



SDU climate account

2018-2023



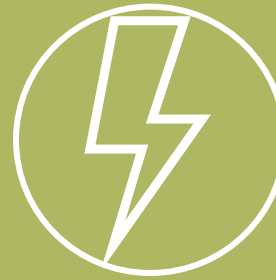
Purchase of goods and services
32.000 tons CO₂e



Work related travel
4.235 tons CO₂e



Heat
2.108 Tons CO₂e



Electricity
1.749 Tons CO₂e



Upstream transport and distribution
221 tons CO₂e



SDU car fleet
121 tons CO₂e



Waste
9 Tons CO₂e



Water and wastewater
16 Tons CO₂e

Indhold

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01 Introduction



Purpose



Method

01.01 Introduction and purpose

Climate change is a significant complex societal challenge that SDU addresses and will continue to focus on. Sustainable changes and solutions require new - and often interdisciplinary - research-based knowledge. SDU is an indispensable actor in the transition process. As an educational and research institution for 26,000 students and employing 4,000 staff (full-time equivalents) across six campuses, SDU also aims to reduce the university's own greenhouse gas emissions in line with what research deems necessary.

In line with Denmark's Climate Act, adopted by the Danish Parliament in 2020, SDU has committed to significantly reducing its own greenhouse gas emissions. In 2019, SDU set a preliminary and ambitious goal to reduce CO₂ emissions by 57% by 2030 compared to 2018, equivalent to a reduction of 70% compared to 1990. The goal of a 57% reduction by 2030 compared to 2018 applies only to the emissions that we are sure we can account for and quantify, including those that fall under scope 1 and 2 in the GHG protocol, as well as parts of scope 3. In connection with the development of the Climate Plan 2025-2027 in 2024, we will revisit our climate goals to ensure that they remain ambitious, but also realistic, specifically for each of the three scopes and as we include more emission categories in scope 3.

SDU's climate accounts are continuously evolving, incorporating new methods and data sources. The climate accounts are constantly changing and therefore cannot be directly compared to previous climate accounts, making it also difficult to compare directly with those of other institutions or companies. For example, in this year's climate accounts, the category of purchases of goods and services is included in scope 3 for the first time, resulting in a significant increase in SDU's total CO₂ emissions for all years compared to previous years' climate accounts.

At SDU, we annually prepare a climate account with the purpose of providing clarity on the current position regarding CO₂ emissions and offering a tool to identify focus areas where our efforts can make the most difference. Through dialogue and engagement from employees, students, and external partners, SDU aims to create a culture where everyone contributes to the goal of reducing CO₂ emissions. Objectives for SDU's climate account:

- Provide insights
- Goal-setting
- Implement initiatives
- Follow up on objectives
- Contribute to new knowledge

01.02 Method

SDU utilizes the methodology of the Greenhouse Gas Protocol (GHG Protocol)¹ as the foundation for its climate accounts. This is an internationally recognized and widely adopted standard for calculating CO2 emissions for businesses, organizations, and other universities. This methodology is recommended by the European Commission and the cross-sectoral cooperation within the government's climate partnerships.

In the GHG Protocol, emissions are divided into three scopes:

Scope	Type of emitter	Definition
Scope 1	Direct emissions	All direct emissions from sources owned or controlled by SDU, including cars and other vehicles, as well as emissions resulting from SDU's own activities, such as gases used for research and education.
Scope 2	Indirect emissions	Indirect emissions from electricity or district heating consumed by SDU.
Scope 3	Other indirect emissions	Other indirect emissions from SDU's activities, arising from sources that SDU does not own or control. This includes emissions related to the entire value chain – which should be understood as both 'upstream', including emissions from procurement, and 'downstream', which are emissions associated with the use and disposal of products.

According to the GHG Protocol, reporting is required for both scope 1 and scope 2, while reporting on categories in scope 3 is voluntary. The Danish climate target in the Climate Act is set for scope 1 and 2, as required by the GHG Protocol. SDU's climate target of 57% reduction also applies to scope 1 and 2, but SDU has chosen to expand it to include selected categories in scope 3, such as work-related air travel, train travel, and taxi services.

Over time, SDU will incorporate more categories into the greenhouse gas inventory as more data become available for reporting. In this year's greenhouse gas inventory, the category of purchases of goods and services has been included in scope 3 for the first time. In connection with the development of the Climate Plan 2025-2027 in 2024, SDU will reassess the climate targets for scope 1, 2, and 3 to ensure that they remain ambitious yet realistic, especially by including more emission categories in scope 3.

¹ <https://ghgprotocol.org/>

02 Results

42,238*
total tons of CO₂e

10.4
Tons of CO₂e per FTE

110
Kg of CO₂e per m²

 +6 %
since 2018

In 2023, SDU included the category of procurement of goods and services in scope 3 in the carbon footprint, resulting in a significant increase in SDU's total CO₂ emissions. Overall, SDU emitted 42,238 tons of CO₂e, representing a 6% increase since 2018.² However, when considering only the categories included in the 2022 carbon footprint, there has been an overall decrease of 45%, with a 10% decrease from 2022 to 2023 primarily due to increased use of green energy in scope 2 and a significant reduction in work-related travel activity in scope 3.



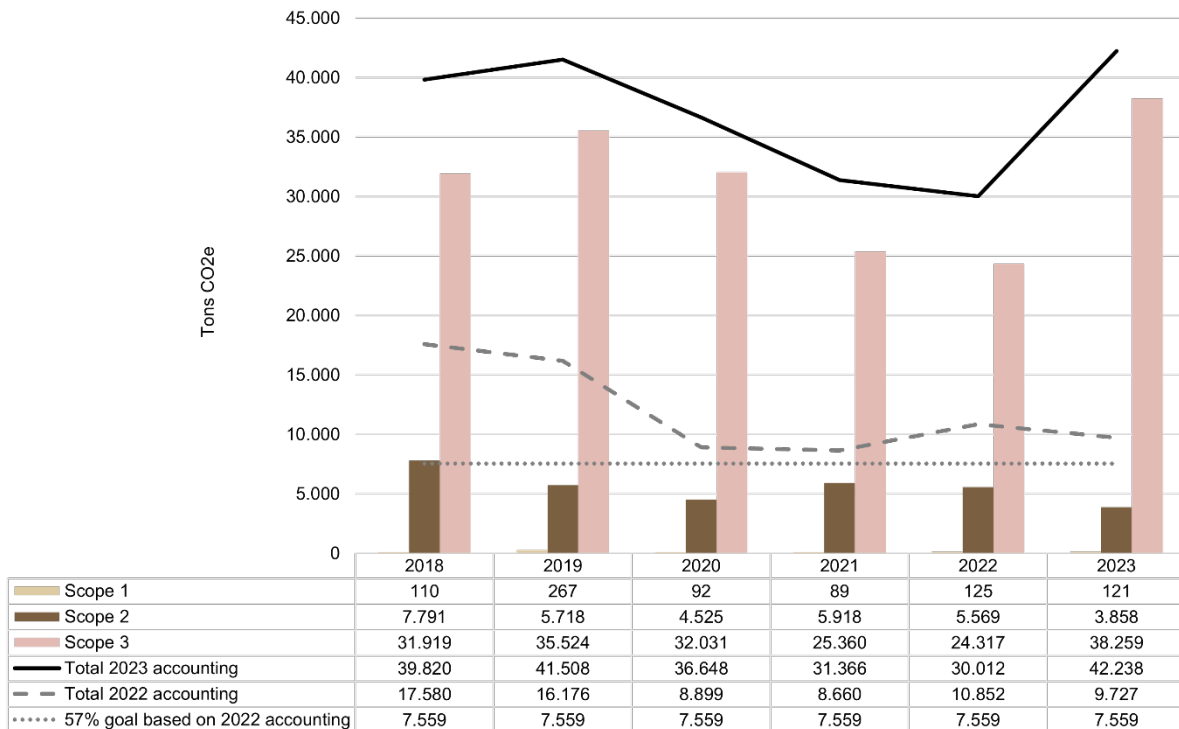
In 2023 SDU emitted
42.238
tons of CO₂e



Equivalent to the absorption
from forest of the size
of Funen and Lolland

The primary reason for the overall increase in the 2023 report is mainly related to emissions in scope 3 for the procurement of goods and services category. SDU

Emissions at SDU 2018-2023



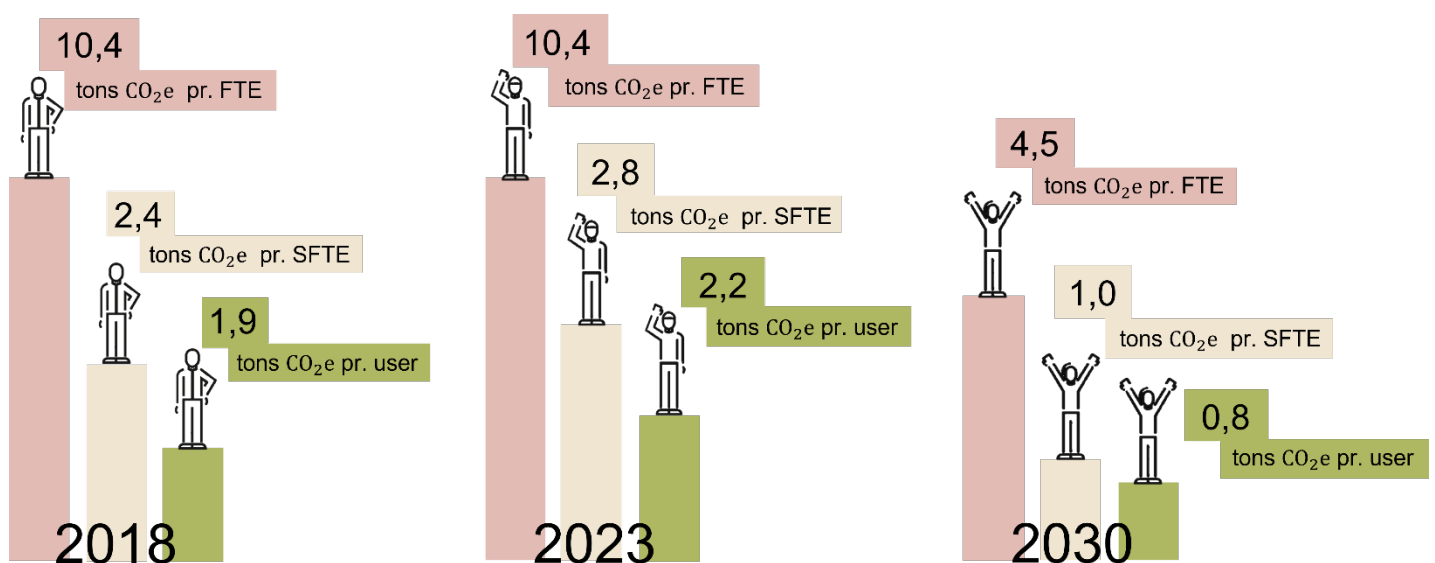
² In the climate account for 2023 SDU has included the scope 3 category 'purchase of goods and services' compared to the climate account of 2022 – read more about the development and method of SDU climate account in section 4.

*Data for water is estimated based on 2018-2022 consumption and will be updated as soon as data is available.

experienced a significant increase from 2022 to 2023, attributed to increased procurement associated with new buildings such as Nyt SUND, Mærsk 2, and LSP. Additionally, SDU has increased its focus on external research funding, which is expected to result in increased research-related procurement. It is assumed that the years 2020-2022 were all somewhat affected by the Covid-19 pandemic, resulting in exceptionally low emissions. Therefore, part of the significant increase from 2022 to 2023 can be attributed to normal operations and procurement patterns post-pandemic. This emphasizes the need for increased focus on SDU's emissions and efforts to reduce them by 2030.

SDU cannot solely focus on reducing direct emissions in scope 1 (<1%) and energy consumption in scope 2 (9%) but must also initiate significant efforts regarding scope 3. This is because scope 3 accounts for 90% of the total emissions, requiring action throughout SDU's value chain to achieve the ambitious goal. Procurement of goods and services, in particular, constitutes a significant portion, accounting for 75% of SDU's total emissions.

Focus areas such as reducing consumption, promoting circular business models, reducing the number of deliveries, investing in green initiatives, and promoting sustainable transport are of great importance here. If the goal of a 57% reduction applied to all categories in scope 1, 2, and 3 emissions, it would mean that SDU's emissions must be below 17,122 tons of CO₂e by 2030. Therefore, based on the 2023 report, SDU would need to reduce by 25,355 tons of CO₂e, equivalent to a 60% reduction compared to 2023. This would be a highly ambitious goal for the 'purchase of goods and services' category, which would have a significant impact on university operations and development. Therefore, in connection with the development of the Climate Plan 2025-2027 in 2024, SDU will reassess the climate goals for scope 1, 2, and 3 to ensure that they remain ambitious but also realistic, especially by including more emission categories in scope 3.



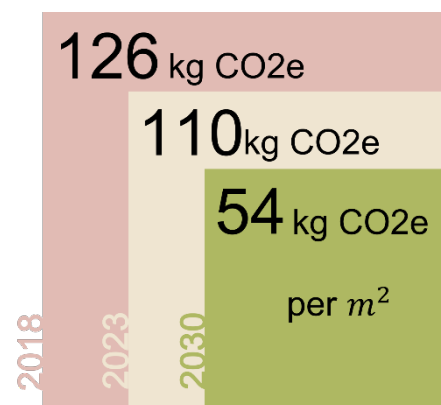
Looking at emissions relative to factors such as full-time equivalents, students, or the total number of users at SDU (student full-time equivalents + full-time equivalents) provides insight into whether emissions

are decreasing relative to overall activity at SDU. Other relevant factors may include emissions per square meter.

Emissions per full-time equivalent amount to 10.4 tons of CO₂e, equivalent to emissions per full-time employee at SDU. This figure has increased by 1% since 2018, indicating that emissions per employee have not risen as much as SDU's total emissions.

When considering emissions per user (full-time equivalents + student full-time equivalents), this provides an understanding of SDU's overall emissions, as it depends on both employees and students. Emissions per user amount to 2.2 tons of CO₂e. For SDU, this means that emissions per user increased by 16% in 2023 compared to 2018.

Regarding emissions per square meter (sqm), in 2023, it amounted to 110 kg of CO₂e per sqm, marking a 12% reduction in emissions. It is worth noting that the sqm figure is relatively high due to a period of overlapping areas at Winsløwparken and Nyt SUND, which will positively affect the relative emissions.



<1%
of total emission

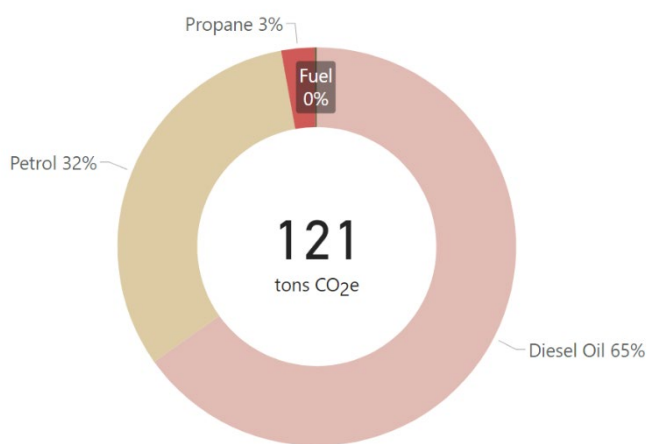
121
Tons of CO₂e

↑ +10%
since 2018

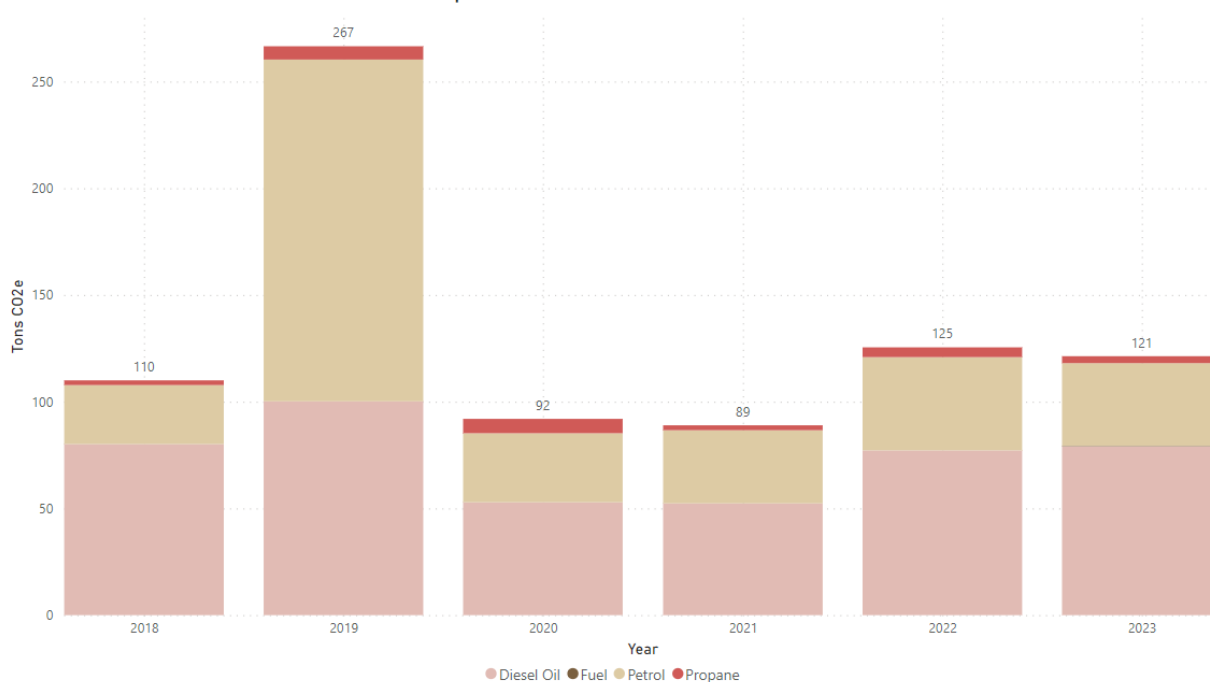
02.01 Scope 1

In 2023, emissions in scope 1 amounted to 121 tons of CO₂e, representing a 10% increase compared to 2018. However, a decrease has been observed since 2022, when emissions were 125 tons.

Scope 1 covers all direct emissions from SDU, including emissions from the organization's facilities and its own fleet of vehicles. Since SDU does not own the buildings but leases them, fuel from SDU's vehicle fleet primarily constitutes the direct emissions in scope 1. However, scope 1 accounts for less than 1% of the total result, indicating that direct emissions from SDU make up the smallest part, while indirect emissions from energy and the entire supply chain account for the majority of SDU's emissions. Despite its small share of SDU's carbon footprint, scope 1 remains important as it represents SDU's direct emissions, which the organization can directly influence. Therefore, SDU has initiated a process to transition its vehicle fleet to electric, as per section 03.01.



Scope 1 emissions at SDU 2018-2023



9%*
of total emission

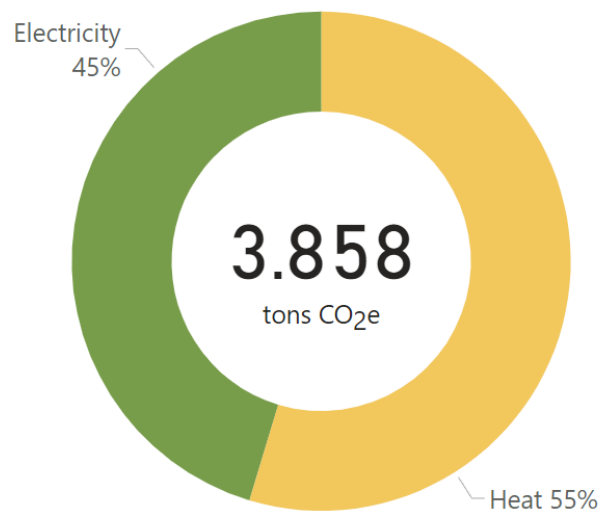
3,858*
tons of CO₂e

↓ -50%*
since 2018

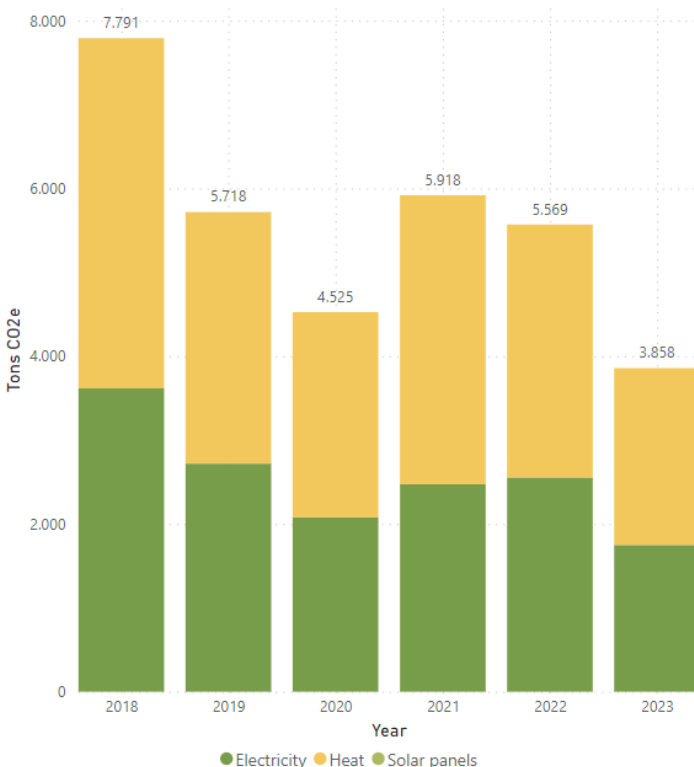
02.02 Scope 2

Emissions from energy account for 9% of SDU's total emissions in 2023. This includes both electricity and heat, constituting 45% and 55% of this scope, respectively. Emissions from electricity amounted to 1,749 tons of CO₂e, while emissions from heat amounted to 2,109 tons.

There is a significant decrease in emissions for this scope compared to the base year 2018. This is due to the average emissions per kWh dropping to 92 grams of CO₂e per kWh from 140 in 2022 and 203 in 2018. This trend has resulted in a decrease in emissions from scope 2 by 50%. It is evident that the developments in green energy in Denmark have a considerable impact on reducing emissions at SDU.



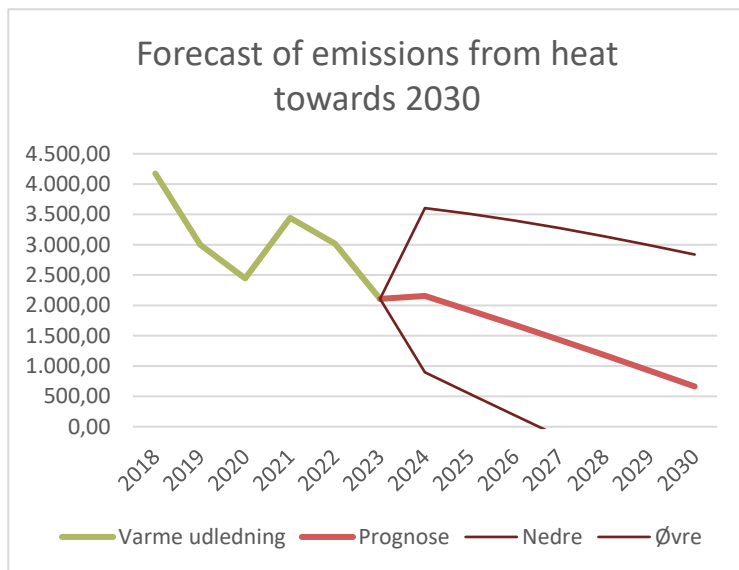
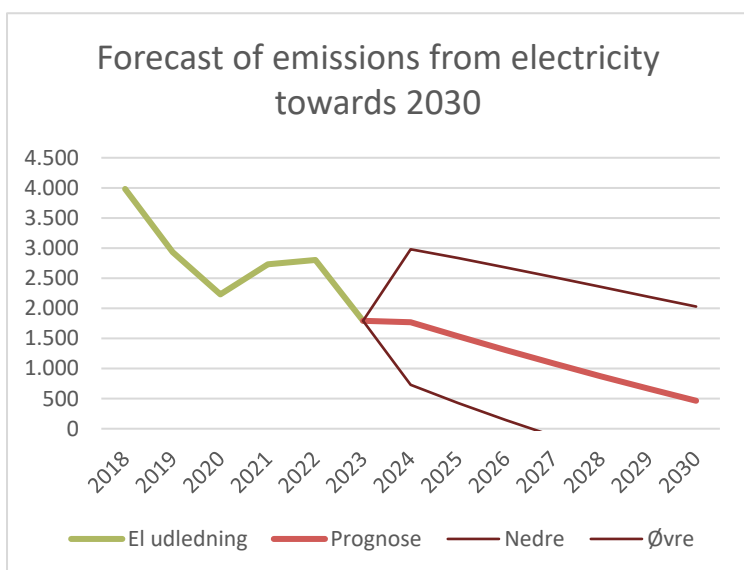
Scope 2 emissions at SDU 2018-2023



Electricity consumption includes usage from the organization's own solar energy production. However, this has zero emissions and thus cannot be seen in the emissions count. SDU produces approximately 2% of its consumption via solar panels.

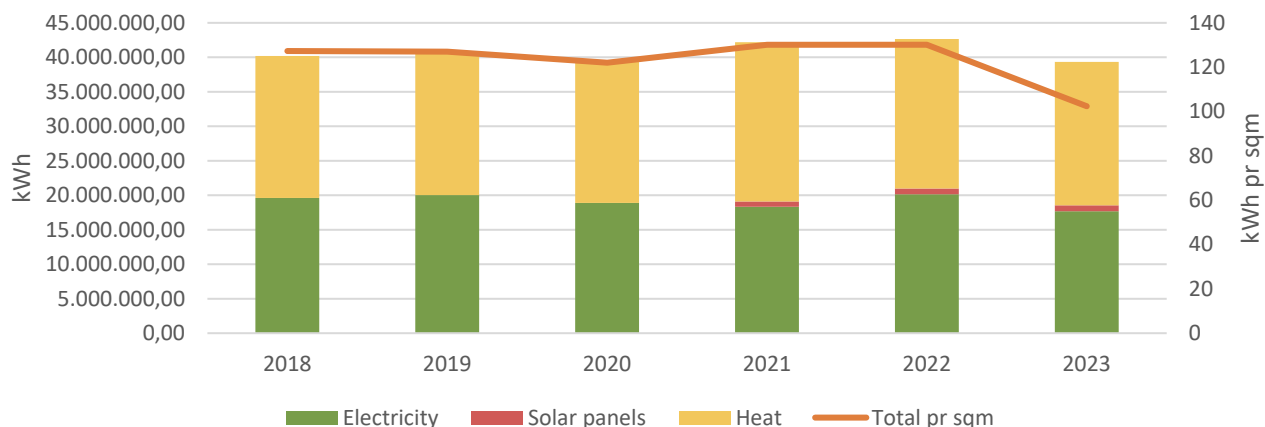
Looking at forecasts for energy consumption and CO₂e emissions per kWh, there is a clear downward trend. In Denmark, there is a goal to be climate-neutral by 2050, including the energy sector. Therefore, SDU expects a continued decrease in emissions in the energy sector. However, there will still be some emissions in scope 2 until the energy supply is 100% based on green energy. According to forecasts, electricity consumption emissions are expected to be 464 tons of CO₂e in 2030, and for heat consumption, it is expected to be 664 tons of CO₂e. Based on these projections, SDU will reduce emissions in

scope 2 by almost 90% in 2030, based on the expected developments in the Danish energy transition.



The electricity and heat consumption at SDU amount to around 20,000 kWh annually for both electricity and heat in the period 2018-2023. This makes it difficult to conclude whether there has been a decrease in consumption due to reduced electricity usage, such as turning off sockets, etc. This is also underscored by the total energy consumption per square meter, which has remained relatively stable between 120 and 130 kWh per square meter. However, in 2023, this drops to 113 kWh per square meter, primarily due to the large area where both Winsløwparken and Nyt SUND are included in the calculation due to overlap.

Consumption in kWh, and kWh pr. sqm



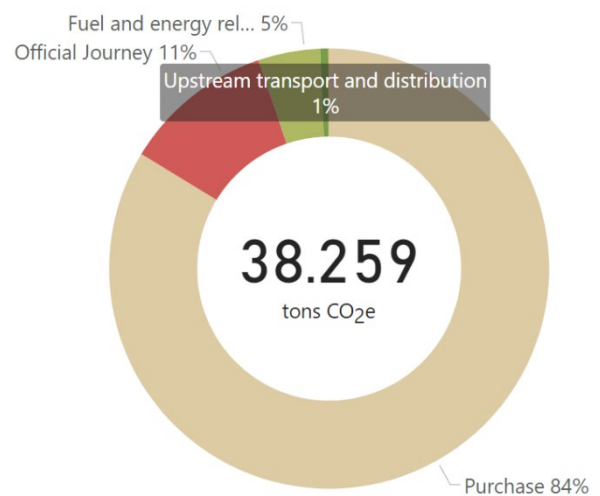
90%*
of total emission

38,259*
tons of CO₂e

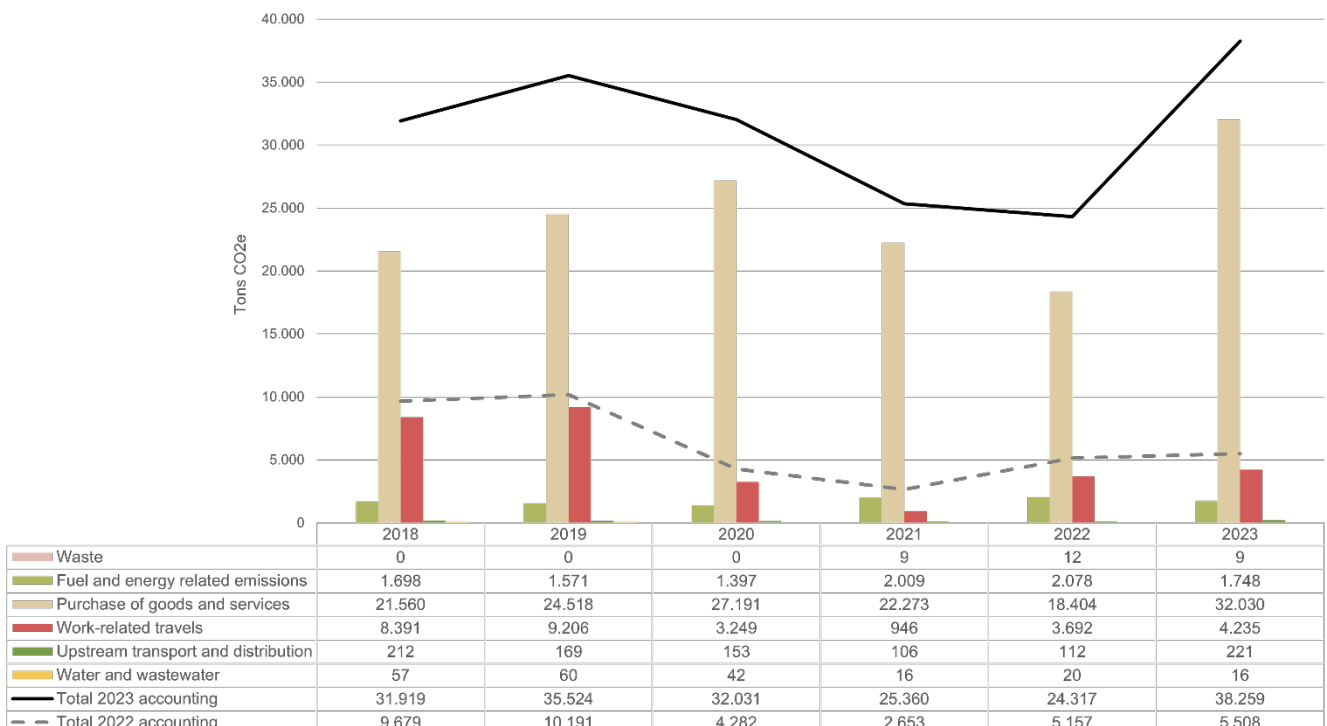
↑ +20%*
since 2018

02.03 Scope 3

A significant portion of SDU's CO₂e emissions comes from the supply chain, totaling 38,259 tons of CO₂e. This constitutes indirect CO₂e emissions and accounts for 90% of SDU's total emissions in 2023. Scope 3 includes the categories; Business Travel, Fuel- and Energy-related activities, waste, water, as well as two new categories Upstream transport and distribution and Procurement of goods and services. As a new addition, the carbon footprint for 2018-2023 has been expanded with the category "Procurement of goods and services" compared to before. This latter category constitutes the majority of emissions, around 32,000 tons of CO₂e. It thus dominates the development of emissions in scope 3. Compared to 2018, there is an increase in emissions from procurement of goods and services by 49% and since 2022 by 74%. This may be due to the university's increased focus on external research funding and the success in obtaining extra



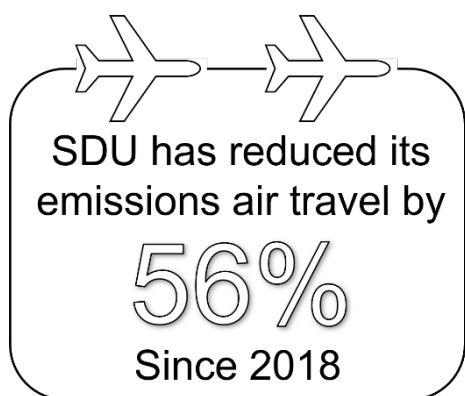
Scope 3 emissions at SDU 2018-2023



*Data of water is estimated

donations to purchase relevant and necessary equipment for research projects. This will consequently create increased purchasing power and increased CO₂e emissions. Additionally, procurement for SDU's new buildings such as Nyt SUND, LSP, and the Mærsk 2 building may be another reason for the increase in this category, as it has required extraordinary purchases of materials and equipment. It should be noted that the years 2020-2022 are partially or entirely affected by the Covid-19 pandemic, which may therefore have consequences for purchasing patterns at the university. These results support the importance of SDU focusing on minimal, smart, and circular consumption. Data indicates that laboratory equipment, IT, and furniture are some of the categories with the highest emissions.

The category of business travel emitted 4,235 tons of CO₂e in 2023. This amounts SDU's second-largest category in scope 3. Emissions from SDU employees' business travel have decreased by 50% since 2018, primarily due to a reduction in emissions from air travel, which alone has decreased by 56%.



There is an increase in the use of trains, which is considered a positive development when air travel is simultaneously limited. Emissions from trains and electric cars are lower than from flights. Since SDU naturally requires travel for research purposes, the aim is to choose the most climate-friendly travel option possible. Therefore, SDU's travel policy³ encourages employees to examine their travel routes and choose the most compatible one, considering climate, economy, and the employee's time.

This transformation is evident in the data, as emissions from employee air travel have decreased by 56% since 2018, while other forms of transportation are slightly increasing. This indicates a shift in transportation choices and a general decrease in the number of business trips. However, there is a minor increase in emissions

from air travel from 2022 to 2023 by 26%.

The category of fuel- and energy-related activities depends on consumption in scope 2. Here, SDU emits 1,748 tons of CO₂e. This category includes activities such as fuel extraction and transport, as well as distribution and transmission losses of electricity and heat. Therefore, emissions depend on kWh of heat and electricity as well as liters of fuel. We see that the Danish emission factor in scope 2 is decreasing, but the emission factor for this category does not decrease in the same way. This indicates that activities related to heating contribute to an increasing emission, as heat consumption is estimated to have increased.

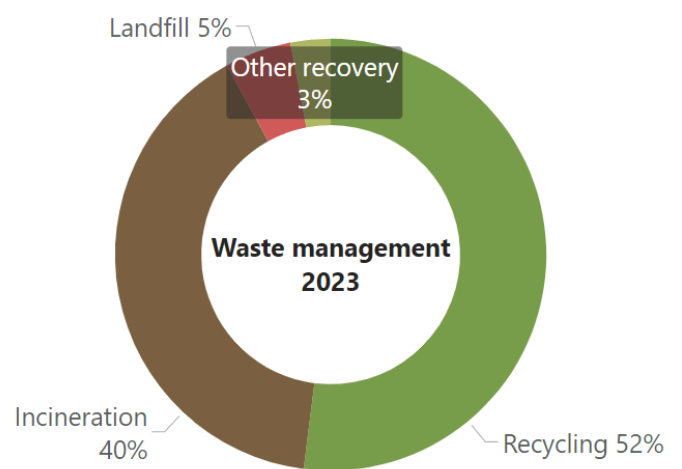
Upstream transport and distribution are a calculation from CarbonKey⁴ that accounts for emissions from the transportation of goods to SDU. The data does not cover the entire category, as SDU does not have information on everything delivered to the university, and moreover, kilometers driven are not reported. It is expected to only constitute a fraction. The emissions in this category amount to 221 tons of CO₂e,

³ SDU introduced a new travel policy January 1 2023, where climate considerations have been incorporated. [Read more here.](#)

⁴ CarbonKey is SDU's system for calculating CO₂e for some scope 3 categories.

which is an increase of 4% since 2018. However, it should be noted that there may be variations in which suppliers report this, and it is therefore seen as a very uncertain category. Water and wastewater constitute less than 1% of SDU's scope 3. Consumption is estimated due to lack of data availability and is extrapolated based on consumption from 2018 to 2022⁵. According to the estimate, SDU has managed to reduce its water consumption by 22% since 2018, resulting in a decrease in CO2e emissions from water by a staggering 72%, from 57 tons to 16 tons. Although this reduction in percentage is significant, it has only a limited impact on SDU's overall accounts.

Waste also accounts for less than 1% of scope 3 with 9 tons of CO2e. However, the focus is on sorting SDU's waste so that it can be more extensively recycled. In 2023, 52% was recycled, 40% was incinerated, 5% was sent to landfill, and 3% was used for other recovery purposes. This shows that a larger proportion of the waste was recycled compared to 2022, where the recycling rate was 47%.



⁵ The report will be updated with 2023 data when available.

03 Efforts on SDU



Vehicle fleet



Circular consumption



Research



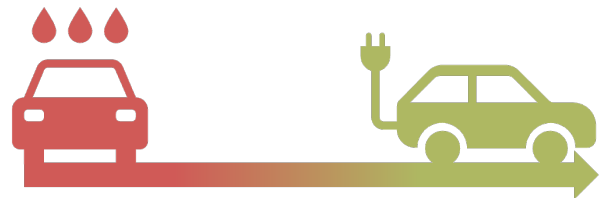
Laboratories



Work-related travels

03.01 Vehicle fleet

Based on last year's carbon footprint report (2018-2022), SDU has initiated a transition of its fleet to electric vehicles (EVs). In this process, efforts are made to optimize the number of vehicles so that capacity is utilized optimally across SDU. The speed and sequence of the replacement, as well as the possibility of a shared SDU fleet, are to be clarified during 2024. Additionally, the financial aspect should also be considered regarding how the replacement will be financed. This effort involves multiple units at SDU. A transition from fossil fuel-powered vehicles to EVs will significantly reduce SDU's direct emissions in scope 1.



03.02 Circular consumption

SDU has a strong focus on circular consumption, which is anchored in SDU's climate plan, as well as SDU's procurement policy and strategy in the form of a consumption program. The consumption program aims to help SDU minimize its carbon footprint when purchasing and consuming goods. Examples of initiatives include establishing an internal marketplace (second-hand market), reducing small orders, stocking more common items, and much more that supports the circular agenda at SDU. Below are described initiatives related to this and which have been implemented during 2023.

03.02.01 Internal Marketplace

Since the last accounting period, SDU has implemented the Internal Marketplace via SDU's procurement system, which is a central element of the consumption program. This initiative aims to promote more circular consumption. SDU continues to work on increasing awareness of and facilitating sustainable choices. Therefore, used goods on the Internal Marketplace will automatically appear in the search results in the procurement system if they match a search term. This enables all employees at SDU to order used goods effortlessly and free of charge. All items on the Internal Marketplace are clearly marked with a green infinity sign to make them easy to identify.

03.02.02 Excess furniture

In 2023, SDU consolidated all faculties under one roof at Campus Odense with the opening of the new SUND building. This also led to the need to clear out previous premises at SUND of furniture.

SCAN QR



To list items on
Internal Marketplace

Although many pieces of furniture were reused and moved to Campus Odense, not everything could be reused within SDU. Therefore, SDU took the initiative to contact associations in Odense to inquire about their interest, resulting in several associations being able to collect the excess furniture. Efforts continue to ensure that more excess furniture is not simply discarded but rather reused and given new life.

03.02.03 Procurement and tendering

SDU continuously works on improving procurement agreements and contracts to include possible sustainability measures. These measures could include specific initiatives such as a 'take-back' scheme for used items from suppliers, data on emissions from products, or similar. It varies within industries how far along they are with sustainability and climate efforts, and therefore considerations are made while SDU aims to push suppliers towards a more sustainable direction. Additionally, efforts are made to minimize the number of deliveries to SDU, for example, by increasing the average order size through consolidating multiple orders to the same location. This is possible due to the procurement structure at SDU. From 2019 to 2023, SDU managed to reduce the number of orders under DKK 250 by 36%.

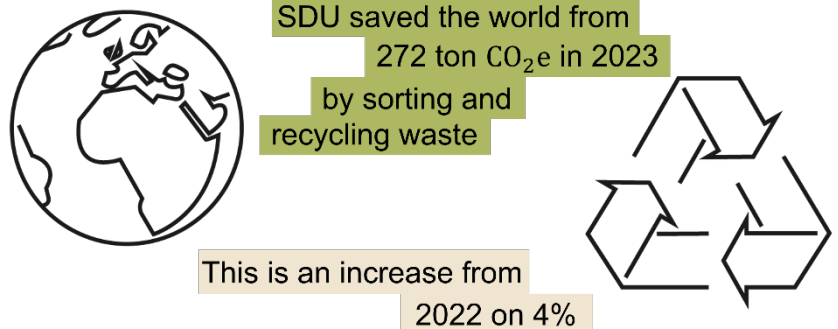
03.02.04 Common standard items

There has been a targeted effort to increase the understanding and use of common standard items at SDU, resulting in more central purchases for storage that can be distributed and shared internally across units. Common standard items at SDU include standard products within selected categories such as furniture and office supplies. SDU aims to expand the scheme to include more product categories as it has proven successful. This is evident in the reduction of orders from SDU's office supply vendor, which decreased from 1,785 orders to 781 between 2019 and 2023, representing a reduction of over 50%.

03.02.05 Waste management

Waste sorting was rolled out at the beginning of 2023, and the result after almost a year of focusing on waste sorting is that the proportion of recycled waste from SDU is 52%, which is an increase from 47% in 2022. Waste for incineration decreased from 2022 to 2023 and is now at 40% instead of 50% in 2022. Landfill and other recovery both increased in 2023.

By recycling its waste and ensuring that the waste SDU sends to the waste station is recycled, SDU contributes to reducing CO₂ emissions. Although this reduction cannot be included in SDU's accounts according to the GHG protocol, in 2023, SDU saved the world from 272 tons of CO₂ emissions, which is an increase of 4% compared to 2022, where the figure was 261 tons.⁶



⁶ Calculated based on factors from ["Handlingsplan for cirkulær økonomi" if. tabel 2.6.1.](#)

Furthermore, SDU acquired a plastic granulator in the first quarter of 2023 to handle plastic waste, especially from the laboratories, more efficiently. This investment was made to reduce waste volume by granulating plastic waste, thereby reducing the need for transportation. Although the plastic granulate does not yet fill a truck, it has the potential to be reused for various purposes, including manufacturing stools and other products.

03.03 Research

At SDU, there are many examples of research in sustainability. This is also part of SDU's strategy, where SDU works to create value for and with society. SDU hosts, among others, the Climate Cluster and has an institute at TEK working on green technology, the Institute of Green Technology.

03.03.06 Climate Cluster

An example where climate research is evident is the Climate Cluster. This is a place that gathers interdisciplinary projects focusing on climate. The Climate Cluster has, among other things, organized a concept called Climate Thursdays, where researchers from various places have presented their climate research. This was intended to educate about the climate and thus educate about researchers' work and findings in the field. The presentations can be reviewed here: [Climate Thursdays 2023](#)

03.04 Laboratory operations

Laboratory work and teaching are a significant part of the university's research and education. However, there are emissions associated with this as well. Therefore, efforts are made to minimize these wherever possible, including through SDU Green Lab project.

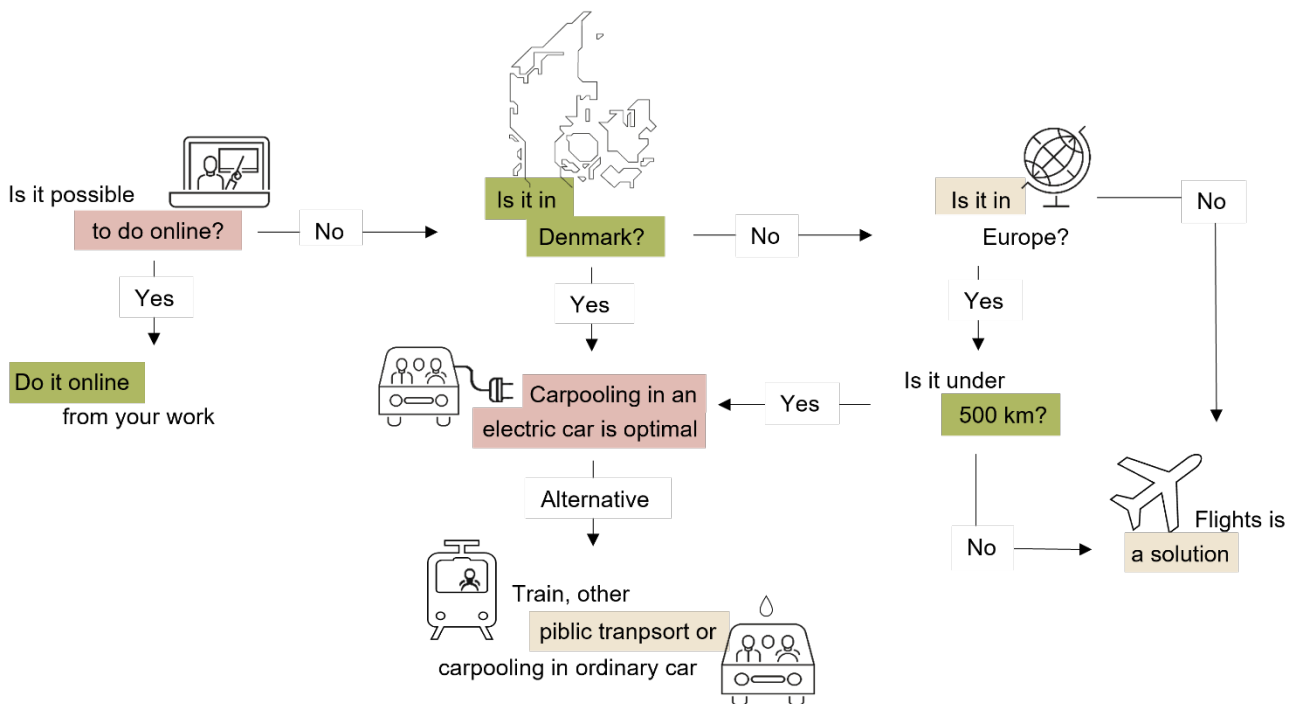
03.04.07 Green Lab

SDU Green Lab focuses on improving SDU's laboratories to reduce their environmental impact. Specifically, efforts are made to minimize electricity consumption, only freeze to what is necessary, share and reuse equipment, purchase most sustainably, and minimize waste and properly sort waste. All of this directly targets the laboratories. Read more about Green Lab here: [SDU Green Lab](#)
In addition, in 2023, Green Lab hosted the sustainability conference 'Sustainable life science - laboratory under loop'. With participation from many parties, including external ones.

03.05 Work-related travels

There continues to be a focus on minimizing SDU's emissions from business trips, especially flights. The significant reduction seen from 2018 to 2023 reflects the significant work done to educate and inform about alternatives.

To explain SDU's travel policy and how employees are expected to act if traveling on behalf of SDU, we have created a decision tree for the policy. However, it is only advisory. The travel policy can be read here: [Cirkulærer vedr. tjenesterejser](#).



04 Development of the climate account



Investments



Data quality



Networking and collaboration

SDU continuously works on developing its climate account and regularly incorporates new categories. A significant change in the climate account from 2018-2023 compared to that for 2022 was the assessment and recalculation of the category 'Purchase of goods and services' for the period. This resulted in a significant increase in scope 3 for the period, for example, the CO2 emissions for 2022 increased by approximately 20 thousand tons. This increase is solely due to more data becoming available.

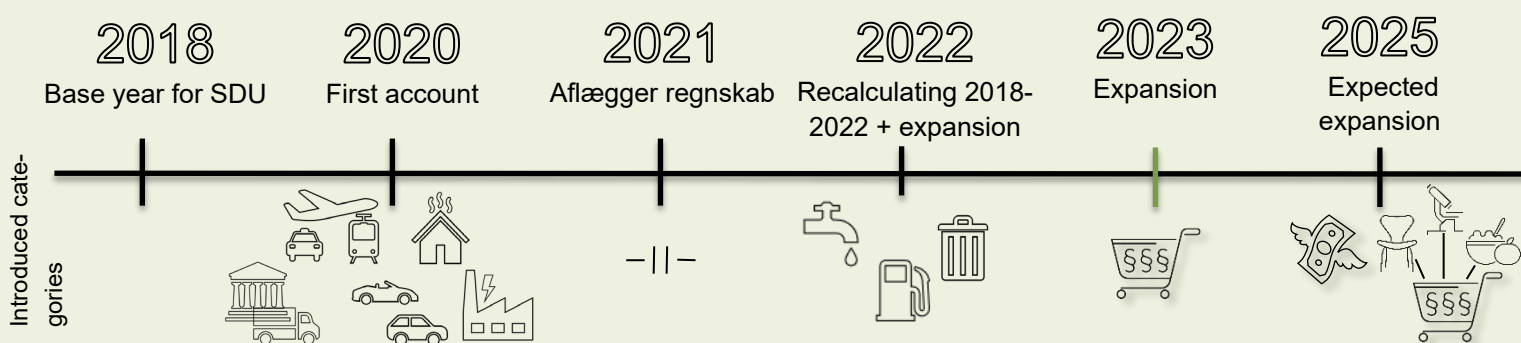
Another category that SDU has explored and intends to include is investments. Unfortunately, it was not possible to include this category in this year's report, but it will be implemented as soon as data becomes available from SDU's investment advisors.

Additionally, SDU has investigated the commuting category, as the university has many students and employees who commute to and from campus daily. Although this contributes to indirect emissions for SDU in scope 3, it is currently not a category supported by data. This is because collecting data in this area can be time-consuming and less reliable. Instead, the focus will be on encouraging and informing about sustainable transportation options to and from SDU.

In the upcoming year's carbon footprint report, SDU will focus on improving data quality introduced in this year's report and strive for further improvements where possible. There will be a particular emphasis on achieving more detailed emissions data at product level.

Furthermore, SDU wishes to revise the categorization of data, including within the new category for the purchase of goods and services. This will enable the analysis of emissions from specific product categories and services and form the basis for actions.

SDU will continue to update historical data if new emissions or methods come into play. However, the impact of the change will be assessed and prioritized accordingly.



SDU also participates in a peer group on climate accounts with other universities. Here, methods for various categories and data collection are discussed. One of the upcoming meetings will focus on how rent and emissions from buildings are accounted for. Therefore, this will not be included in this year's report.

04.01.01 Data quality

SDU has a goal of improving the data quality in its carbon footprint. This involves efforts to ensure better quality of the many invoices received by SDU as well as obtaining product-specific emissions data. For certain categories, improvement will involve transitioning to unit-based emissions instead of monetary values.

This means that SDU assesses data quality based on both calculation method and reliability of activity data and emissions factors. For procurement, SDU uses the data quality from CarbonKey, which is primarily based on the calculation method, but it can also be directly transferred to other areas.

Data quality is ranked from 0 to 5, where 0 represents the highest quality, based on reliable activity data and emissions factors, while 5 represents the lowest quality, where the method is monetary, or the data source is uncertain.

Data quality is an average based on the number of item lines and not in relation to the amount of CO2 emissions. Thus, a line with high CO2 emissions counts the same as an item line with low CO2 emissions.

Year	Scope 1	Scope 2	Scope 3	Hovedtotal
2018	3,00	3,00	3,61	3,56
2019	3,00	3,00	3,66	3,60
2020	3,00	2,50	3,54	3,46
2021	3,00	2,29	3,17	3,12
2022	3,00	2,29	3,25	3,19
2023	3,00	2,62	3,34	3,29
Total	3,00	2,60	3,43	3,36

It is observed that data quality has improved since 2018 in both scope 2 and scope 3. Nevertheless, SDU aims to further improve data quality. There has been an increase from 2022 to 2023 in both scope 2 and 3, possibly due to the data quality for estimates of water and heat being assessed as poorer than the actual data from previous years.

05 Dictionary

Base year: The base year that a company/organization uses as a reference for the percentage reduction in CO₂e equivalent emissions. SDU's 57% reduction by 2030 is calculated based on the premise that Denmark must reduce its CO₂e equivalent emissions by 70% in 2030 compared to the levels in 1990. Therefore, a reduction of 57% from 2018 to 2030 at SDU is equivalent to a 70% reduction from 1990 to 2030 in Denmark.

CO₂ equivalents (CO₂e): This is a collective term for the greenhouse gases: CO₂, CH₄, N₂O, HFCs, PFCs and SF₆.

Downstream activities: Activities in which SDU is the 'supplier'.

Greenhouse gases: Gases that rise into the atmosphere and contribute to the greenhouse effect.

ESG: Stands for "Environmental, Social, and Governance." It encompasses the environmental, social, and governance aspects of a company. It is often referred to as sustainability. ESG represents an organizational approach that can be used to measure and enhance a company's climate and environmental impact in relation to the United Nations Sustainable Development Goals.

Life Cycle Assessment (LCA): An inventory of CO₂e emitted for a product in its entire life cycle.

Radiative forcing (RF): Emissions of CO₂e gases are greater at altitude, where, for example, aeroplanes release a large proportion of their emissions.

Scopes: The GHG Protocol categorises emissions into three main categories: scopes 1, 2 and 3. Scope 1 is the direct emissions from company or organization. Scope 2 and 3 represent indirect emissions from a company or organization.

Upstream activities: Activities related to SDU's suppliers.

Well-to-tank: Emissions of CO₂e from the extraction and transport of fuel until it is used for refuelling.

06 Appendix

Category	Subcategory	Data quality	S1 emission	S2 emission	S3 emission	Source activity data	Source emission factor
Waste	Waste	2.0			9.29	Marius Pedersen	GOV UK*
Fuel	Petrol	3.0	38.99		11.35	Procurement analysis system	GOV UK*
Fuel	Diesel	3.0	77.19		18.29	Procurement analysis system	GOV UK*
Energy	Electricity	1.8		1,780.73	988.50	Energinet consumption, loss % from Energinet	Energinet**, GOV UK*
Energy	Heat	4.0		2,209.88	835.76	Estimated	Energinet**, GOV UK*
Natural gases	Propane	3.0	3.25		0.38	Procurement analysis system	GOV UK*
Purchase of goods and services	Purchase of G&S	4.7			32,029.96	CarbonKey	CarbonKey
Work-related travel	Bus	4.3			19.85	CarbonKey, zExpense	CarbonKey
Work-related travel	Flight	2.9			3,208.27	CarbonKey, CWT, zExpense	CarbonKey, CWT
Work-related travel	Ferry	4.5			7.84	CarbonKey, zExpense	CarbonKey
Work-related travel	Hotels, conferences and board	4.0			442.42	CarbonKey	CarbonKey
Work-related travel	Driving own car	3.0			253.44	zExpense	GOV UK*
Work-related travel	Taxi	4.0			14.34	CarbonKey, zExpense	CarbonKey, GOV UK*
Work-related travel	Train	3.14			246.48	CarbonKey, CWT, zExpense, indkøbsanalysesystem	CarbonKey, CWT, DSB
Work-related travel	Other	4.2			42.64	CarbonKey, zXpense	CarbonKey, GOV UK*
Upstream Transport and Distribution	Upstream T&D	3.5			220.88	CarbonKey	CarbonKey
Water	Water and wastewater	4.0			16.00	Estimated	GOV UK*
Total		3.3	121	3,991	38,366		

* GOV UK: <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022>

** Energinet emission factors per 5 min.: <https://www.energidataservice.dk/tso-electricity/CO2Emis>

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