG accounting & reporting standard for the financial industry.[7]
Unit of measurement	m^3
Selections	Not applicable
Data transformation	To perform the calculations the following transformations have been done: Data of the year 2020 was transformed to the 2021 municipality division.
Data missing	For the reporting years 2019 and 2020 the following number of social housing associations are missing in the final results of GHG emissions: 2019: 27 from the 312 social housing associations in the loan portfolio; 2020: 24 from the 304 social housing associations in the loan portfolio.
Print Screens	\Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Printscreens\ 25-8-2022_output aangepast vrijgegeven_8741_jkrz.msg

Topic	Description
Data	Number of houses owned by housing associations by municipalities
Data file	Original files: dvi2019 H2.xlsx dvi2020 H2.xlsx Edited files: 20221021 aantal woningen 2019.xlsx 20221021 aantal woningen 2020.xlsx
Data Source	Inspectie Leefomgeving en Transport (ilent); Autoriteit Woningcorporaties
Year	2019- 2020
Last update	Not applicable
Date of download	18-10-2022
Link to webpage	https://data.overheid.nl/dataset/verantwoordingsinformatie-woningcorporaties-dvi2020-hfd21
Filters used to obtain the datafile	Filters obtained for 2019 and 2020: DEAB_Indicatie_Ultimo: J & N; Soort_Instelling_Ultimo: TI; EenheidSoort: WoonZelfst & WoonOnzelfst.
Internal location	Original files: Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Ruwe data Edited files: Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Voorberwerking data
Data quality estimate	1 Audited data per social housing association specific.

[7] https://carbonaccountingfinancials.com/standard

Unit of measurement	Number of dwellings
Selections	Not applicable
Data transformation	To perform the calculations the following transformations have been done: Data of the year 2020 was transformed to the 2021 municipality division.
Data missing	Not applicable
Print Screens	Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Printscreens\ 20221018 dvi 2019 H2.png 20221018 dvi 2020 H2.png

List of the calculation sheets	Location
Emissiefactoren_totaaloverzicht.csv Energiedata woco.csv Woningen woningcorporaties per gemeente.csv	Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Brondata voor SQL
PCAF_woco_BNG	Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Scripts en database SQL
WOCO BNG 2020.sql WOCO BNG 2021.sql	Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile \Scripts en database SQL
WOCO aardgasverbruik 0-meting en 1-meting.xlsx	Klantgroepen\Woningcorporaties\SDG_7.3_kWh elektriciteitsvebruik corporatiewoningen in portefeuile

3.2.3 Presence of solar panels for social housing associations

Topic	Description
Data	The presence of solar panels per social housing association . The dataset contains for each housing association: - Total number of houses with solar panels; - Percentage of houses with solar panels; - Percentage of single-family houses with solar panels. This data is based on datasets of the energy consumption for housing associations from two network operators: Liander and Enexis.
Calculation steps	The data is obtained by performing the following steps: Each year Republiq collects the energy consumption for all houses owned by housing associations from network operators. This leads to a dataset containing the energy consumption and energy redelivery per house. The data is available for all houses located in the areas where Liander or Enexis is active (1.3 million houses). The presence of solar panels can be indicated by the value of energy redelivery. When the energy redelivery is above zero we assume there are solar panels present at a house. Per housing association the following values are obtained: - total of houses - total of houses with solar panels Percentages can be obtained by dividing the houses with solar panels by the total of houses for which data is available. When the data is available for less than 60% of the houses per social housing association, values are replaced by '*'.
Limitations	The data is only available for houses located in the areas where Liander and Enexis are active. This means that the information is available for 60% of all houses owned by social housing associations.
SDG	SDG 7.2
Data quality estimate	3 – Average data that is peer/(sub)sector-specific Score Quality requirement

1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Energy redelivery per house owned by social housing associations
Data file	4. Aanwezigheid zonnepanelen.xlsx
Data Source	Republiq
Year	2021
Last update	03-11-2021
Date of download	08-12-2021
Link to webpage	Not applicable
Filters used to obtain the datafile	Netbeheerder_elektra = Liander or netbeheerder_elektra=Enexis
Internal location	Klantgroepen\Woningcorporaties\SDG_7.2_Zonnepanelen\Ruwe data - overig
Data quality estimate	3
Unit of measurement	kWh
Selections	Not applicable
Data missing	Data is missing for the houses that are not located in one of the areas where Liander or Enexis is active.
Print Screens	Internal location Republiq

3.2.4 Amount of housing stock social houses per social housing association

Topic	Description
Data	Number of total rental units per year per social housing association. Data on new owner occupied units obtained from dVi woningcorporaties: https://data.overheid.nl/
Calculation steps	The data is obtained by performing the following steps: Download the number of independent rental units per year per social housing association from Aedes Datacentrum. By downloading the dVi files. Chapter one of dVi contains the names and institution numbers of the social housing associations. Chapter two contains the number of new realized units per year and the corresponding institution number. By joining both chapters on institution number the total number of units per social housing association are obtained. The results of both steps are joined on name of social housing association. Multiple social housing associations have merged in the period 2016-2019. The values in this dataset are given for each social housing association for each year. When an institution does not longer exist after a merge, the values are set at missing from the year of the merge. From that year onwards, the values of new units are added to the values of the institution that continues to exist or is established. The column 'corporatie'_huidig' contains the current name of each social housing association.
Limitations	Not applicable
SDG	SDG 11.1
Data quality estimate	1 - Audited data or actual primary data

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Number of total rental units per year per social housing association
Data file	3. Aantal nieuwe verhuurwoningen (1).xlsx
Data Source	Aedes Datacentrum
Year	2016-2020
Last update	19-11-2021
Date of download	08-11-2022
Link to webpage	https://aedesdatacentrum.nl/jive/ ?Var=dvi_21_2,dvi_21_7,dvi_21_14,dvi_21_15 ,dvi_21_16,dvi_21_17,dvi_22a_6,dvi_22a_17,dvi_22a_7,dvi_22a_18& Mostrecentperiods=5&geolevel=nederland&geoitem=1&geocompare=
Filters used to obtain the datafile	Year: 2016, 2017, 2018, 2019, 2020 Subjects: Zelfstandige huurwoningen DAEB, Zelfstandige huurwoningen niet-DAEB, nieuwbouw woongelegenheden Level: woningcorporatie
Internal location	Klantgroepen\Woningcorporaties\SDG_11.1_Voorraad woongelegenheden
Data quality estimate	1
Unit of measurement	Number of rental units
Selections	Not applicable
Data missing	Not applicable

Print Screens	Klantgroepen\Woningcorporaties\SDG_11.1_Voorraad woongelegenheden\Printscreens

Topic	Description
Data	Accountability information social housing associations (address details of social housing associations ….2019)
Data file	Kopie van 20220120 – 4. Aantal nieuwe verhuurwoningen
Data Source	Inspectie Leefomgeving en Transport (Rijk)
Year	2019
Last update	13-09-2021
Date of download	08-12-2021
Link to webpage	https://data.overheid.nl/dataset/verantwoordingsinformatie-woningcorporaties-dvi2019-hfd2
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Woningcorporaties\SDG_11.1_Nieuwbouw woongelegenheden
Data quality estimate	1
Unit of measurement	Units
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

Topic	Description
Data	Accountability information housing associations (address details of social housing associations….2019)
Data file	Kopie van 20220120 – 4. Aantal nieuwe verhuurwoningen
Data Source	Inspectie Leefomgeving en Transport (Rijk)
Year	2020
Last update	02-10-2021
Date of download	08-12-2021
Link to webpage	https://data.overheid.nl/dataset/verantwoordingsinformatie-woningcorporaties-dvi2020-hfd1
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Woningcorporaties\SDG_11.1_Nieuwbouw woongelegenheden
Data quality estimate	1
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

3.2.5 Financial accessibility social housings

Topic	Description
Data	All data used for this indicator comes from the Aedes benchmark ‘individuele benchmarkpositie van corporaties 2021’.
Calculation steps	In 2021, the Aedes benchmark has been published for the eighth year and has developed into a leading instrument for the benchmark of social housings associations. The benchmark gives insight in the performance of social housing associations and enables comparison between housing associations on several indicators. A total of 269 housing associations are represented in the Aedes benchmark. That represents 98% of all Dutch social housing associations.

	Social housing dwellings are considered to be financial accessible when the rental price is categorized as 'tot de aftoppingsgrens'. This means the rental price of the dwelling can't exceed a certain price. For 2021, the 'aftoppingsgrens' was €633.25 for one- and two-person households and €678.66 for multi-person households. The 'liberalisatiegrens' is the maximum rent that can be charged for a social housing dwelling. In 2021, the 'liberalisatiegrens' was €752.33. If this price is exceeded, it is no longer considered to be a social housing dwelling. All the prices are per month. The percentage of financial accessible social housing dwellings is calculated by Aedes. Aedes divides the number of allocated dwellings in rental price category 'tot de aftoppingsgrens' by the number of allocated dwellings in rental price category 'tot de liberalisatiegrens'. This gives the percentage of allocated dwellings 'tot de aftoppingsgrens' within the total allocated social housing dwellings. The exact number and definitions can be find : https://www.woningmarktbeleid.nl/actueel/nieuws/2020/11/18/inkomens--en-huurgrenzen-huurtoeslag-2021-bekend
Limitations	No limitations
SDG	SDG 11.1: Sustainable cities and communities
Data quality estimate	All the data is primary data which is obtained directly from the social housing associations. No calculations or estimations needed. Data quality score = 2

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Benchmark with data from all social housing associations
Data file	Aedes-benchmark 2021 individuele resultaten corporaties
Data Source	Aedes
Years	2020&2021
Last update	18-11-2021
Date of download	06-01-2022
Link to webpage	https://aedes.nl/aedes-benchmark/benchmarkresultaten-en-publicaties
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Woningcorporaties\betaalbare huurwoningen
Data quality estimate	1
Unit of measurement	Percentages
Selections	Not applicable
Data missing	Not applicable
Print Screens	Klantgroepen\Woningcorporaties\betaalbare huurwoningen\betaalbaarheid

3.2.6 Total allocations within income limits

Topic	Description
Data	All data for this indicator is obtained from dVi woningcorporaties H5.2.1 via: https://data.overheid.nl/
Calculation steps	The data is obtained by performing the following steps: Obtain the total allocations for all social housing associations by downloading dVi chapter five. Tab 'data 5.2.1.' shows the total allocations for one-person, two-person, and multi-person households, both above and below the retirement age and also above and below income limits. Allocations are also differentiated based on rental prices in categories 'basishuur', boven kwaliteitskortingsgrens onder laagste aftoppingsgrens', boven laagste aftoppingsgrens onder liberalisatiegrens' and 'tot en met kwaliteitskortingsgrens'. In order to calculate the total allocations within income limits we add up the following allocations: - Total number of allocations for one-person households, both above and below retirement age, below income limits for all rental price categories. - Total number of allocations for two-person households, both above and below retirement age, below income limits for all rental price categories. - Total number of allocations for multi-person households, both above and below retirement age, below income limits for all rental price categories. - Total number of allocations below income limits for price category 'boven liberalisatiegrens'. The exact numbers of all the limits and categories can be obtained from: https://www.woningmarktbeleid.nl/actueel/nieuws/2020/11/18/inkomens--en-huurgrenzen-huurtoeslag-2021-bekend Inkomensgrenzen passend toewijzen 2021 Eenpersoonshuishouden €23.725 Meerpersoonshuishouden €32.200 Eenpersoonsouderenhuishouden €23.650 Meerpersoonsouderenhuishouden €32.075
Limitations	No limitations
SDG	SDG 11.1: Sustainable cities and communities
Data quality estimate	All the data is primary data which is obtained directly from the social housing associations. No calculations or estimations needed. Data quality score = 2

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Accountability information social housing associations
Data file	dVi2019 H5.xlsx

Data Source	Inspectie Leefomgeving en Transport (Rijk)
Year	2019 &2020
Last update	09-01-2022
Date of download	12-01-2022
Link to webpage	https://data.overheid.nl/dataset/verantwoordingsinformatie-woningcorporaties-dvi2019-hfd5
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Woningcorporaties\SDG_11.1_Toewijzingen binnen inkomensgrenzen/aantal toewijzingen binnen inkomensgrenzen
Data quality estimate	2
Unit of measurement	Number of allocations
Selections	Not applicable
Data missing	Not applicable
Print Screens	Klantgroepen\Woningcorporaties\SDG_11.1_Toewijzingen binnen inkomensgrenzen\printscreens

3.2.7 Conformity of dwellings and target group

Topic	Description
Data	All data used for this indicator comes from the Aedes benchmark 'individuele benchmarkpositie van corporaties 2021'.
Calculation steps	In 2021, the Aedes benchmark has been published for the eighth year and has developed into a leading instrument for social housings associations as benchmark. The benchmark gives insight in the performance of social housing associations and enables comparison between housing associations on several indicators. A total of 284 social housing associations are represented in the Aedes benchmark. That represents 98% of all Dutch social housing associations. The conformity of dwellings and target group is calculated by Aedes. Aedes first obtains the total number of dwellings per housing association from the dVi files. The target group is obtained by adding three categories of households: - Households in the target group (based on the income limits see 3.2.6 for the exact numbers) that currently live in a social housing dwelling, regardless of rental price. - Households not in the target group that currently live in a social housing dwelling, with rental price in category 'tot aftoppingsgrens'. - The demand for social housing dwellings from (semi-)starters like young adults or divorcees. The conformity of dwellings and target group is then calculated by dividing the demand from the three categories of households by the total number of dwellings per social housing association multiplied by 100.
Limitations	No limitations
SDG	SDG 11.1
Data quality estimate	All the data is primary data which is obtained directly from the social housing associations. No calculations or estimations needed. Data quality score = 2

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Benchmark with data from all social housing associations
Data file	aedes-benchmark-2021-individuele-resultaten-corporaties.xlsx and aedes-benchmark-2020-individuele-resultaten-corporaties.xlsx
Data Source	Aedes
Year	2020 and 2021
Last update	18-11-2021
Date of download	05-09-2022
Link to webpage	https://aedes.nl/aedes-benchmark/benchmarkresultaten-en-publicaties
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Woningcorporaties\SDG_11.1_Match doelgroep DAEB\Ruwe data
Data quality estimate	2
Unit of measurement	Percentages
Selections	Not applicable
Data missing	Not applicable
Print Screens	Klantgroepen\Woningcorporaties\ SDG_11.1_Match doelgroep DAEB\Printscreen\Match doelgroep DAEB 2020-2021.PNG

3.2.8 GHG emissions per social housing association

Topic	Description
Data	Data on the electricity use and natural gas use is based on register data from the Microdata of the Dutch Central Bureau of Statistics (CBS). The data on natural gas use is based on connection registers of energy network companies. It is based on actual natural gas consumption, and therefore reliable. Natural gas use per social housing association house is available in the CBS Microdata and aggregated to the municipality level. Per municipality the natural gas use by social housing association houses is known. The data on electricity use is based on connection registers of energy network companies, based on actual energy consumption and therefore reliable. Electricity use per social housing association house is available in the CBS Microdata and aggregated to the municipality level. Per municipality the electricity use by social housing assocation houses is known. The data on district heating is based on connection registers of energy network companies, collected by the Dutch Central Bureau of Statistics (CBS). It is based on actual energy consumption, and therefore reliable. The use of district heating is available on municipality level. Per municipality the district heating use by houses owned by the social housing associations are known. Data on the number of houses per social housing association per municipality come from the “Inspectie van de leefomgeving en transport”. This data is audited and therefore reliable.
Calculation steps	**Scope 1: Natural gas** The 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, a few calculations had to be made. The CBS Microdata has information on natural gas consumption of all Dutch houses. Within the CBS Microdata database, this dataset has been combined with a dataset that has information about homeowners. For this calculation only houses owned by social housing associations has been used. The definition of a house used by CBS is: *the smallest unit of use located within one or more buildings and suitable for residential purposes, accessed by a private entrance from the public road, a yard or a shared traffic area. Examples include detached houses, single-family houses, apartment or porch houses, student houses.* *All residential objects in the Basic Registration of Addresses and Buildings (BAG) with at least a residential function and possibly one or more other use functions are considered as a house*. Per municipality, the natural gas use for all houses owned by social housing associations has been calculated. Outside the CBS Microdata database, the natural gas use per social housing association has been calculated. From the CBS data it is only known how many houses are owned by social housing associations per municipality. The “Inspectie van de leefomgeving en transport” has data on the number of independent and non-independent houses per social housing association per municipality. According to this data the percentage of houses owned by the social housing associations has been calculated per municipality. This percentage has been multiplied by the total number of houses owned by all the social housing associations per municipality (CBS data) to result in the number of houses owned per social housing association per municipality. This extra calculation step has been performed because the total number of houses owned by all the social housing associations per municipality from the CBS data did not correspond to the total number of houses owned by all the social housing associations per municipality from the “Inspectie van de leefomgeving en transport”. Because the energy consumption data comes from CBS, also the total number of houses owned by all the social housing associations per municipality from CBS has been used to calculate the number of houses owned by social housing associations per municipality.

	The natural gas use per municipality for all houses owned by social housing associations has been multiplied by the ratio of the number of houses of one particular social housing association versus total number of houses of all social housing associations in one municipality. For each social housing association the natural gas use per municipality has been added up to result in the total natural gas use for that particular social housing association. Unfortunately, no data is available about the car fleet of the social housing associations, therefore this is not taken into account in scope 1. The natural gas use in m^3 has been multiplied by the emission factor for natural gas (1.791 kg CO_2-eq / m3 for the year 2019 (reporting year 2021) and 1.785 kg CO_2-eq / m^3 for the year 2020 (reporting year 2022)) to result in kg GHG emissions. These emissions have been divided by 1000 to result in ton GHG emissions. **Scope 2: District heating** The use of district heating per social housing association is unknown. Therefore, an estimation had to be made. To make this estimation as accurate as possible, a few calculations had to be made. The CBS Microdata has information on the use of district heating of all Dutch houses. Within the CBS Microdata database, this dataset has been combined with a dataset with information about homeowners. For this calculation only houses owned by social housing associations has been used. The definition of a house used by CBS is: *the smallest unit of use located within one or more buildings and suitable for residential purposes, accessed by a private entrance from the public road, a yard or a shared traffic area. Examples include detached houses, single-family houses, apartment or porch houses, student houses.* *All residential objects in the Basic Registration of Addresses and Buildings (BAG) with at least a residential function and possibly one or more other use functions are considered as a house*. Per municipality, the use of district heating for all houses owned by social housing associations has been calculated. Outside the CBS Microdata database, the use of district heating per social housing association has been calculated. From the CBS data it is only known how many houses are owned by social housing associations per municipality. The “Inspectie van de leefomgeving en transport” has data on the number of independent and non-independent houses per social housing association per municipality. According to this data the percentage of houses owned by the social housing associations has been calculated per municipality. This percentage has been multiplied by the total number of houses owned by all the social housing associations per municipality (CBS data) to result in the number of houses owned per social housing association per municipality. This extra calculation step has been performed because the total number of houses owned by all the social housing associations per municipality from the CBS data did not correspond to the total number of houses owned by all the social housing associations per municipality from the “Inspectie van de leefomgeving en transport”. Because the energy consumption data comes from CBS, also the total number of houses owned by all the social housing associations per municipality from CBS has been used to calculate the number of houses owned by social housing associations per municipality. The use of district heating per municipality for all houses owned by social housing associations has been multiplied by the ratio of the number of houses of one particular social housing association versus total number of houses of all social housing associations in one municipality. For each social housing association the use of district heating per municipality has been added up to result in the total district heating use for that particular social housing association. The use of district heating in GJ has been multiplied by the emission factor for district heating (STEG; 32.53 kg CO_2-eq / GJ)to result in kg GHG emissions. These emissions have been divided by 1000 to result in ton GHG emissions. **Scope 2: Electricity use**

	The use of electricity per social housing association is unknown. Therefore, an estimation had to be made. To make this estimation as accurate as possible, a few calculations had to be made. The CBS Microdata has information on electricity use of all Dutch houses. Within the CBS Microdata database, this dataset has been combined with a dataset that has information about homeowners so only houses owned by social housing associations have been used. The definition of a house used by CBS is: *the smallest unit of use located within one or more buildings and suitable for residential purposes, accessed by a private entrance from the public road, a yard or a shared traffic area. Examples include detached houses, single-family houses, apartment or porch houses, student houses.* *All residential objects in the Basic Registration of Addresses and Buildings (BAG) with at least a residential function and possibly one or more other use functions are considered as a house*. Per municipality, the electricity use for all houses owned by social housing associations has been calculated. Outside the CBS Microdata database, the electricity use per social housing association has been calculated. From the CBS data it is only known how many houses are owned by social housing associations per municipality. The "Inspectie van de leefomgeving en transport" has data on the number of independent and non-independent houses per social housing association per municipality. According to this data the percentage of houses owned by the social housing associations has been calculated per municipality. This percentage has been multiplied by the total number of houses owned by all the social housing associations per municipality (CBS data) to result in the number of houses owned per social housing association per municipality. This extra calculation step has been performed because the total number of houses owned by all the social housing associations per municipality from the CBS data did not correspond to the total number of houses owned by all the social housing associations per municipality from the "Inspectie van de leefomgeving en transport". Because the energy consumption data comes from CBS, also the total number of houses owned by all the social housing associations per municipality from CBS has been used to calculate the number of houses owned by social housing associations per municipality. The electricity use per municipality for all houses owned by social housing associations has been multiplied by the ratio of the number of houses of one particular social housing association versus total number of houses of all social housing associations in one municipality. For each social housing association the electricity use per municipality has been added to result in the total electricity use for that particular social housing association. The electricity use in kWh has been multiplied by the emission factor for unknown electricity (0.405 kg CO_2-eq / kWh) to result in kg GHG emissions. These emissions have been divided by 1000 to result in ton GHG emissions.
Limitations	Unfortunately, we have no data available about which house belongs to which social housing association. Therefore, the energy use (natural gas use, electricity use, and use of district heating) per social housing association has to be estimated based on the ratio of the number of houses of one particular social housing association versus total number of houses of all social housing associations in one municipality. The accuracy of the data can be improved when it is known which house belongs to which social housing association. However, this will have no effect on the GHG emissions of the sector in total, but improves the data quality on client level. The most recent data on energy consumption of social housing associations available from CBS is from the year 2020. Therefore the data used for reporting year 2022 is from the year 2020 instead of 2021.
SDG	SDG 13
Data quality estimate	*Scope 1 and 2: data quality score 2.* The GHG emissions are calculated based on primary data on actual building energy consumption. The data quality score 2 applies to the overall sector. See

	option 1b in Table 5-10 on page 87 of the report The global GHG accounting & reporting standard for the financial industry.[8] At the level of individual social housing associations, the data quality score would be 3, because it is not known which house belongs to which social housing association. **Score** / **Quality requirement** 1 – Audited data or actual primary data 2 – Non-audited data, or other primary data 3 – Average data that is peer/(sub)sector-specific 4 – Proxy data on the basis of region or country 5 – Estimated data with very limited support

Topic	Description
Data	Natural gas use of social housing associations
Data files	Original file: Output microdata aardgas en elektra verbruik.xlsx Edited file: Energieverbruik 2017 2019 en 2020 aangepast voor gebruik in SQL.xlsx
Data Source	CBS Microdata (received by e-mail)
Year	2019- 2020
Last update	Not applicable
Date of download	25-8-2022
Link to webpage	https://www.cbs.nl/nl-nl/onze-diensten/maatwerk-en-microdata/microdata-zelf-onderzoek-doen/microdatabestanden/energieverbruik-energiegebruiken-van-woningen
Filters used to obtain the datafile	Not applicable
Internal location	Original file: Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties\Ruwe data Edited file: Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties\Voorbewerking data
Data quality estimate	2 The GHG emissions are calculated based on primary data on actual building energy consumption. The data quality score 2 applies to the overall sector. See option 1b in Table 5-10 on page 87 of the report The global GHG accounting & reporting standard for the financial industry.[9]
Unit of measurement	m^3
Selections	Not applicable
Data transformation	To perform the calculations the following transformations have been done: Data of the year 2020 was transformed to the 2021 municipality division.
Data missing	For the years 2019 and 2020 the following number of social housing associations are missing in the final results of GHG emissions: 2019: 27 from the 312 social housing associations in the loan portfolio; 2020: 24 from the 304 social housing associations in the loan portfolio.

[8] https://carbonaccountingfinancials.com/standard. PCAF(2020). The Global GHG Accounting and Reporting Standard for the Financial Industry. First edition.

[9] https://carbonaccountingfinancials.com/standard. PCAF(2020). The Global GHG Accounting and Reporting Standard for the Financial Industry. First edition.

Print Screens	Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties\Printscreens\ 25-8-2022_output aangepast vrijgegeven_8741_jkrz.msg

Topic	Description
Data	Electricity use of social housing associations
Data files	Original file: Output microdata aardgas en elektra vebruik.xlsx Edited file: Energieverbruik 2017 2019 en 2020 aangepast voor gebruik in SQL.xlsx
Data Source	CBS Microdata (received by e-mail)
Year	2019- 2020
Last update	Not applicable
Date of download	25-8-2022
Link to webpage	https://www.cbs.nl/nl-nl/onze-diensten/maatwerk-en-microdata/microdata-zelf-onderzoek-doen/microdatabestanden/energieverbruik-energiegebruiken-van-woningen
Filters used to obtain the datafile	Not applicable
Internal location	Original file: Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties\Ruwe data Edited file: Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties\Voorbewerking data
Data quality estimate	2 The GHG emissions are calculated based on primary data on actual building energy consumption. The data quality score 2 applies to the overall sector. See option 1b in Table 5-10 on page 87 of the report The global GHG accounting & reporting standard for the financial industry.[10]
Unit of measurement	kWh
Selections	Not applicable
Data transformation	To perform the calculations the following transformations have been done: Data of the year 2020 was transformed to the 2021 municipality division.
Data missing	For the years 2019 and 2020 the following number of social housing associations are missing in the final results of GHG emissions: 2019: 27 from the 312 social housing associations in the loan portfolio; 2020: 24 from the 304 social housing associations in the loan portfolio.
Print Screens	Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties\Printscreens\ 25-8-2022_output aangepast vrijgegeven_8741_jkrz.msg

Topic	Description
Data	District heating of housing associations
Data files	Original files: Stadsverwarming 2019.xlsx Stadsverwarming 2020.xlsx Edited file: Energieverbruik 2017 2019 en 2020 aangepast voor gebruik in SQL.xlsx
Data Source	CBS Microdata (received by e-mail)
Year	2017- 2019- 2020

[10] https://carbonaccountingfinancials.com/standard. PCAF(2020). The Global GHG Accounting and Reporting Standard for the Financial Industry. First edition.

Last update	Not applicable
Date of download	11-10-2022
Link to webpage	https://www.cbs.nl/nl-nl/onze-diensten/maatwerk-en-microdata/microdata-zelf-onderzoek-doen/microdatabestanden/energieverbruik-energiegebruiken-van-woningen https://opendata.cbs.nl/statline/#/CBS/nl/dataset/83878NED/table
Filters used to obtain the datafile	Not applicable
Internal location	Original files: Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties\Ruwe data\Microdata stadsverwarming Edited file: Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties\Voorbewerking data
Data quality estimate	2 The GHG emissions are calculated based on primary data on actual building energy consumption. The data quality score 2 applies to the overall sector. See option 1b in Table 5-10 on page 87 of the report The global GHG accounting & reporting standard for the financial industry.[11]
Unit of measurement	GJ
Selections	Not applicable
Data transformation	To perform the calculations the following transformations have been done: Data of the year 2020 was transformed to the 2021 municipality division.
Data missing	Not applicable
Print Screens	Not applicable

Topic	Description
Data	Number of houses owned by housing associations by municipalities
Data file	Original files: dvi2019 H2.xlsx dvi2020 H2.xlsx Edited files: 20221021 aantal woningen 2019.xlsx 20221021 aantal woningen 2020.xlsx
Data Source	Inspectie Leefomgeving en Transport (ilent); Autoriteit Woningcorporaties
Year	2019- 2020
Last update	Not applicable
Date of download	18-10-2022
Link to webpage	https://data.overheid.nl/dataset/verantwoordingsinformatie-woningcorporaties-dvi2020-hfd21
Filters used to obtain the datafile	Filters obtained for 2019 and 2020: DEAB_Indicatie_Ultimo: J & N; Soort_Instelling_Ultimo: TI; EenheidSoort: WoonZelfst & WoonOnzelfst.
Internal location	Original files: Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties\Ruwe data Edited files: Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties\Voorberwerking data
Data quality estimate	1 Audited data per social housing association specific.
Unit of measurement	Number of dwellings
Selections	Not applicable
Data transformation	To perform the calculations the following transformations have been done:

[11] https://carbonaccountingfinancials.com/standard. PCAF(2020). The Global GHG Accounting and Reporting Standard for the Financial Industry. First edition.

	Data of the year 2020 was transformed to the 2021 municipality division.
Data missing	Not applicable
Print Screens	Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties \Printscreens\ 20221018 dvi 2019 H2.png 20221018 dvi 2020 H2.png

List of the calculation sheets	Location
Emissiefactoren_totaaloverzicht.csv Energiedata woco.csv Leningen woco BNG.csv Woningen woningcorporaties per gemeente.csv	Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties\Brondata voor SQL
PCAF_woco_BNG	Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties\Scripts en database SQL
WOCO BNG 2020.sql WOCO BNG 2021.sql	Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties\Scripts en database SQL
WOCO BNG 2020 afzonderlijke instellingen.csv WOCO BNG 2021 afzonderlijke instellingen.csv	Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties\Data uit SQL\BNG
20221013 missende Woco's BNG Bank 2020.xlsx 20221013 missende Woco's BNG Bank 2021.xlsx	Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties/missende data
20221024 CO2 emissies WOCO 0-meting en 1-meting	Klantgroepen\Woningcorporaties\SDG_13.2_CO2-emissies woningbouwcorporaties

4 Educational institutions

4.1 General factsheet

Topic	Description
Portfolio covered	54.4% of BNG bank's portfolio is covered for this costumer group. 34% of customers is a non-authorized educational institution. The percentage is an indication of the completeness of the dataset. It is calculated by looking at the collected data for all indicators for the customers in the loan portfolio of the BNG Bank. The percentage is lower than 100% if there are missing data. The missing data are either not available or it was not possible to collect or calculate these data correctly.
Indicators	- Energy consumption educational buildings – electricity (kWh) - Energy consumption educational buildings – natural gas (m^3) - GHG emissions per educational institution - Investments in school buildings and grounds
Limitations	- Some clients have a score of zero in the 0-measurement and for the 1-measurement a score that is higher than zero. In these cases the formula (of percentage increase/decrease) does not work, because a division by zero is not possible. This results in zero impact, while there definitely is impact.. These cases got a difference of 100 percent and this percentage is used for the following calculation steps. In the calculation sheets, these adjustments are colored.For the indicator 'investments in school buildings' this was the case for 2 educational institutions. - The coverage rate of the education sector is relatively low. This is due to a high percentage of customers who are officially no educational institution. In the Netherlands all educational institutions have an authorized number. For the total customer group 34% is a non-authorized educational institution. Due to this high number, the impact is limited to the other 66 percent of institution in the portfolio within this 66% percent there are also some missings. The total covered rate is 54.4%.

4.2 Factsheet per data source used per indicator

4.2.1 Energy consumption educational buildings – electricity (kWh)

Topic	Description
Data	Energy consumption (in total and per m^2) for educational institutions in primary, secondary, and higher education.
Calculation steps	For primary and secondary education another approach is used than for higher education. Therefore, the calculation steps are explained separately. Primary and secondary education The following steps are performed: 1) Inventory buildings 2) Joining consumption data 3) Data validation 4) Create output file 1) Inventory buildings Republiq combines the sources of DUO to obtain a list of all addresses used for primary and secondary education. Addresses with multiple house numbers are split into unique addresses. Republiq joins this list on address with BAG (Basisregistratie Adressen en Gebouwen) to obtain the unique ID's (pand-id and verblijfsobject-id) belonging to the buildings.

	2) Joining consumption data Republiq adds consumption data to each building. In first instance, Republiq uses consumption data from the network operators. At the beginning of 2021, this was requested from the three largest operators (Enexis, Liander and Stedin). Where this data is not available, Republiq supplements it with estimated values (these values are calculated by Republiq). 3) Data validation To make sure that the data is reliable, Republiq carries out the following checks: - There are 318 establishments where multiple establishments are located in one building. To prevent square meters being counted twice, the surface area per building is divided equally among the various establishments. - Unrealistic electricity consumption per m^2 is corrected. When the electricity consumption of an establishment is higher than 100 kWh per m^2, Republiq marks this as unreliable and replace this value with an estimated value (these values are calculated by Republiq). - Republiq checks whether the surface is realistic. Republiq uses an upper limit of 50,000 m^2 for this. If the surface area is larger than 50,000 m^2, Republiq will replace it with a more realistic number (these numbers are calculated by Republiq), namely 2,500 m^2 An unrealistic surface can be the result of incorrect data in the BAG or it can happen that an entire building has been included while the school location only concerns a small part of a building. There are 4 locations where the surface is corrected. 4) Create output file The following measure values are grouped for each education institution: - Total surface - Total electricity consumption in kWh (years 2016-2020) - Average electricity consumption in kWh per m^2 (years 2016-2020) For higher educationthe following steps are performed: 1) Inventory buildings 2) Request to network operators 3) Processing consumption data 4) Estimate missing consumption data 5) Creating the overview of consumption data per institution 1) Inventory buildings Republiq manually looked up which buildings are used for higher education. For the relevant educational institutions, Republiq based themselves on the list of addresses of higher professional education institutions and universities in the Netherlands that DUO publishes. Republiq then makes a link with the BAG to find the associated buildings. 2) Request to network operators Due to privacy reasons it is not allowed to provide consumption data for individual buildings. It is allowed to provide these for cluster of buildings (10 to 15 buildings). Republiq therefore makes clusters of buildings, taking into account the owner of buildings and the type of building. Where possible, clusters consist only of buildings of the same owner. If this is not possible, buildings are merged into a cluster. Clusters are made as followed: 1. The network operator is assigned to the buildings. This is done on the basis of address details and the area division of the operators (see: https://data.overheid.nl/dataset/gebiedsbedrijven-netbeheers-elektriciteit--gas-en-water). Republiq only request consumption data from the three largest network operators (Enexis, Liander and Stedin). Together they provide approximately 95% of the buildings with energy. For buildings that fall in an area

	of another operator Republiq makes an estimate of the consumption (this estimations is made by Republiq). 2. The request for data is at the level of unique addresses. Republiq therefore groups the data by zip code, house number, and house number addition. The number of unique addresses is counted per institution. 3. Republiq makes clusters of at least 15 addresses. Where possible, they create multiple clusters per institution. 4. Republiq creates joint clusters for institutions with fewer than 15 unique addresses. They calculate the average surface area of the buildings per institution. They then create clusters of at least 15 buildings, in which the buildings of institutions with a comparable surface area end up in the same cluster. 3) Processing consumption data From the network operators they receive per cluster the standard annual consumption (in Dutch standaard jaarverbruik (SJV)). They divide this by the average surface of buildings from a cluster to obtain consumption data per m^2. The consumption data per m^2 is assigned to the individual buildings belonging to a cluster. Next, they perform a check on outliers. When the electricity consumption of an establishment is higher than 200 kWh per m^2 or lower than 5 kWh per m^2, they mark this as unreliable and replace this value with an estimated value (this estimation is made by Republiq). 4) Estimate missing consumption data They use the actual consumption data to calculate an average value for electricity usage and gas usage. This is done per year for different classes of building years. For the buildings with missing consumption data an estimation for gas and electricity is assigned on the basis of the building period. 5) Overview per educational institution For each educational institution They group the following measures: - Total surface of buildings - Total energy consumption (in kWh) - Average energy consumption (in kWh per m^2)
Limitations	It is not possible to assign actual consumption data to every building. For the buildings where this is not possible, They make an estimation of the consumption data.
SDG	SDG 7.3
Data quality estimate	3 – Average data that is peer/(sub)sector-specific **Score** / **Quality requirement** 1 – Audited data or actual primary data 2 – Non-audited data, or other primary data 3 – Average data that is peer/(sub)sector-specific 4 – Proxy data on the basis of region or country 5 – Estimated data with very limited support

Topic	Description
Data	Addresses of all primary school locations
Data file	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data Source	DUO
Year	2020&2021
Last update	01-12-2021
Date of download	06-12-2021

Link to webpage	https://duo.nl/open_onderwijsdata/databestanden/po/adressen/adressen-po-3.jsp
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data quality estimate	1
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

Topic	Description
Data	Addresses of all school locations in special education
Data file	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data Source	DUO
Year	2020&2021
Last update	01-12-2021
Date of download	06-12-2021
Link to webpage	https://duo.nl/open_onderwijsdata/databestanden/po/adressen/adressen-po-4.jsp
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data quality estimate	1
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

Topic	Description
Data	Addresses of all school locations in secondary education
Data file	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data Source	DUO
Year	2020&2021
Last update	01-12-2021
Date of download	06-12-2021
Link to webpage	https://duo.nl/open_onderwijsdata/databestanden/vo/adressen/adressen-vo-2.jsp
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data quality estimate	1
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

Topic	Description
Data	Addresses HBO institutions and universities
Data file	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data Source	DUO

Year	2020&2021
Last update	01-12-2021
Date of download	06-12-2021
Link to webpage	https://duo.nl/open_onderwijsdata/databestanden/ho/adressen/adressen-ho1.jsp
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data quality estimate	1
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	This dataset only contains one main address per institution. Republiq manually added all the addresses belonging to an institution by searching on the website of each institution.
Print Screens	Internal location Republiq

Topic	Description
Data	Consumption data public real estate
Data file	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data Source	Republiq
Year	2021
Last update	18-5-2021
Date of download	08-12-2021
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data quality estimate	3
Unit of measurement	kWh for electricity and m^3 for gas
Selections	Not applicable
Data missing	Data is missing for the buildings not located in one of the areas where Liander, Enexis or Stedin is active.
Print Screens	Internal location Republiq

Topic	Description
Data	Values for gas and electricity (used for estimation)
Data file	Bijlage 1 – Kengetallen energieverbruik
Data Source	Republiq
Year	2022
Last update	18-1-2022
Date of download	18-01-2022
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data quality estimate	3
Unit of measurement	kWh for electricity
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

4.2.2 Energy consumption educational buildings – natural gas (m^3)

Topic	Description
Data	Energy consumption (in total and per m^2) for educational institutions in primary, secondary and higher education.
Calculation steps	For primary and secondary education another approach is used than for higher education. Therefore the calculation steps are explained separately. Primary and secondary education The following steps are performed: 1) Inventory buildings 2) Joining consumption data 3) Data validation 4) Create output file 1) Inventory buildings We combine the sources of DUO to obtain a list of all addresses used for primary and secondary education. Addresses with multiple house numbers are split into unique addresses. We join this list on address with BAG (Basisregistratie Adressen en Gebouwen) to obtain the unique ID's (pand-id and verblijfsobject-id) belonging to the buildings. 2) Joining consumption data We add consumption data to each building. In first instance, we use consumption data from the network operators. At the beginning of 2021, this was requested from the three largest operators (Enexis, Liander and Stedin). Where this data is not available, we supplement it with estimated values (these values are calculated by Republiq). 3) Data validation To make sure that the data is reliable, we carry out the following checks: - There are 318 establishments where multiple establishments are located in one building. To prevent square meters being counted twice, the surface area per building is divided equally among the various establishments. - Unrealistic electricity consumption per m^2 is corrected. When the electricity consumption of an establishment is higher than 100 kWh per m^2, we mark this as unreliable and replace this value with an estimated value (these values are calculated by Republiq).. - We check whether the surface is realistic. We use an upper limit of 50,000 m^2 for this. If the surface area is larger than 50,000 m^2, we will replace it with a more realistic number (these numbers are calculated by Republiq), namely 2,500 m^2 An unrealistic surface can be the result of incorrect data in the BAG or it can happen that an entire building has been included while the school location only concerns a small part of a building. There are 4 locations where the surface is corrected. 4) Create output file The following measure values are grouped for each education institution: - Total surface - Total electricity consumption in kWh (years 2016-2020) - Average electricity consumption in kWh per m^2 (years 2016-2020) Higher education The following steps are performed: 1) Inventory buildings 2) Request to network operators 3) Processing consumption data 4) Estimate missing consumption data 5) Creating the overview of consumption data per institution

	1) Inventory buildings We manually looked up which buildings are used for higher education. For the relevant educational institutions, we based ourselves on the list of addresses of higher professional education institutions and universities in the Netherlands that DUO publishes. We then make a link with the BAG to find the associated buildings. 2) Request to network operators Due to privacy reasons it is not allowed to provide consumption data for individual buildings. It is allowed to provide these for cluster of buildings (10 to 15 buildings). We therefore make clusters of the buildings, taking into account the owner of the buildings and the type of building. Where possible, clusters consist only of buildings of the same owner. If this is not possible, buildings are merged into a cluster. Clusters are made as followed: 1. The network operator is assigned to the buildings. This is done on the basis of address details and the area division of the operators (see: https://data.overheid.nl/dataset/gebiedsbedrijven-netbeheers-elektriciteit--gas-en-water). We only request consumption data from the three largest network operators (Enexis, Liander and Stedin). Together they provide approximately 95% of the buildings with energy. For buildings that fall in an area of another operator we make an estimate of the consumption (this estimations is made by Republiq). 2. The request for data is at the level of unique addresses. We therefore group the data by zip code, house number and house number addition. The number of unique addresses is counted per institution. 3. We make clusters of at least 15 addresses. Where possible, we create multiple clusters per institution. 4. We create joint clusters for institutions with fewer than 15 unique addresses. We calculate the average surface area of the buildings per institution. We then create clusters of at least 15 buildings, in which the buildings of institutions with a comparable surface area end up in the same cluster. 3) Processing consumption data From the network operators we receive per cluster the standard annual consumption (in Dutch standaard jaarverbruik (SJV)). We divide this by the average surface of buildings from a cluster to obtain consumption data per m^2. The consumption data per m^2 is assigned to the individual buildings belonging to a cluster. Next, we perform a check on outliers. When the electricity consumption of an establishment is higher than 200 kWh per m^2 or lower than 5 kWh per m^2, we mark this as unreliable and replace this value with an estimated value (this estimation is made by Republiq). 4) Estimate missing consumption data We use the actual consumption data to calculate an average value for electricity usage and gas usage. This is done per year for different classes of building years. For the buildings with missing consumption data an estimation for gas and electricity is assigned on the basis of the building period. 5) Overview per educational institution For each educational institution we group the following measures: - Total surface of buildings - Total gas consumption (in m^3) - Average gas consumption (in m^3 per m^2)
Limitations	It is not possible to assign actual consumption data to every building. For the buildings where this is not possible, we make an estimation of the consumption data.
SDG	SDG 7.3
Data quality estimate	3 – Average data that is peer/(sub)sector specific

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Addresses of all primary school locations
Data file	Republiq - Klantgroepen\Onderwijsinstellingen\Elektriciteit en gasverbruik
Data Source	DUO
Year	2021
Last update	01-12-2021
Date of download	06-12-2021
Link to webpage	https://duo.nl/open_onderwijsdata/databestanden/po/adressen/adressen-po-3.jsp
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data quality estimate	1
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

Topic	Description
Data	Addresses of all school locations in special education
Data file	Republiq - Klantgroepen\Onderwijsinstellingen\Elektriciteit en gasverbruik
Data Source	DUO
Year	2021
Last update	01-12-2021
Date of download	06-12-2021
Link to webpage	https://duo.nl/open_onderwijsdata/databestanden/po/adressen/adressen-po-4.jsp
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data quality estimate	1
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

Topic	Description
Data	Addresses of all school locations in secondary education
Data file	Republiq - Klantgroepen\Onderwijsinstellingen\Elektriciteit en gasverbruik
Data Source	DUO

Year	2021
Last update	01-12-2021
Date of download	06-12-2021
Link to webpage	https://duo.nl/open_onderwijsdata/databestanden/vo/adressen/adressen-vo-2.jsp
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data quality estimate	1
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

Topic	Description
Data	Addresses HBO institutions and universities
Data file	Republiq - Klantgroepen\Onderwijsinstellingen\Elektriciteit en gasverbruik
Data Source	DUO
Year	2021
Last update	01-12-2021
Date of download	06-12-2021
Link to webpage	https://duo.nl/open_onderwijsdata/databestanden/ho/adressen/adressen-ho1.jsp
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data quality estimate	1
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	This dataset only contains one main address per institution. Republiq manually added all the addresses belonging to an institution by searching on the website of each institution.
Print Screens	Internal location Republiq

Topic	Description
Data	Consumption data public real estate
Data file	Republiq - Klantgroepen\Onderwijsinstellingen\Elektriciteit en gasverbruik
Data Source	Republiq
Year	2021
Last update	18-5-2021
Date of download	08-12-2021
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data quality estimate	3
Unit of measurement	m^3
Selections	Not applicable
Data missing	Data is missing for the buildings not located in one of the areas where Liander, Enexis or Stedin is active.

Print Screens	Internal location Republiq

Topic	Description
Data	Values for gas and electricity (used for estimation)
Data file	Republiq - Klantgroepen\Onderwijsinstellingen\Elektriciteit en gasverbruik
Data Source	Republiq
Year	2022
Last update	18-1-2022
Date of download	18-01-2022
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Onderwijsinstellingen\SDG_7.3_Elektriciteit en gasverbruik
Data quality estimate	3
Unit of measurement	kWh for electricity and m^3 for gas
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

4.2.3 GHG emissions per educational institution

An important remark is that for the indicators: Energy consumption educational buildings – electricity (kWh) and natural gas (m^3) , the used data source(s) are different than the data sources used for the indicator: GHG emissions per educational institution. The used data sources for the latter indicator are specified in this paragraph.

Topic	Description
Data	Data about the supply of energy to the education sector comes from the Dutch Central Bureau of Statistics (CBS). Data covers the supply of electricity and natural gas to businesses and other utility buildings. The supply is via public network. Data is divided by sector and region and comes from connection registers of the energy companies. It is based on actual energy consumption, and therefore reliable. Data about transaction prices for natural gas and electricity comes from the Dutch Central Bureau of Statistics (CBS). The data is obtained from energy companies by sending them surveys. Data of the addresses of the location of educational institutions, data of number of pupils/students per location of the educational institutions, and costs for energy per educational institution come from DUO: the Dutch Education Service of Ministry of Education, Culture and Science. Data on actual natural gas and electricity use per educational organization is not available. Data on the costs for energy and water are collected by the ministry of Education, Culture and Science. It is assumed that costs for water are negligible compared to costs for energy. Based on the factsheet energy data primary schools, water usage is less than 5% of the total costs of energy and water.[12] Other data on water usage by educational institutions could not be found.
Calculation steps	Per municipality it is known how much natural gas and electricity is delivered to the education sector per year. According to the average price for natural gas and electricity the total costs for natural gas and electricity for the education sector has been calculated per municipality. Afterwards, the percentage of costs for natural gas and electricity has been calculated relative to the total costs for natural gas, plus electricity. Percentage of costs for natural gas for the education sector per municipality (A) = costs for natural gas / total costs for natural gas + electricity. Percentage of costs for electricity for education sector per municipality (B) = costs for electricity / total costs for natural gas + electricity. The average price for natural gas has been calculated according to four consumption classes, provided by CBS. To calculate the price for natural gas per m^3, the conversion factor for natural gas of 0.03165 GJ/m^3 has been used (Klimaatmonitor). The average price for electricity has been calculated according to six consumption classes provided by CBS. Per educational institution, the total costs for energy and water has been known (DUO). As stated earlier, the costs for water were not taken into account. The total costs for energy had to be divided in costs for natural gas and costs for electricity. An educational institution ('bevoegdgezag') can have several schools located in different municipalities. Per school location, the municipality is known. Per 'BRIN-number' the number of students is known. If a BRIN-number has locations in multiple municipalities, the number of students has been equally divided over the locations, as the exact number of students per BRIN-number in a municipality was not known. According to this information, the percentage of

[12] https://duurzamepabo.nl/energie-besparen-op-school/ (factsheet energiegegevens (.pdf))

	students per educational institution ('bevoegdgezag') per municipality has been calculated. Percentage of students per educational institution per municipality (C) = number of students per educational institution per municipality / total number of students per educational institution. The next step has been to divide the total costs for energy per educational institution to the municipalities that have locations of that organization according to the percentage of students (C). Costs per educational institution per municipality = % of students per educational institution per municipality (C) * total costs for energy of educational institution. The costs per educational institution per municipality has been divided in costs for natural gas and electricity according to % of costs for natural gas per municipality (A) and % of costs for electricity per municipality (B). After this step, the costs for natural gas and electricity per educational institution per municipality has been added up, to come to the total costs for natural gas (D) and electricity (E) per educational institution. According to the total costs for natural gas (D) and electricity (E) per educational institution the correct price per GJ for natural gas and per kWh for electricity has been chosen according to the usage of natural gas and electricity (lower price when use is higher). To convert GJ natural gas to m^3 the conversion factor for natural gas of 0.03165 GJ/m^3 has been used (Klimaatmonitor, 2020). The costs for natural gas and electricity per educational institution has been divided by the cost per m^3 (natural gas) and per kWh (electricity). Thereafter, the m^3 natural gas has been multiplied by the emission factor for natural gas (1.785 kg CO_2-eq / m^3) and divided by 1000 to result in ton of GHG emissions for scope 1. The kWh electricity has been multiplied by the emission factor for electricity (0.405 kg CO_2-eq / kWh) and has been divided by 1000 to result in ton of GHG emissions for scope 2.
Limitations	An important limitation is that the costs for energy and water are used as a starting point for calculating the GHG emissions. Several assumptions have been made to divide the costs for energy in costs for natural gas and electricity and then a price has been chosen to calculate costs for natural gas use in m^3 and electricity use in kWh. Nowadays, energy prices are under pressure in the current energy market and therefore a calculation in which price is an important factor, makes the calculation less accurate. Another limitation is that for some municipalities data on the supply of natural gas and electricity to the education sector is missing. If that was the case, the national average % of costs for natural gas per municipality and national average % of costs for electricity per municipality has been used. For some educational institutions, the exact number of students per municipality has been estimated as the number of students per 'BRIN-number' is known and some BRIN-numbers have locations in multiple municipalities. As the exact ratio on how the students are divided over these locations is not known, the students have been equally divided over the locations. These numbers have been used to calculate the total number of students per educational institution per municipality and the percentage of students per municipality per educational institution.
SDG	SDG 13.2
Data quality estimate	*The data quality score is 4.* The GHG emissions are calculated based on costs for energy and water, energy supply to the education sector on the aggregation level of municipalities, and the number of students per educational institution. Both sectorspecific data and regional data were used and therefore, data quality score is 4.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Supply of energy to the education sector
Data file	20221011 levering aardgas, elektriciteit via openbaar net; bedrijven, SBI2008, regio.xlsx
Data Source	CBS Statline
Year	2020-2021
Last update	7-10-2022
Date of download	11-10-2022
Link to webpage	https://opendata.cbs.nl/statline/#/CBS/nl/dataset/82538NED/table?ts=1597657120347
Filters used to obtain the datafile	Onderwerp: Geleverd aardgas, geleverde elektriciteit Perioden: 2018-2020-2021 Regio's: Gemeenten per provincie Bedrijfstakken/branches: Bedrijfstakken 1e digit (SBI 2008), P Onderwijs
Internal location	Original data: Klantgroepen\Onderwijsinstellingen\SDG_13.2_Reductie CO2-emissies onderwijs\Ruwe data
Data quality estimate	4 Highly reliable data, because of the registration manner. Different control and correction methods are used, which can be find here: https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/korte-onderzoeksbeschrijvingen/leveringen-van-elektriciteit-en-aardgas-via-het-openbare-net. The supply of energy is to the whole education sector per municipality and it is unknown to which type of education (primary school, etc.) Therefore, the data quality score is 4 because it is a combination of sectorspecific data and regional data.
Unit of measurement	Natural gas: 1000 m^3 Electricity: 1000 kWh
Selections	Not applicable
Data transformation	Not applicable
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs \Printscreens\ 20221011 levering aardgas, elektriciteit via openbaar net; bedrijven, SBI2008, regio v1.PNG 20221011 levering aardgas, elektriciteit via openbaar net; bedrijven, SBI2008, regio v2.PNG 20221011 levering aardgas, elektriciteit via openbaar net; bedrijven, SBI2008, regio v3.PNG 20221011 levering aardgas, elektriciteit via openbaar net; bedrijven, SBI2008, regio v4.PNG

Topic	Description
Data	Transaction prices for natural gas and electricity
Data file	20220901 ruwe data aardgas en elektriciteitsprijs.xlsx
Data Source	CBS Statline
Year	2020&2021
Last update	30-06-2022
Date of download	1-9-2022
Link to webpage	https://opendata.cbs.nl/statline/#/CBS/nl/dataset/81309NED/table?ts=1599143752393
Filters used to obtain the datafile	Belastingen: Inclusief btw en belastingen Onderwerp: Aardgasprijs verbruiksklassen niet-huishoudens/ elektriciteitsprijs verbruiksklassen niet-huishoudens Perioden: 2018-2020-2021 Prijscomponenten: Transactieprijs
Internal location	Original data: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Ruwe data
Data quality estimate	2 The research method used to obtain the data can be find here: https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/korte-onderzoeksbeschrijvingen/aardgas-en-elektriciteit-gemiddelde-prijzen-van-eindverbruikers. The data is obtained from energy companies via surveys
Unit of measurement	Natural gas: Euro per GJ Electricity: Euro per kWh
Selections	Transaction prices natural gas Euro per GJ: 4 usage classes 1 till 10 TJ 10 till 100 TJ 100 till 1000 TJ 1000 TJ and more Transaction prices electricity Euro per kWh: 6 usage classes 20 till 500 MWh 500 till 2000 MWh 2000 till 20000 MWh 20000 till 70000 MWh 70000 till 150000 MWh 150000 MWh and more
Data transformation	For the minimum and maximum usage per class the total price has been calculated (Euro per GJ). This has been used to choose the correct price per education organization. If the organization uses less electricity or natural gas the price per GJ is higher. The average price for natural gas over the 4 usage classes and average price for electricity over the 6 usage classes has been used to calculate the percentage of costs for natural gas and electricity per municipality.
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs \Printscreens\20220901 aardgas en elektriciteitsprijs.png

Topic	Description
Data	Energy-content of natural gas
Data file	Energie-inhoud aardgas (onderwaarde_in GJ_m3)
Data Source	Klimaatmonitor
Year	2021
Last update	Unknown
Date of download	21-9-2022

Link to webpage	https://klimaatmonitor.databank.nl/Jive
Filters used to obtain the datafile	Not applicable
Internal location	Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Ruwe data
Data quality estimate	1 Official statistic. https://www.infomil.nl/onderwerpen/duurzaamheid-energie/energiebesparing/vragen-antwoorden/overige-vragen/omrekening-verbruik/
Unit of measurement	GJ/m^3
Selections	Not applicable
Data transformation	Not applicable
Data missing	Not applicable
Print screens	In folder: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Printscreens\20220921 energie inhoud aardgas 2021.png

Topic	Description
Data	Registration numbers of schools and universities
Data file	Original files: 02-adressen-besturen_mbo.xlsx 03-bevoegde-gezagen-hbo-en-wo.xlsx 03-bevoegde-gezagen-vo.xlsx 03-schoolbesturen-basisonderwijs_.xlsx 10-besturen-sbo-so-en-vso.xlsx Edited files: 02-adressen-besturen_mbo kolommen geselecteerd voor SQL.xlsx 03-bevoegde-gezagen-hbo-en-wo kolommen geselecteerd voor SQL.xlsx 03-bevoegde-gezagen-vo kolommen geselecteerd voor SQL.xlsx 03-schoolbesturen-basisonderwijs_kolommen geselecteerd voor SQL.xlsx 10-besturen-sbo-so-en-vso kolommen geselecteerd voor SQL.xlsx
Data Source	DUO: Education Service of Ministry of Education, Culture and Science
Year	2021 For recalculation of reporting year 2021 data of the year 2020 was used again.
Last update	1-6-2022
Date of download	13-6-2022
Link to webpage	***Primary schools*** https://duo.nl/open_onderwijsdata/primair-onderwijs/scholen-en-adressen/schoolbesturen-basisonderwijs.jsp ***Secondary schools*** https://duo.nl/open_onderwijsdata/voortgezet-onderwijs/adressen/besturen.jsp ***Special primary and secondary schools*** https://duo.nl/open_onderwijsdata/primair-onderwijs/scholen-en-adressen/schoolbesturen-sbo-vso.jsp ***Secondary vocational education*** https://duo.nl/open_onderwijsdata/middelbaar-beroepsonderwijs/adressen/adressen-mbo-besturen.jsp ***Higher professional education and universities*** https://duo.nl/open_onderwijsdata/hoger-onderwijs/adressen/besturen-hogescholen-universiteiten.jsp
Filters used to obtain the datafile	Not applicable
Internal location	Original files: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Ruwe data\Data 2021\Bevoegd gezag

	Edited files: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs \Ruwe data\Data 2021\Bevoegd gezag\Voorbewerking data Data of the year 2020 can be find in the folder: 2020: Klantgroepen\Onderwijsinstellingen\Reductie CO2-emissies onderwijs \Ruwe data\Data 2020\Bevoegd gezag
Data quality estimate	1
Unit of measurement	Not applicable
Selections	Not applicable
Data transformation	Not applicable
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs \Printscreens\Bevoegd gezag nr

Topic	Description
Data	Addresses of schools and universities
Data file	Original files: 01-adressen-instellingen_mbo.xlsx 01-instellingen-hbo-en-wo.xlsx 02-alle-schoolvestigingen-basisonderwijs.xlsx 02-alle-vestigingen-vo.xlsx 09-alle-vestigingen-speciaal-basisonderwijs.xlsx Edited files: 01-adressen-instellingen_mbo kolommen geselecteerd voor SQL.xlsx 01-instellingen-hbo-en-wo kolommen geselecteerd voor SQL.xlsx 02-alle-schoolvestigingen-basisonderwijs kolommen geselecteerd voor SQL.xlsx 02-alle-vestigingen-vo kolommen geselecteerd voor SQL.xlsx 09-alle-vestigingen-speciaal-basisonderwijs kolommen geselecteerd voor SQL.xlsx
Data Source	DUO: Education Service of Ministry of Education, Culture and Science
Year	2021 For recalculation of reporting year 2021 data of the year 2020 was used again.
Last update	1-6-2022
Date of download	13-6-2022
Link to webpage	***Primary schools*** https://duo.nl/open_onderwijsdata/primair-onderwijs/scholen-en-adressen/schoolvestigingen-basisonderwijs.jsp ***Secondary schools*** https://duo.nl/open_onderwijsdata/voortgezet-onderwijs/adressen/vestigingen.jsp ***Special primary and secondary schools*** https://duo.nl/open_onderwijsdata/primair-onderwijs/scholen-en-adressen/hoofd-nevenvestigingen-sbo-vso.jsp ***Secondary vocational education*** https://duo.nl/open_onderwijsdata/middelbaar-beroepsonderwijs/adressen/adressen-instellingen-mbo.jsp ***Higher professional education and universities*** https://duo.nl/open_onderwijsdata/hoger-onderwijs/adressen/hogescholen-en-universiteiten.jsp
Filters used to obtain the datafile	Not applicable
Internal location	Original files: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Ruwe data\Data 2021\Brin nummers

	Edited files: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Ruwe data\Data 2021\Brin nummers\Voorbewerking data Data of the year 2020 can be find in the folder: 2020: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Ruwe data\Data 2020\Brin nummers
Data quality estimate	1
Unit of measurement	Not applicable
Selections	Not applicable
Data transformation	Not applicable
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs \Printscreens\Brin nr

Topic	Description
Data	Number of pupils or students per education organization
Data file	Original files: 01a-ingeschrevenen-hbo-2021.csv 01a-ingeschrevenen-wo-2021.xlsx 01-leerlingen-po-soort-po-cluster-leeftijd-2021-2022.csv 01-leerlingen-vo-per-vestiging-naar-onderwijstype-2021.xlsx 01-studenten-per-instelling-bestuur-plaats-gemeente-provincie-type-mbo-2017-2021.xlsx Edited files: 01a-ingeschrevenen-hbo-2021 aanpassingen voor gebruik SQL.csv 01a-ingeschrevenen-wo-2021 aanpassingen voor gebruik SQL.xlsx 01-leerlingen-po-soort-po-cluster-leeftijd-2021-2022 kolommen geselecteerd voor SQL.csv 01-leerlingen-vo-per-vestiging-naar-onderwijstype-2021 kolommen geselecteerd voor SQL.xlsx 01-studenten-per-instelling-bestuur-plaats-gemeente-provincie-type-mbo-2017-2021-kolommen geselecteerd voor SQL.xlsx
Data Source	DUO: Education Service of Ministry of Education, Culture and Science
Year	2021 For recalculation of reporting year 2021 data of the year 2020 was used again.
Last update	Primary schools 11-2-2022, secondary schools 22-12-2021, secondary vocational education 23-2-2022, higher professional education 15-3-2022, universities 15-3-2022
Date of download	13-6-2022 (secondary vocational education on 22-6-2022)
Link to webpage	***Primary schools*** https://duo.nl/open_onderwijsdata/primair-onderwijs/aantal-leerlingen/leerlingen-onderwijssoort-cluster-leeftijd.jsp ***Secondary schools*** https://duo.nl/open_onderwijsdata/voortgezet-onderwijs/aantal-leerlingen/aantal-leerlingen.jsp ***Secondary vocational education*** https://duo.nl/open_onderwijsdata/middelbaar-beroepsonderwijs/aantal-studenten/aantal-studenten-mbo-per-instelling.jsp ***Higher professional education*** https://duo.nl/open_onderwijsdata/hoger-onderwijs/aantal-studenten/studenten-hbo.jsp ***Universities*** https://duo.nl/open_onderwijsdata/hoger-onderwijs/aantal-studenten/studenten-wo.jsp

Filters used to obtain the datafile	Not applicable
Internal location	Original files: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Ruwe data\Data 2021\Aantal leerlingen Edited files: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Ruwe data\Data 2021\Aantal leerlingen\Voorbewerking data Data of the year 2020 can be find in the folder: 2020: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Ruwe data\Data 2020\Aantal leerlingen
Data quality estimate	2 Registration data
Unit of measurement	Not applicable
Selections	Not applicable
Data transformation	Some universities and higher professional education schools had as value '<5'. These are replaced with the number 5.
Data missing	Not applicable
Print Screens	In folder: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Printscreens\Aantal leerlingen

Topic	Description
Data	Energy and water costs per education organization
Data files	Original files: 20200825 Kopie van 14-lasten-2018.xlsx 20210921 14-lasten-2016-2020.xlsx 2021 onderwijs portefeuilles.xlsx & diversen jaarverslagen Edited file: Lasten totaal 2018 2020 2021.xlsx
Data Source	DUO: Education Service of Ministry of Education, Culture and Science
Year	2020-2021
Last update	19-10-2022
Date of download	20-10-2022
Link to webpage	https://duo.nl/open_onderwijsdata/databestanden/onderwijs-algemeen/financiele-cijfers/verantwoording-xbrl.jsp
Filters used to obtain the data file	Not applicable
Internal location	Original files: 2020: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Ruwe data\ Data 2020 2021: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Ruwe data\Data 2021\Lasten Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Ruwe data\Data 2021\Jaarverslagen energie\BNG Edited file: Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Onderwijs\Ruwe data\Data 2021\Lasten
Data quality estimate	2 Schoolboards send the data to DUO. The numbers are not checked by accountants or by DUO/the Ministry of Education, Culture and Science.
Unit of measurement	Euro
Selections	Not applicable
Data transformation	Not applicable

Data missing	DUO did not publish data on energy and water costs on time (data expected in December 2022). To calculate the GHG emissions for the education sector, energy costs have been extracted from annual reports of the education organizations. If the annual report of the year 2021 was not yet available, the energy costs of the previous year have been used. In the file: 2021 onderwijs portefeuilles.xlsx it is shown that for eleven education organizations data from the previous years have been used.
Print Screens	Not applicable

List of the calculation sheets	Location
Aantal_leerlingen_bo_onderwijs.csv Aantal_leerlingen_hbo_onderwijs.csv Aantal_leerlingen_mbo_onderwijs.csv Aantal_leerlingen_vo_onderwijs.csv Aantal_leerlingen_wo_onderwijs.csv Aardgas_elektra_prijs_onderwijs.csv Bg_bo_onderwijs.csv Bg_hbo_wo_onderwijs.csv Bg_mbo_onderwijs.csv Bg_sbo_onderwijs.csv Bg_vo_onderwijs.csv Brin_hbo_wo_onderwijs.csv Brin_mbo_onderwijs.csv Brin_sbo_onderwijs.csv Brin_vo_onderwijs.csv Elektra_aardgas_onderwijs.csv Emissiefactoren_totaaloverzicht.csv Lasten_onderwijs.csv leningportefeuilleBNG_onderwijs.csv	Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Brondata voor SQL
PCAF_onderwijs BNG	Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Scripts en database SQL
PCAF onderwijs BNG Bank 2020.sql PCAF onderwijs BNG Bank 2020.sql	Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Scripts en database SQL
20221019_BNG toerekening scopes onderwijs 2020.csv	Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Data verkregen uit SQL\BNG\2020
20221019_BNG toerekening scopes onderwijs 2021.csv	Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs\Data verkregen uit SQL\BNG\2021
20221024 CO2 emissies onderwijsinstellingen 0-meting en 1-meting	Klantgroepen\Onderwijsinstellingen\ SDG_13.2_Reductie CO2-emissies onderwijs

4.2.4 Investments in school buildings and grounds

Topic	Description
Data	Investments in school buildings and grounds
Calculation steps	No calculations were done on the original data set. The data is delivered by school boards via their yearly financial statement of 2021, supplied in XBRL. Complemented with the yearly financial statements of 2017 to 2021. The data are not audited by an accountant, The Ministry of Education or DUO. But are audited by the institutions.
Limitations	No limitations
SDG	SDG 4: Quality education
Data quality estimate	2 – Non-audited data, or other primary data. The data is delivered by school boards via their yearly financial statements. These financial statements are audited by an accountant, but the data is not audited by DUO or the Ministry of Education, where the used dataset comes from.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Investments in school buildings and grounds
Data file	Bronbestand 05.-materiale-vaste-activa-2017-2020.xlsx Investeringen gebouwen onderwijs 2021.xlsx
Data Source	Dienst Uitvoering Onderwijs (DUO)
Years	2020&2021
Last update	19-10-2022
Date of download	20-10-2022
Link to webpage	https://duo.nl/open_onderwijsdata/onderwijs-algemeen/financiele-overzichten/financiele-verantwoording-xbrl.jsp
Filters used to obtain the datafile	No filters used
Internal location	Klantgroepen\Onderwijsinstellingen\SDG_4.1_Investeringen gebouwen
Data quality estimate	2 – Non-audited data, or other primary data. Data comes from the 2020 financial statements of the school board. Data is not audited by an accountant or by the ministry of Education, Culture and Science or DUO.
Unit of measurement	Euros
Selections	
Data missing	Not applicable
Print Screens	\Klantgroepen\Onderwijsinstellingen\ SDG_4.1_Investeringen gebouwen\Printscreens\20102022 Investeringen gebouwen 1.png \Klantgroepen\Onderwijsinstellingen\ SDG_4.1_Investeringen gebouwen\Printscreens\20102022 Investeringen gebouwen 2.png

5 Healthcare institutions

5.1 General factsheet

Topic	Description
Portfolio covered	89.2% of BNG bank's portfolio is covered for this costumer group. The percentage is an indication of the completeness of the dataset. It is calculated by looking at the collected data for all indicators for the customers in the loan portfolio of the BNG Bank. The percentage is lower than 100% if there are missing data. The missing data are either not available or it was not possible to collect or calculate these data correctly.
Indicators	- Energy consumption for healthcare institutions – electricity (kWh) - Energy consumption for healthcare institutions - natural gas (m3) - GHG emissions per healthcare institution
Limitations	-

5.2 Factsheet per data source used per indicator

5.2.1 Energy consumption healthcare institutions – electricity (kWh)

Topic	Description
Data	Energy consumption data from healthcare institutions (in total and per m^2) are obtained from three largest network operators in the Netherlands (Enexis, Liander and Stedin).
Calculation steps	Energy consumption data was received from three largest network operators in the Netherlands based on cadastral parcels owned by healthcare institutions. The following steps has been performed by Republiq: 1. Inventory of all healthcare institutions; 2. Inventory of all cadastral parcels owned by healthcare institutions; 3. Inventory of all buildings owned by healthcare institutions; 4. Request to three network operators; 5. Processing consumption data; 6. Estimate missing consumption data; 7. Creating the overview of consumption data per healthcare institution. *Inventory of all healthcare institutions* BNG Bank has provided an overview of healthcare institutions from its portfolio at 31-12-2021 and 31-12-2020 *Inventory of all cadastral parcels owned by healthcare institutions* Republiq has inventoried the properties of the healthcare institutions via Kadaster. Kadaster has provided an overview of the cadastral parcels and associated rights for each institution. *Inventory of all buildings owned by healthcare institutions* In this step Republiq has looked for the buildings on the cadastral parcels from step 2. First, Republiq has matched the results from Kadaster with BAG (Basisregistratie Adressen en Gebouwen). Then, they have looked at whether they could link additional buildings by performing a spatial match. 1. For part of the parcels Kadaster provided an VBO-id (verblijfsobject-ID). This VBO-id is an unique ID for the building or buildings that are placed on the parcel. Republiq has joined the set from Kadaster with the BAG on VBO-id to find the corresponding addresses.

	2. Republiq has performed a spatial match by combining a shapefile of cadastral parcels with a shapefile of all buildings in the Netherlands. This has resulted in a list with all parcels and the corresponding buildings placed on this parcel. Republiq has joined this list on parcel-ID with the result from Kadaster to obtain the buildings that are placed on the parcels in ownership of healthcare institutions. 3. Republiq has combined the results from the match on VBO-id and the spatial match to obtain a list with all parcels and corresponding addresses. If several healthcare institutions have rights for the same parcel, Republiq has let the right of ownership prevail over other rights. The result of this step has been an overview of 57,508 unique addresses with the corresponding institution. *Request to three network operators* Due to privacy reasons it is not allowed to provide energy consumption data for individual buildings. It is allowed to provide these for cluster of buildings (10 to 15 buildings). Republiq therefore has made clusters of the buildings, taking into account the owner of the buildings and the type of building. Where possible, clusters consisted only of buildings of the same owner. Clusters were made as followed: 1. The network operator has been assigned to the buildings. This was done on the basis of address details and the area division of the operators (see: https://data.overheid.nl/dataset/gebiedsbedrijven-netbeheers-elektriciteit--gas-en-water). Republiq only has requested energy consumption data from the three largest network operators (Enexis, Liander and Stedin). Together they provide approximately 95% of the buildings with energy data. For buildings that fall in an area of another operator Republiq has made an estimate of the energy consumption. 2. The request for energy consumption data was at the level of unique addresses. Republiq therefore has grouped the data by zip code, house number, and house number addition. The number of unique addresses has been counted per institution. 3. Republiq has made clusters of at least 15 addresses. Where possible, they have created multiple clusters per institution. 4. Republiq has created joint clusters for healthcare institutions with fewer than 15 unique addresses. They have calculated the average surface area of the buildings per institution. Then they have created clusters of at least 15 buildings, in which the buildings of healthcare institutions with a comparable surface area ended up in the same cluster. *Processing consumption data* From the network operators Republiq has received per cluster the standard annual energy consumption (in Dutch standaard jaarverbruik (SJV)). They have divided this by the average surface of buildings from a cluster to obtain energy consumption data per m^2. The energy consumption data per m^2 has been assigned to the individual buildings belonging to a cluster. Next, Republiq has performed a check on outliers. When the electricity consumption of an establishment was higher than 200 kWh per m^2 or lower than 5 kWh per m^2, they have marked this as unreliable and have replaced this value with an estimated value. When the gas consumption of an establishment has been higher than 100 m^3 per m^2, they have marked this as unreliable and have replaced this value with an estimated value. *Estimate missing consumption data* Republiq has used the actual consumption data to calculate an average value for electricity usage and gas usage. This has been done per year for different classes of building years and surfaces. For the buildings with missing consumption data an estimation for gas and electricity has been assigned on the basis of the building period and surface class. *Overview per healthcare institution* For each healthcare institution Republiq has grouped the following measures: - Total surface of buildings (m^2)

	- Total electricity consumption (in kWh) - Average electricity consumption (in kWh per m^2)
Limitations	It is not possible to assign actual consumption data to every building. For the buildings where this is not possible, Republiq has made an estimation of the consumption data.
SDG	SDG 7.3
Data quality estimate	*Data quality score 3.* Due to privacy reasons, it is not allowed to provide energy consumption data for individual buildings. It is allowed to provide these for cluster of buildings (10 to 15 buildings). Where possible, clusters consisted only of buildings of the same owner. If this was not possible, buildings of different owners have been clustered. For the buildings with missing consumption data an estimation for gas and electricity has been assigned on the basis of the building period and surface class. Because the actual building energy consumption had to be clustered and in some cases for the buildings with missing data an estimation was made the data quality score is 3.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Energy consumption healthcare institutions
Data files	Original files (datafiles received from Republiq): 3.Energieverbruik zorginstellingen 2020.xlsx 4.Energieverbruik zorginstellingen 2021.xlsx
Data Source	Republiq
Year	2020-2021
Last update	Not applicable
Date of download	21-9-2022
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Original files: Klantgroepen\Zorginstellingen\SDG_7.3_Energieverbruik\Ruwe data
Data quality estimate	3 Due to privacy reasons it is not allowed to provide energy consumption data for individual buildings. It is allowed to provide these for cluster of buildings (10 to 15 buildings). Where possible, clusters consisted only of buildings of the same owner. If this was not possible, buildings of different owners have been clustered. For the buildings with missing consumption data an estimation for gas and electricity has been assigned on the basis of the building period and surface class. Because the actual building energy consumption had to be clustered and in some cases for the buildings with missing data an estimation was made the data quality score is 3.
Unit of measurement	Natural gas use in m^3 Electricity use in kWh
Selections	Republiq has delivered the data at the level of the healthcare institutions so no selection was necessary
Data transformation	Republiq delivered the data at the level of the healthcare institutions so no transformation was necessary
Data missing	2020: Data is missing for 43 healthcare organizations

	2021: Data is missing for 31 healthcare organizations
Print screens	In folder: Klantgroepen\Zorginstellingen\SDG_7.3_Energieverbruik\Printscreens\20220921 downloaden van Republiq data zorginstellingen.png

Topic	Description
Data	Healthcare institutions
Data file	Klantgroepen\Zorginstellingen\SDG_7.3_Energieverbruik
Data Source	BNG Bank
Year	2021
Last update	22-11-2021
Date of download	22-11-2021
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Internal location Republiq
Data quality estimate	2
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

Topic	Description
Data	Cadastral parcels in ownership of healthcare institutions
Data file	Internal location Republiq
Data Source	Kadaster
Year	2021
Last update	09-12-2021
Date of download	09-12-2021
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Republiq -> Klantgroepen\Zorginstellingen\SDG_7.3_Energieverbruik
Data quality estimate	2
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

Topic	Description
Data	Energy consumption (Enexis)
Data file	Internal location Republiq
Data Source	Enexis
Year	2021
Last update	23-12-2021
Date of download	23-12-2021
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Republiq -> Klantgroepen\Zorginstellingen\SDG_7.3_Energieverbruik
Data quality estimate	3

Unit of measurement	kWh for electricity
Selections	Not applicable
Data missing	For some clusters we did not receive consumption data. This can have several causes: Enexis could not find an address (this is most often the case for addresses with an add-on. For example house number 1-A) The address is assigned to a connection for large consumption (grootverbruik). Net operators are not allowed to share this data.
Print Screens	Internal location Republiq
Topic	Description
Data	Energy consumption (Liander)
Data file	Internal location Republiq
Data Source	Liander
Year	2022
Last update	12-01-2022
Date of download	12-01-2022
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Republiq -> Klantgroepen\Zorginstellingen\SDG_7.3_Energieverbruik
Data quality estimate	3
Unit of measurement	kWh
Selections	Not applicable
Data missing	For some clusters we did not receive consumption data. This can have several causes: Liander could not find an address (this is most often the case for addresses with an add-on. For example house number 1-A) The address is assigned to a connection for large consumption (grootverbruik). Net operators are not allowed to share this data.
Print Screens	Internal location Republiq

Topic	Description
Data	Energy consumption (Stedin)
Data file	Internal location Republiq
Data Source	Stedin
Year	2022
Last update	14-01-2022
Date of download	14-01-2022
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Republiq -> Klantgroepen\Zorginstellingen\SDG_7.3_Energieverbruik
Data quality estimate	3
Unit of measurement	kWh
Selections	Not applicable
Data missing	For some clusters we did not receive consumption data. This can have several causes: Stedin could not find an address (this is most often the case for addresses with an add-on. For example house number 1-A) The address is assigned to a connection for large consumption (grootverbruik). Net operators are not allowed to share this data.
Print Screens	Internal location Republiq

Topic	Description
Data	Values for gas and electricity (used for estimation)
Data file	Bijlage 1 – Kengetallen energieverbruik
Data Source	Republiq
Year	2022
Last update	18-1-2022
Date of download	18-01-2022
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Republiq -> Klantgroepen\Zorginstellingen\SDG_7.3_Energieverbruik
Data quality estimate	3
Unit of measurement	kWh for electricity and m^3 for gas
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

5.2.2 Energy consumption healthcare institutions – natural gas (m^3)

Topic	Description
Data	Energy consumption data from healthcare institutions (in total and per m^2) are obtained from three largest network operators in the Netherlands (Enexis, Liander and Stedin).
Calculation steps	Energy consumption data was received from three largest network operators in the Netherlands based on cadastral parcels owned by healthcare institutions. The following steps has been performed by Republiq: 1. Inventory of all healthcare institutions; 2. Inventory of all cadastral parcels owned by healthcare institutions; 3. Inventory of all buildings owned by healthcare institutions; 4. Request to three network operators; 5. Processing consumption data; 6. Estimate missing consumption data; 7. Creating the overview of consumption data per healthcare institution. *Inventory of all healthcare institutions* BNG Bank has provided an overview of healthcare institutions from its portfolio at 31-12-2021 and 31-12-2020. *Inventory of all cadastral parcels owned by healthcare institutions* Republiq has inventoried the properties of the healthcare institutions via Kadaster. Kadaster has provided an overview of the cadastral parcels and associated rights for each institution. *Inventory of all buildings owned by healthcare institutions* In this step Republiq has looked for the buildings on the cadastral parcels from step 2. First, Republiq has matched the results from Kadaster with BAG (Basisregistratie Adressen en Gebouwen). Then, they have looked at whether they could link additional buildings by performing a spatial match. 1. For part of the parcels Kadaster provided an VBO-id (verblijfsobject-ID). This VBO-id is an unique ID for the building or buildings that are placed on the parcel. Republiq has joined the set from Kadaster with the BAG on VBO-id to find the corresponding addresses. 2. Republiq has performed a spatial match by combining a shapefile of cadastral parcels with a shapefile of all buildings in the Netherlands. This has resulted in a

	list with all parcels and the corresponding buildings placed on this parcel. Republiq has joined this list on parcel-ID with the result from Kadaster to obtain the buildings that are placed on the parcels in ownership of healthcare institutions. 3. Republiq has combined the results from the match on VBO-id and the spatial match to obtain a list with all parcels and corresponding addresses. If several healthcare institutions have rights for the same parcel, Republiq has let the right of ownership prevail over other rights. The result of this step has been an overview of 57,508 unique addresses with the corresponding institution. *Request to three network operators* Due to privacy reasons it is not allowed to provide energy consumption data for individual buildings. It is allowed to provide these for cluster of buildings (10 to 15 buildings). Republiq therefore has made clusters of the buildings, taking into account the owner of the buildings and the type of building. Where possible, clusters consisted only of buildings of the same owner. Clusters were made as followed: 1. The network operator has been assigned to the buildings. This was done on the basis of address details and the area division of the operators (see: https://data.overheid.nl/dataset/gebiedsbedrijven-netbeheers-elektriciteit--gas-en-water). Republiq only has requested energy consumption data from the three largest network operators (Enexis, Liander and Stedin). Together they provide approximately 95% of the buildings with energy data. For buildings that fall in an area of another operator Republiq has made an estimate of the energy consumption. 2. The request for energy consumption data was at the level of unique addresses. Republiq therefore has grouped the data by zip code, house number, and house number addition. The number of unique addresses has been counted per institution. 3. Republiq has made clusters of at least 15 addresses. Where possible, they have created multiple clusters per institution. 4. Republiq has created joint clusters for healthcare institutions with fewer than 15 unique addresses. They have calculated the average surface area of the buildings per institution. Then they have created clusters of at least 15 buildings, in which the buildings of healthcare institutions with a comparable surface area ended up in the same cluster. *Processing consumption data* From the network operators Republiq has received per cluster the standard annual energy consumption (in Dutch standaard jaarverbruik (SJV)). They have divided this by the average surface of buildings from a cluster to obtain energy consumption data per m^2. The energy consumption data per m^2 has been assigned to the individual buildings belonging to a cluster. Next, Republiq has performed a check on outliers. When the electricity consumption of an establishment was higher than 200 kWh per m^2 or lower than 5 kWh per m^2, they have marked this as unreliable and have replaced this value with an estimated value. When the gas consumption of an establishment has been higher than 100 m^3 per m^2, they have marked this as unreliable and have replaced this value with an estimated value. *Estimate missing consumption data* Republiq has used the actual consumption data to calculate an average value for electricity usage and gas usage. This has been done per year for different classes of building years and surfaces. For the buildings with missing consumption data an estimation for gas and electricity has been assigned on the basis of the building period and surface class. *Overview per healthcare institution* For each healthcare institution we group the following measures: - Total surface of buildings (m^2) - Total gas consumption (in m^3) - Average gas consumption (in m^3 per m^2)

Limitations	It is not possible to assign actual consumption data to every building. For the buildings where this is not possible, Republiq has made an estimation of the consumption data.
SDG	SDG 7.3
Data quality estimate	*3.* Due to privacy reasons, it is not allowed to provide energy consumption data for individual buildings. It is allowed to provide these for cluster of buildings (10 to 15 buildings). Where possible, clusters consisted only of buildings of the same owner. If this was not possible, buildings of different owners have been clustered. For the buildings with missing consumption data an estimation for gas and electricity has been assigned on the basis of the building period and surface class. Because the actual building energy consumption had to be clustered and in some cases for the buildings with missing data an estimation was made the data quality score is 3.

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Energy consumption healthcare institutions
Data files	Original files (datafiles received from Republiq): 3.Energieverbruik zorginstellingen 2020.xlsx 4.Energieverbruik zorginstellingen 2021.xlsx
Data Source	Republiq
Year	2020-2021
Last update	Not applicable
Date of download	21-9-2022
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Original files: Klantgroepen\Zorginstellingen\SDG_7.3_Energieverbruik\Ruwe data
Data quality estimate	3 Due to privacy reasons it is not allowed to provide energy consumption data for individual buildings. It is allowed to provide these for cluster of buildings (10 to 15 buildings). Where possible, clusters consisted only of buildings of the same owner. If this was not possible, buildings of different owners have been clustered. For the buildings with missing consumption data an estimation for gas and electricity has been assigned on the basis of the building period and surface class. Because the actual building energy consumption had to be clustered and in some cases for the buildings with missing data an estimation was made the data quality score is 3.
Unit of measurement	Natural gas use in m^3 Electricity use in kWh
Selections	Republiq has delivered the data at the level of the healthcare institutions so no selection was necessary
Data transformation	Republiq delivered the data at the level of the healthcare institutions so no transformation was necessary
Data missing	2020: Data is missing for 48 healthcare organizations 2021: Data is missing for 36 healthcare organizations

Print screens	In folder: Klantgroepen\Zorginstellingen\SDG_7.3_Energieverbruik\Printscreens\20220921 downloaden van Republiq data zorginstellingen.png

Topic	Description
Data	Healthcare institutions
Data file	Internal location Republiq
Data Source	BNG Bank
Year	2021
Last update	22-11-2021
Date of download	22-11-2021
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Republiq -> Klantgroepen\Zorginstellingen\SDG_7.3_Energieverbruik
Data quality estimate	2
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

Topic	Description
Data	Cadastral parcels in ownership of healthcare institutions
Data file	Internal location Republiq
Data Source	Kadaster
Year	2021
Last update	09-12-2021
Date of download	09-12-2021
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Republiq -> Klantgroepen\Zorginstellingen\SDG_7.3_Energieverbruik
Data quality estimate	2
Unit of measurement	Not applicable
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

Topic	Description
Data	Energy consumption (Enexis)
Data file	Internal location Republiq
Data Source	Enexis
Year	2021
Last update	23-12-2021
Date of download	23-12-2021
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Internal location Republiq

Data quality estimate	3
Unit of measurement	m^3 for gas
Selections	Not applicable
Data missing	For some clusters we did not receive consumption data. This can have several causes: Enexis could not find an address (this is most often the case for addresses with an add-on. For example house number 1-A) The address is assigned to a connection for large consumption (grootverbruik). Net operators are not allowed to share this data.
Print Screens	Internal location Republiq

Topic	Description
Data	Energy consumption (Liander)
Data file	Internal location Republiq
Data Source	Liander
Year	2022
Last update	12-01-2022
Date of download	12-01-2022
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Internal location Republiq
Data quality estimate	3
Unit of measurement	m^3 for gas
Selections	Not applicable
Data missing	For some clusters we did not receive consumption data. This can have several causes: Liander could not find an address (this is most often the case for addresses with an add-on. For example house number 1-A) The address is assigned to a connection for large consumption (grootverbruik). Net operators are not allowed to share this data.
Print Screens	Internal location Republiq

Topic	Description
Data	Energy consumption (Stedin)
Data file	Internal location Republiq
Data Source	Stedin
Year	2022
Last update	14-01-2022
Date of download	14-01-2022
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Internal location Republiq
Data quality estimate	3
Unit of measurement	m^3 for gas
Selections	Not applicable
Data missing	For some clusters we did not receive consumption data. This can have several causes: Stedin could not find an address (this is most often the case for addresses with an add-on. For example house number 1-A)

	The address is assigned to a connection for large consumption (grootverbruik). Net operators are not allowed to share this data.
Print Screens	Internal location Republiq

Topic	Description
Data	Values for gas and electricity (used for estimation)
Data file	Bijlage 1 – Kengetallen energieverbruik
Data Source	Republiq
Year	2022
Last update	18-1-2022
Date of download	18-01-2022
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Internal location Republiq
Data quality estimate	3
Unit of measurement	m^3 for gas
Selections	Not applicable
Data missing	Not applicable
Print Screens	Internal location Republiq

5.2.3 GHG emissions per healthcare institution

Topic	Description
Data	Energy consumption data from healthcare institutions are obtained from three largest network operators in the Netherlands (Enexis, Liander and Stedin). Data of the total balance sheet per healthcare institute per year, are coming from their own annual reports. Geographically based annual averages (provinces/NUTS2) for commuting distance data is coming from the Dutch Central Bureau of Statistics (CBS). Just as the Geographically based annual averages (provinces/NUTS2) for business travel distance and distance travelled per means of transportation data.
Calculation steps	Scope 1 emissions are the direct GHG emissions of the organizations. For healthcare organizations, these emissions result from the use of natural gas for heating of buildings, or for disinfection of medical tools. Scope 2 emissions include the indirect GHG emissions from the generation of purchased or acquired electricity, steam, heating or cooling consumed by the healthcare institution. Because steam, heating or cooling use per healthcare institution is unknown, scope 2 will be based on the emissions from purchased electricity. Energy consumption data was received from three largest network operators in the Netherlands based on cadastral parcels owned by healthcare institutions. The following steps has been performed by Republiq: 1. Inventory of all healthcare institutions; 2. Inventory of all cadastral parcels owned by healthcare institutions; 3. Inventory of all buildings owned by healthcare institutions; 4. Request to three network operators; 5. Processing consumption data; 6. Estimate missing consumption data; 7. Creating the overview of consumption data per healthcare institution. *Inventory of all healthcare institutions* BNG Bank has provided an overview of healthcare institutions from its portfolio at 31-12-2021, 31-12-2020, and 31-12-2018. *Inventory of all cadastral parcels owned by healthcare institutions* Republiq has inventoried the properties of the healthcare institutions via Kadaster. Kadaster has provided an overview of the cadastral parcels and associated rights for each institution. *Inventory of all buildings owned by healthcare institutions* In this step Republiq has looked for the buildings on the cadastral parcels from step 2. First, Republiq has matched the results from Kadaster with BAG (Basisregistratie Adressen en Gebouwen). Then, they have looked at whether they could link additional buildings by performing a spatial match. 1. For part of the parcels Kadaster provided an VBO-id (verblijfsobject-ID). This VBO-id is an unique ID for the building or buildings that are placed on the parcel. Republiq has joined the set from Kadaster with the BAG on VBO-id to find the corresponding addresses. 2. Republiq has performed a spatial match by combining a shapefile of cadastral parcels with a shapefile of all buildings in the Netherlands. This has resulted in a list with all parcels and the corresponding buildings placed on this parcel. Republiq has joined this list on parcel-ID with the result from Kadaster to obtain the buildings that are placed on the parcels in ownership of healthcare institutions. 3. Republiq has combined the results from the match on VBO-id and the spatial match to obtain a list with all parcels and corresponding addresses.

	If several healthcare institutions have rights for the same parcel, Republiq has let the right of ownership prevail over other rights. The result of this step has been an overview of 57,508 unique addresses with the corresponding institution. *Request to three network operators* Due to privacy reasons it is not allowed to provide energy consumption data for individual buildings. It is allowed to provide these for cluster of buildings (10 to 15 buildings). Republiq therefore has made clusters of the buildings, taking into account the owner of the buildings and the type of building. Where possible, clusters consisted only of buildings of the same owner. Clusters were made as followed: 1. The network operator has been assigned to the buildings. This was done on the basis of address details and the area division of the operators (see: https://data.overheid.nl/dataset/gebiedsbedrijven-netbeheers-elektriciteit--gas-en-water). Republiq only has requested energy consumption data from the three largest network operators (Enexis, Liander and Stedin). Together they provide approximately 95% of the buildings with energy data. For buildings that fall in an area of another operator Republiq has made an estimate of the energy consumption. 2. The request for energy consumption data was at the level of unique addresses. Republiq therefore has grouped the data by zip code, house number, and house number addition. The number of unique addresses has been counted per institution. 3. Republiq has made clusters of at least 15 addresses. Where possible, they have created multiple clusters per institution. 4. Republiq has created joint clusters for healthcare institutions with fewer than 15 unique addresses. They have calculated the average surface area of the buildings per institution. Then they have created clusters of at least 15 buildings, in which the buildings of healthcare institutions with a comparable surface area ended up in the same cluster. *Processing consumption data* From the network operators Republiq has received per cluster the standard annual energy consumption (in Dutch standaard jaarverbruik (SJV)). They have divided this by the average surface of buildings from a cluster to obtain energy consumption data per m^2. The energy consumption data per m^2 has been assigned to the individual buildings belonging to a cluster. Next, Republiq has performed a check on outliers. When the electricity consumption of an establishment was higher than 200 kWh per m^2 or lower than 5 kWh per m^2, they have marked this as unreliable and have replaced this value with an estimated value. When the gas consumption of an establishment has been higher than 100 m^3 per m^2, they have marked this as unreliable and have replaced this value with an estimated value. *Estimate missing consumption data* Republiq has used the actual consumption data to calculate an average value for electricity usage and gas usage. This has been done per year for different classes of building years and surfaces. For the buildings with missing consumption data an estimation for gas and electricity has been assigned on the basis of the building period and surface class. *Overview per healthcare institution* For each healthcare institution Republiq has grouped the following measures: - Total electricity consumption (in kWh) - Total gas consumption (in m^3) The total electricity consumption per healthcare institution has been converted into kg CO_2 equivalent using the emission factor for electricity from unknown sources (0.405 kg CO_2-eq / kWh) and natural gas use (1.785 kg CO_2-eq /m^3). The amount of GHG emissions has been divided by the factor 1000, to result in ton GHG emissions for scope 1 and 2.

	Scope 3 Scope 3 should cover all other indirect emissions (not included in Scope 2). In the current report, scope 3 is incomplete and only emissions from employee commuting has been included in the calculations. From the datasets of the Ministry of Health, Welfare and Sport available for 2021 the number of employees in FTE were used for the calculations. According to the average distance a person travels per year by bus/tram/metro, train, bike, car as driver, car as passenger, foot, and other mode of transport (7 travel types), the percentage of travelling per travel type has been calculated. For every type of transport (except for other mode of transport), the number of employees in fulltime-equivalent (FTE) has been multiplied by the average distance a person travels per year for work and by percentage of transport type to come to the number of kilometer travelled per year with the travel types (except for other mode of transport). Afterwards, the kilometers per year per travel type has been multiplied by the corresponding emission factor resulting in kilogram GHG for each travel type. For car as driver and car as passenger the total kilometer travelled per year has been first divided by 1.39 (Conversion factor for passenger kilometers to vehicle kilometers (the average occupancy rate of vehicles is 1.39 per car) (www.CO2emissiefactoren.nl, 2021) and then this has been multiplied by the corresponding emission factor resulting in kilogram GHG. The kilogram GHG for each travel type has been added up to result in scope 3. The amount of GHG emissions has been divided by the factor 1000, to result in ton GHG emissions for scope 3. The following emission factors have been used: - Bus /Tram/Metro: 0.052 kg CO_2-eq / km for the year 2020 and 2021; - Train (unknown type): 0.005 kg CO_2-eq / km for the year 2020 and 0.002 kg CO_2-eq / km for the year 2021; - Car (average type, weight class medium heavy, fuel mix 79.3% petrol, 15.8% diesel, 1.5% lpg, 3.0% petrol-hybrid, 0.2% electric): 0.163 kg CO_2-eq / km for the year 2020 and 2021.
Limitations	It is not possible to assign actual consumption data to every building. For the buildings where this is not possible, Republiq has made an estimation of the consumption data. Ideally, emissions from other sources in the primary process of healthcare organizations should be taken into account as well. For example emissions of other gasses from ambulances and trauma helicopters used for medical procedures. Unfortunately, the data provided on these issues is insufficient to be able to make reliable estimations. Therefore, only natural gas use is taken into consideration under scope 1. Scope 3 should cover all other indirect emissions (not included in Scope 2). Only a small part of scope 3 is covered for the healthcare institutions. The part that is covered is based on proxy data and therefore data quality is poor. In the calculation of scope 3, the number of employees (in FTE) has a major impact on the results. The used mobility data from CBS is based on people that work 30 hours per week or more. It was not possible to choose a working week of 40 hours. So this selection of people is larger than the group of people that works between 36 and 40 hours per week (1 FTE). These mentioned factors have an effect on the data quality.
SDG	SDG 13
Data quality estimate	*Scope 1 and 2: data quality score 3.* The GHG emissions are based as much as possible on actual building energy consumption. However, due to privacy reasons it is not allowed to provide energy consumption data for individual buildings. It is allowed to provide these for cluster of buildings (10 to 15 buildings). Where possible, clusters consisted only of buildings of the same owner. If this was not possible, buildings of different

	owners have been clustered. For the buildings with missing consumption data an estimation for gas and electricity has been assigned on the basis of the building period and surface class. Because the actual building energy consumption had to be clustered and in some cases for the buildings with missing data an estimation was made the data quality score is 3. *Scope 3: data quality score 5.* The GHG emissions are calculated based on average vehicle information. Vehicle make, model, and type are unknown and distance traveled is based on local or regional statistical data. Therefore, data quality score is 5. See option 3b in Table 5-10 on page 94 of the report The global GHG accounting & reporting standard for the financial industry.[13]

Score	Quality requirement
1	Audited data or actual primary data
2	Non-audited data, or other primary data
3	Average data that is peer/(sub)sector-specific
4	Proxy data on the basis of region or country
5	Estimated data with very limited support

Topic	Description
Data	Energy consumption healthcare institutions
Data files	Original files (datafiles received from Republiq): 3.Energieverbruik zorginstellingen 2020.xlsx 4.Energieverbruik zorginstellingen 2021.xlsx Edited files: 20220926 toewerk bestand aardgasverbruik en elektriciteitsverbruik naar totaal bestand voor SQL.xlsx
Data Source	Republiq
Year	2020-2021
Last update	Not applicable
Date of download	21-9-2022
Link to webpage	Not applicable
Filters used to obtain the datafile	Not applicable
Internal location	Original files: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Ruwe data Edited file: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Voorbewerking data
Data quality estimate	3 The GHG emissions are based as much as possible on actual building energy consumption. However, due to privacy reasons it is not allowed to provide energy consumption data for individual buildings. It is allowed to provide these for cluster of buildings (10 to 15 buildings). Where possible, clusters consisted only of buildings of the same owner. If this was not possible, buildings of different owners have been clustered. For the buildings with missing consumption data an estimation for gas and electricity has been assigned on the basis of the building period and surface class. Because the actual building energy consumption had to be clustered and in some cases for the buildings with missing data an estimation was made the data quality score is 3.
Unit of measurement	Natural gas use in m^3 Electricity use in kWh

[13] https://carbonaccountingfinancials.com/standard. PCAF (2020). The Global GHG Accounting and Reporting Standard for the Financial Industry. First edition.

Selections	Republiq has delivered the data at the level of the healthcare institutions so no selection was necessary
Data transformation	Republiq delivered the data at the level of the healthcare institutions so no transformation was necessary
Data missing	For the years 2018, 2020, and 2021 the following number of health care institutions are missing in the final results of GHG emissions: 2018: 93 from the 399 health care institutions in the loan portfolio; 2020: 82 from the 389 health care institutions in the loan portfolio; 2021: 70 from the 375 health care institutions in the loan portfolio. This can be due to missing energy data or total balance sheet data.
Print screens	In folder: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen \Printscreens\20220921 downloaden van Republiq data zorginstellingen.png

Topic	Description
Data	Concern codes and KvK data per healthcare institution
Data files	Original files: DigiMV2021_dataset_20220715_1600.xlsx DigiMV2020_prd_202111213_1200.xlsx DigiMV2019_20210816_concernbreed_deel1.xlsx DigiMV2018_20210816_concernbreed_deel1.xlsx x7conc_total_VOLLEDIG.xlsx. Edited file: 20220725 concerncodes en kvknummers
Data Source	CIBG; Ministerie van Volksgezondheid Welzijn en Sport
Year	2017 t/m 2021
Last update	Unknown
Date of download	Several dates in July 2022
Link to webpage	https://www.jaarverantwoordingzorg.nl/gegevens-bekijken/verantwoordingsgegevens-per-verslagjaar-datasets
Filters used to obtain the datafile	Not applicable
Internal location	Original datafiles: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Ruwe data Edited datafile: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Voorbewerking data
Data quality estimate	2 Data is acquired by CIBG from individual annual reports of healthcare organizations. The source data in the annual report is audited, the composite dataset of CIBG is not.
Unit of measurement	Not applicable
Selections	Not applicable
Data transformation	Not applicable
Data missing	Not applicable
Print screens	In folder: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Printscreens\Download locatie datasets ministerie Volksgezondheid, Welzijn en Sport.png

Topic	Description
Data	Villages and cities overview in the Netherlands
Data file	Woonplaatsen _in_Nederland_2021_25072022_103720.xlsx
Data Source	CBS, Statline
Year	2021
Last update	1-4-2021

Date of download	25-7-2022
Link to webpage	https://opendata.cbs.nl/statline/#/CBS/nl/dataset/84992NED/table
Filters used to obtain the datafile	Woonplaatsen: Woonplaatsen op alfabet Onderwerp: gemeentenaam, gemeentecode, provincienaam, provinciecode
Internal location	Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Ruwe data
Data quality estimate	1
Unit of measurement	Not applicable
Selections	Not applicable
Data transformation	Not applicable
Data missing	Not applicable
Print screens	In folder: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Printscreens\woonplaatsen nederland 2021 v1.png t/m woonplaatsen nederland 2021 v10.png

Topic	Description
Data	Average mobility per person per year (part 1)
Data file	Original file: Mobiliteit_per_persoon_persoonskenmerken_en-regio_s_11072022_133129.xlsx Sheet: Mobiliteit_per_persoon_persoo Edited file: 20220711 totaal afstanden per provincie.xlsx
Data Source	CBS, Statline
Year	2018-2021
Last update	8-7-2022
Date of download	11-7-2022
Link to webpage	https://opendata.cbs.nl/statline/#/CBS/nl/dataset/84713NED/table?ts=1603811773192
Filters used to obtain the datafile	Populatie: 12 jaar of ouder Marge: waarde Regio's: provincies Reismotieven: van en naar het werk & zakelijk, beroepsmatig Persoonskenmerken: participatie: werkzaam 30 uur pw of meer Geslacht: totaal mannen en vrouwen Onderwerp: gemiddeld per persoon per jaar / afstand Perioden: 2018-2021
Internal location	Original file: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Ruwe data Edited file: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Voorbewerking data
Data quality estimate	3 With sample surveys, such as the ODiN, information is collected from only part of the population. The estimated results based on the sample data are generally not equal to the actual values and therefore have margins of inaccuracy. For more information, see https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/korte-onderzoeksbeschrijvingen/onderweg-in-nederland
Unit of measurement	km
Selections	Not applicable
Data transformation	Some data was missing. See for the transformation Data missing
Data missing	For some provinces data was missing. If possible the missing data was filled with data from another year for that province. If data from another year was not available the missing values were filled with data from a larger region of the

	Netherlands from data file Mobiliteit_per_persoon_persoonskenmerken_motieven_en_regio_s _11072022_133807.xlsx E.g.: the data for province of Zeeland was missing, therefore data of West-Nederland was used. These adjustments are shown in the data file: Zorginstellingen\Data \Data bestanden\20220711 totaal afstanden per provincie.xlsx sheet “invullen van missende data” and “data per provincie”.
Print screens	In folder: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Printscreens\20220711 mobiliteit_per_persoon_afstand_perjaar_provincie.png

Topic	Description
Data	Average mobility per person per year (part 2)
Data file	Original file: Mobiliteit_per_persoon_persoonskenmerken_motieven_en_regio_s _11072022_133807.xlsx Sheet: Mobiliteit_per_persoon_persoo Edited file: 20220711 totaal afstanden per provincie.xlsx
Data Source	CBS, Statline
Year	2018-2021
Last update	8-7-2022
Date of download	11-7-2022
Link to webpage	https://opendata.cbs.nl/statline/#/CBS/nl/dataset/84713NED/ table?ts=1603811773192
Filters used to obtain the datafile	Populatie: 12 jaar of ouder Marge: waarde Regio’s: landsdelen: Oost-Nederland en West Nederland Reismotieven: van en naar het werk & zakelijk, beroepsmatig Persoonskenmerken: participatie: werkzaam 30 uur pw of meer Geslacht: totaal mannen en vrouwen Onderwerp: gemiddeld per persoon per jaar / afstand Perioden: 2018-2021
Internal location	Original file: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Ruwe data Edited file: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Voorbewerking data
Data quality estimate	3 With sample surveys, such as the ODiN, information is collected from only part of the population. The estimated results based on the sample data are generally not equal to the actual values and therefore have margins of inaccuracy. For more information, see https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/korte-onderzoeksbeschrijvingen/onderweg-in-nederland
Unit of measurement	km
Selections	Not applicable
Data transformation	Not applicable
Data missing	Data in this file was used to fill up the missing values in data file: Mobiliteit_per_persoon_persoonskenmerken_en-regio_s _11072022_133129.xlsx Sheet: Mobiliteit_per_persoon_persoo
Print screens	In folder: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Printscreens\20220711 mobiliteit_per_persoon_afstand_perjaar_landsdelen.png

Topic	Description
Data	Transportation methods used per person per province
Data file	Mobiliteit_per_persoon_persoonskenmerken_vervoerwijzen_en_regio_s _18072022_120958.xlsx Sheet: Mobiliteit_per_persoon_persoo
Data Source	CBS, Statline
Year	2018-2021
Last update	8-7-2022
Date of download	18-7-2022
Link to webpage	https://opendata.cbs.nl/statline/#/CBS/nl/dataset/84709NED/table?ts=1603813016233
Filters used to obtain the datafile	Populatie: 12 jaar of ouder Geslacht: totaal mannen en vrouwen Persoonskenmerken: werkzaam 30 uur pw of meer Vervoerswijzen: totaal / personenauto (bestuurder) / personenauto (passagier) / trein / bus-tram-metro / fiets / lopen / overige vervoerswijze Onderwerp: gemiddeld per persoon per jaar / afstand Periode: 2018 -2021 Marge: waarde Regio's: totalen / landsdelen / provincies / overig
Internal location	Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Ruwe data
Data quality estimate	3 With sample surveys, such as the ODiN, information is collected from only part of the population. The estimated results based on the sample data are generally not equal to the actual values and therefore have margins of inaccuracy. For more information, see https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/korte-onderzoeksbeschrijvingen/onderweg-in-nederland
Unit of measurement	km
Selections	Not applicable
Data transformation	In the sheet "Mobiliteit_per_persoon_persoo" some data was missing for provinces. In sheet "data gebruikt voor berekeningen" the missing values for provinces was filled with data from a larger area than provinces or the value for the Netherlands.
Data missing	For the missing values the lowest possible available geographic scale level was used. E.g.: if the data for the province of Groningen is missing, than the data for Noord-Nederland (LD) was used. If that data was not available too, the data for the whole Netherlands was used. The transformed data is in sheet: "Data gebruikt voor berekeningen".
Print screens	In folder: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Printscreens\20220718 mobiliteit vervoerswijzen afstand per persoon per jaar v1.png t/m v3.png

Topic	Description
Data	FTE per healthcare institution
Data files	Original files: x7conc_total_VOLLEDIG.xlsx sheet: x7conc_total_VOLLEDIG_2 DigiMV2018_20210816_concernbreed_deel2.xlsx sheet: x8conc_total_24 DigiMV2019_20210816_concernbreed_deel2.ods sheet: x9conc_total_24 DigiMV2020_prd_202111213_1200.xlsx sheet: rowdata DigiMV2021_dataset_20220715_1600.xlsx sheet: rowdata Edited datafiles:

	20220707 FTE zorginstellingen 2017.xlsx 20220718 FTE zorginstellingen 2018.xlsx 20220711 FTE zorginstellingen 2019.xlsx 20220707 FTE zorginstellingen 2020.xlsx 20220729 FTE zorginstellingen 2021.xlsx
Data Source	CIBG; Ministerie van Volksgezondheid Welzijn en Sport
Year	2017-2021
Last update	Unknown
Date of download	Several dates in July 2022
Link to webpage	https://www.jaarverantwoordingzorg.nl/gegevens-bekijken/verantwoordingsgegevens-per-verslagjaar-datasets
Filters used to obtain the datafile	Not applicable
Internal location	Original files: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Ruwe data Edited files: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Voorbewerking data
Data quality estimate	2 Data is acquired by CIBG from individual annual reports of healthcare organizations. The source data in the annual report is audited, the composite dataset of CIBG is not.
Unit of measurement	FTE
Selections	Not applicable
Data transformation	Sum of personnel in paid employment, self-employed persons and hired staff.
Data missing	Not applicable
Print screens	In folder: Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Printscreens\Download locatie datasets ministerie Volksgezondheid, Welzijn en Sport.png

List of the calculation sheets	Location
20220729 zorginstellingen.csv Emissiefactoren_totaaloverzicht.csv Energieverbruik zorginstellingen.csv FTE zorginstellingen met jaartallen.csv Jaarkilometers per persoon met jaartallen.csv Lening BNG Bank met jaartallen.csv Voertuiginformatie algemeen met jaartallen.csv Woonplaatsen nederland 2021.csv	Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Brondata voor SQL
PCAF_zorg_BNG	Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Database en scripts SQL
PCAF_zorg_def_script data republiq BNG Bank 2020.sql PCAF_zorg_def_script data republiq BNG Bank 2021.sql	Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Database en scripts SQL
BNG 2020 zorginstellingen CO2 voetafdruk per instelling.csv BNG 2021 zorginstellingen CO2 voetafdruk per instelling.csv	Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen\Bestanden uit SQL
20221025 CO2 emissies zorginstellingen 0-meting en 1-meting.xlsx	Klantgroepen\Zorginstellingen\SDG_11.2_CO2emissies zorginstellingen

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About Het PON & Telos

Improving social decision-making

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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