Climate account 2020

NIRAS A/S

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1 Executive summary

This climate account reports the Scope 1 and 2 emissions for the Danish consultancy company NIRAS A/S Denmark. NIRAS is an international multidisciplinary consultancy company headquartered in Denmark with activities in countries across the world. The aim of the climate account is to estimate the greenhouse gas (GHG) emissions caused by NIRAS' activities in Denmark in 2020. NIRAS A/S climate account 2020 is conducted following the standards and methods of the Greenhouse Gas Protocol[1].

The total scope 1 and 2 emissions from NIRAS' Danish activities in 2020 are 1.013 ton CO_2 equivalents (CO_2e). Figure 1.1 shows the total emissions distributed on scope 1 and 2 and the total emissions distributed on the included activities/categories: electricity, district heating, natural gas and company cars.

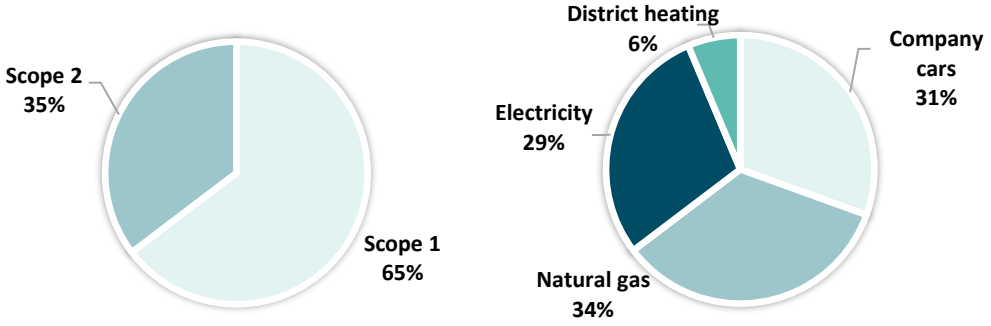

Figure 1.1 Total emissions for scope 1 and scope 2 (left) and total emissions for included activities (right).

The climate accounts for NIRAS A/S Denmark has undergone significant revisions and updates during the preparation of the 2020 report. Consequently the year 2018 and 2019 have been recalculated and included in this years' report. NIRAS' Scope 3 emissions climate account is also undergoing revisions and updates and a full Scope 1, 2 and 3 climate account for 2018 – 2021 will be reported with the 2021 NIRAS A/S Denmark climate account.

NIRAS publishes annual climate accounts, but due to delays in data from external suppliers, the climate accounts are a year behind the financial reports.

The development of Scope 1 and 2 emissions from 2018 to 2020 is shown in Table 1.1.

Table 1.1 Development of emissions from 2018-2020 (Year 2018 and 2019 recalculated in 2020) with a location based approach.

Ton CO2e				
	2018	2019	2020	% Development 2019-2020
Scope 1	530	754	655	-13%
Scope 2	577	504	358	-29%
Total	1.107	1.257	1.013	-19%

After an increase in emissions from 2018 to 2019, which was mainly due to a significant increase in natural gas consumption, emissions have been reduced significantly from 2019 to 2020.

[1] NIRAS' Scope 1 and 2 emissions are reported following The Greenhouse Gas Protocol *A Corporate Accounting and Reporting Standard*, revised edition and GHG Protocol *Scope 2 Guidance*.

2 Introduction

This climate account reports the Scope 1 and 2 emissions for the Danish consultancy company NIRAS A/S Denmark. NIRAS is an international multidisciplinary consultancy company headquartered in Denmark with activities in countries across the world.

The aim of the climate account is to estimate the greenhouse gas (GHG) emissions caused by NIRAS activities, in Denmark in 2020. NIRAS A/S climate account 2020 is conducted following the standards and methods of the Greenhouse Gas Protocol[2].

2.1 Reporting period

This climate account covers NIRAS' activities in Denmark in the period January to December 2020. Emissions for 2018 and 2019 have been recalculated and are also reported.

2.2 Organizational boundaries and method

This climate account includes the Danish part of NIRAS A/S which constitutes more than 70 % of its business. The operational boundary covers emissions caused by NIRAS' Danish operations in Scope 1 and 2. For this inventory, all internal activities are included. In this context, external activities refer to those conducted in projects in which NIRAS act as consultant for.

All Danish offices are included in NIRAS' Climate Account 2020, which are:

- Allerød
- Aalborg
- Aarhus
- Esbjerg
- Kolding
- Odense
- Nykøbing Falster
- Holbæk
- Frederikshavn
- Holstebro
- København
- Næstved

This climate account includes all scope 1 and 2 emissions, from the following activities:

Scope 1

- Natural gas for heating
- Use of company cars

Scope 2

- Electricity
- District heating

The climate account does not include biogenic CO_2-emissions. The climate account is reported in CO2-equivalents (CO2e) and does not report separately on the six individual greenhouse gases.

2.3 Re-calculation of former years

NIRAS has conducted climate accounts from the year 2013. 2018 was the first year that the climate account included a full scope 3 inventory. For the climate account of 2020, the following changes have been made which require a recalculation of former years' climate account results:

- Updated data model and structure
- Updated sources of emissions factors for electricity, natural gas and fuels.
- Updated Local emissions factors for district heating suppliers

[2] NIRAS' Scope 1 og 2 are reported following The Greenhouse Gas Protocol A Corporate Accounting and Reporting Standard, revised edition and GHG Protocol Scope 2 Guidance.

The recalculation has also led to some minor corrections in the energy consumption data by revisiting previous years' raw data in the form of the original bills and inventories from suppliers.

The climate accounts of 2018 and 2019 are recalculated and the 2018 results act as baseline year going forward. This means that all years included to track emissions are calculated using the same methods.

3 Results 2018 - 2020

This section presents the results of the climate account 2020 and development of recalculated emissions from former years.

3.1 Total Scope 1 and 2 emissions 2020 location based approach

The total emissions from NIRAS DK's scope 1 and 2 emissions result in 1.013 Ton CO_2e as shown in Table 3.1 and Figure 3.1.

Table 3.1 Total emissions 2020.

2020 - Location based		
	Ton CO_2e	**%**
Scope 1	**655**	**65%**
Company cars	309	31%
Natural gas	346	34%
Scope 2	**358**	**35%**
Electricity	294	29%
District heating	64	6%
Total	**1.013**	**100%**

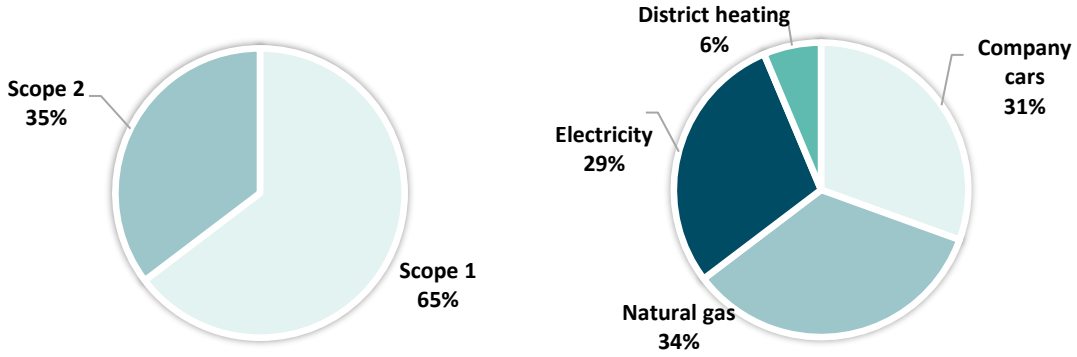

Figure 3.1 Total emissions 2020, illustrated as distribution between Scope 1 and 2 (left) and consumption (right).

3.2 Total Scope 1 and 2 emissions 2020 Market based approach

Table 3.2 present the total emissions calculated by a market based approach. The main difference from the location based method, is that the market based approach takes into account the purchase and sale of renewable energy based electricity based on certificates in the marked. The approach is further explained in the method section.

Table 3.2 Total market based emissions 2020.

2020 - Market based		
	Ton CO_2e	**%**
Scope 1	655	41%
Scope 2	952	59%
Total	**1.607**	**100%**

3.3 Tracking Scope 1 and 2 emissions 2018-2020

The emissions for the years 2018 and 2019 have been recalculated in this 2020 climate account. The results are shown from a location based approach in Table 3.3 and Figure 3.2 below, which also shows the percentual development from 2019 to 2020.

Table 3.3 Development of emissions from 2018-2020 (Year 2018 and 2019 recalculated in 2020) with a location based approach.

	Ton CO2e			
	2018	**2019**	**2020**	**% Development 2019-2020**
Scope 1	**530**	**754**	**655**	**-13%**
Company cars	276	332	309	-7%
Natural gas	254	422	346	-18%
Scope 2	**577**	**504**	**358**	**-29%**
Electricity	470	408	294	-28%
District heating	108	96	64	-33%
Total	**1.107**	**1.257**	**1.013**	**-19%**

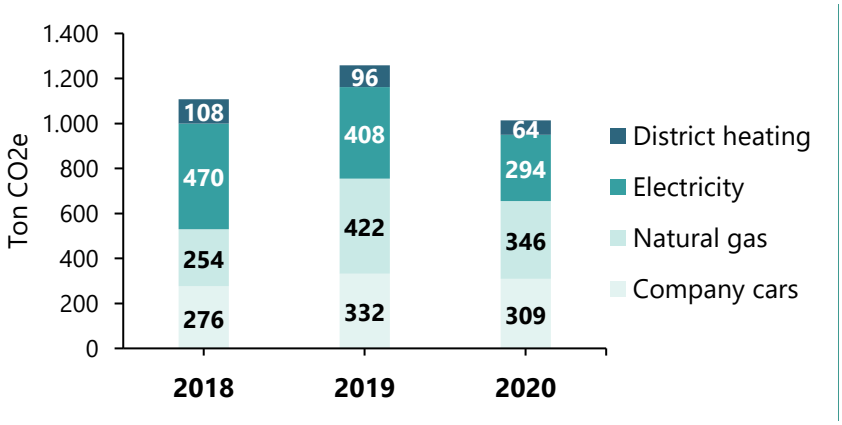

Figure 3.2 Development of emissions from 2018-2020 (Year 2018 and 2019 recalculated in 2020). Scope 1 covers the two bottom categories and scope 2 covers the two upper categories.

After an increase in emissions from 2018 to 2019, the results show a significant reduction in emissions from 2019 to 2020. Emissions from all sources are reduced in the period.

The results are shown from a market based approach in Table 3.4 below, which also shows the percentual development from 2019 to 2020.

Table 3.4 Development of emissions from 2018-2020 (Year 2018 and 2019 recalculated in 2020) with a market based approach.

Ton CO2e – Market based				
	2018	**2019**	**2020**	**% Development 2019-2020**
Scope 1	503	754	655	-13%
Scope 2	1.015	1.115	952	-15%
Total	**1.544**	**1.869**	**1.607**	**-14%**

From a market based approach the emissions have also been reduced significantly from 2019 to 2020, although to a lesser extend than from a location based approach.

4 Method

The following section briefly describes the method and data used to establish NIRAS A/S Denmark's 2021 climate account.

NIRAS' climate account follows the Greenhouse Gas Protocol (GHG Protocol), which is an international recognized standard for the calculation of climate accounts[3].

The emissions are calculated in CO_2-equivalents (CO_2e).

Six greenhouse gasses are addresses in the GHG protocol, which are calculated as CO_2e, based on the global warming potential (GWP values) for the individual gasses. Greenhouse gasses has various effects and lifespan in the atmosphere and thereby affect the climate differently.

This climate account includes emissions from the following greenhouse gases and their GWP value:

- Carbon dioxide (CO2): 1 kgCO_2e/ kg
- Methane (CH4): 28 kg CO_2e/ kg
- Nitrous oxide (N2O): 265 kg CO_2e/ kg

Additional greenhouse gasses (SF6, HFCs, PFCs) are not included and their contribution is considered neglectable.

4.1 Location based and market based method

When applying the location based method for calculating emissions, the consumed electricity is modelled as a average composition of the electricity grid and calculated from an emissions factor based on the average amount of renewable and non-renewable energy.

When applying the market based method, the trading of renewable energy is taken into account and affects the applied emissions factor. As illustrated in Figure 4.1, an amount of the greener electricity is purchased as green certificates on the market (a). These are therefore not considered a part of the average electricity grid for companies and organization that do not contribute to the trading of green certificate (b) and therefore the emissions factor applied (when not trading) is based on a higher share of non-renewable energy (c) and thereby the same amount of electricity emits a higher amount of emissions.

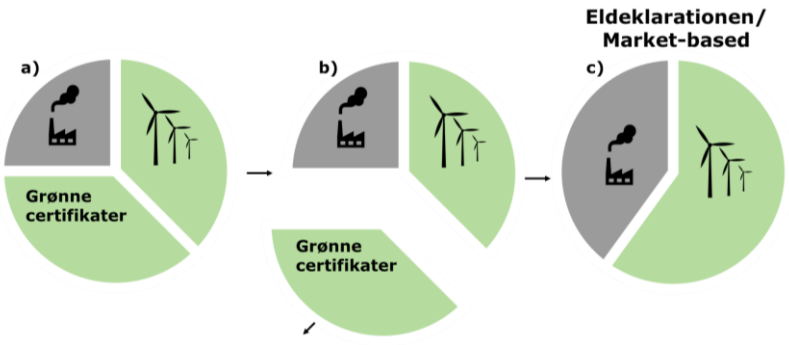

Figure 4.1 Illustration of the market based method.

[3] NIRAS' Scope 1 og 2 are reported following The Greenhouse Gas Protocol A Corporate Accounting and Reporting Standard, revised edition and GHG Protocol Scope 2 Guidance.

4.2 Data

The energy consumptions included in the accounts are based on direct measurements, invoices from landlords and in a few cases estimates. These estimates were used when no reliable data was available and are based on the average consumption per m^2 in the given year for district heating and an average price for electricity of 2 DKK per kWh for electricity.

Transportation figures are based on data in NIRAS' ERP that covers gasoline and diesel consumption in all company owned or leased cars.

Emissions factors

2018-2020

	Unit	2018	2019	2020	Data Source
Company cars					Calculated from Energistyrelsens Energistatistik, and emissionsfactors from UK Government GHG Conversion Factors for Company Reporting (DEFRA, 2020) for bioethanol, methane og N20.
Petrol	Kg CO2e/Liter	2,291	2,291	2,171	
Diesel	Kg CO2e/Liter	2,502	2,502	2,595	
Natural gas	Kg CO2e/m3	2,098	1,936	1,633	Calculated from: Energistatistik, Energistyrelsen and UK Government GHG Conversion Factors for Company Reporting (DEFRA 2018).
Electricity					
Location based	Kg CO2e/kWh	0,202	0,149	0,125	Miljødeklaration
Market based	Kg CO2e/kWh	0,390	0,373	0,378	Eldeklaration
District heating					
ARHK Fjernvarme	Kg CO2e/kWh	0,093	0,067	0,06693	Miljødeklaration for fjernvarme, 125% metoden.
ALBK Fjernvarme	Kg CO2e/kWh	0,185	0,158	0,15758	
NFAK Fjernvarme	Kg CO2e/kWh	0,192	0,190	0,19026	
CPHO Fjernvarme	Kg CO2e/kWh	0,099	0,091	0,09114	
LOLK Fjernvarme	Kg CO2e/kWh	0,074	0,064	0,06446	
ESBK Fjernvarme	Kg CO2e/kWh	0,198	0,188	0,18835	
HOLK Fjernvarme	Kg CO2e/kWh	0,084	0,083	0,08333	
ODEK Fjernvarme	Kg CO2e/kWh	0,141	0,137	0,13686	
FRHK Fjernvarme	Kg CO2e/kWh	0,172	0,170	0,16977	
NAEO Fjernvarme	Kg CO2e/kWh	-	-	0,11805	
VIRUM Fjernvarme	Kg CO2e/kWh	0,211	-	-	

*The listed emissions factors cover scope 1 and 2 only.