SDU Climate account

2018-2024

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01 Introduction





01.01 Introduction and purpose

Climate change presents a significant and complex societal challenge that SDU is actively working to address. Sustainable solutions require new knowledge and interdisciplinary research, where SDU plays an indispensable role in the transition process. With 26,000 students and 4,000 employees (full-time equivalents) across six campuses, SDU is committed to reducing the university's own greenhouse gas emissions in line with what research shows is necessary.

In accordance with Denmark's Climate Act, SDU has committed to a significant reduction in greenhouse gas emissions. In 2019, a target was set to reduce CO_2e emissions by 57% by 2030 compared to 2018 levels (equivalent to a 70% reduction compared to 1990 levels). This reduction target included emissions that SDU could quantify and account for, covering emission scopes 1, 2, and parts of scope 3, such as business travel including flights, train journeys, and taxi rides.

In 2024, SDU set new ambitious goals with the launch of Climate Plan 2.0. The aim is to achieve climate neutrality in scope 1 and 2 by 2030. For scope 3, the target of a 57% reduction in business travel emissions remains, while other significant and relevant scope 3 categories for SDU have a target of a 15% reduction by 2030.

SDU prepares an annual climate report to ensure transparency, initiate actions, set targets, and track progress on climate ambitions. Through collaboration and engagement with employees, students, and external partners, SDU is actively working towards a more sustainable future.

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.

Scope	Type af emissioner	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.

In the GHG Protocol, emissions are diveded intro three scopes:

¹ <u>https://ghgprotocol.org/</u>

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 pro- curement, and 'downstream', which are emissions associated
		with the use and disposal of products.

According to the GHG Protocol, reporting on both scope 1 and scope 2 is mandatory, while reporting on categories within scope 3 is voluntary. The Danish climate target set in the Climate Act applies to scope 1 and 2, as required by the GHG Protocol.

SDU's climate accounts are continuously developed to ensure accurate reporting and provide a better foundation for decision-making. New methods and data sources mean that previous climate accounts are not directly comparable, but the ongoing effort ensures that SDU continuously optimizes its climate initiatives. In this year's climate account, the category of investments has been included in scope 3.



-139

since 2018

02 Results

In 2024, SDU emitted 36,199 tons of CO_2e , representing a 13% decrease compared to the baseline year 2018. From 2023 to 2024, SDU successfully reduced its total CO_2 emissions, particularly within Scope 3.

In 2023, SDU experienced a temporary increase in CO_2 emissions, primarily due to increased procurement related to new buildings such as Nyt SUND, Mærsk 2, and LSP. This contrasts with the COVID-19 years (2020–2022), when activity levels were lower. In 2024, CO_2 emissions have once again declined, mainly due to a lower activity level within Scope 3, particularly in relation to the procurement of goods and services.

In the coming years, SDU's total CO_2 footprint is expected to rise as an increase in external research funding leads to a shift from teaching activities to research activities. Research typically has a higher CO_2 footprint than teaching, as it requires more laboratory space, greater consumption of research equipment, and potentially increased travel activity. Therefore, it is crucial that SDU maintains a strong focus on initiatives that can minimize CO_2 emissions across all areas.

Climate Plan 2.0, covering the period 2025–2027, will play a key role in achieving SDU's climate targets. The plan aims to support SDU's ambition of CO_2e neutrality in Scope 1 and 2 by 2030, as well as a 57% reduction in travel-related emissions and a 15% reduction in other Scope 3 activities, including the procurement of goods and services. These measures will be essential to balancing the increased level of research activity with SDU's climate goals



SDU CO₂e development 2018-2024





In 2024, SDU emitted 106 tons of CO_2e from direct emissions, representing a 3% reduction compared to 2018. SDU's goal for 2030 is a 100% reduction. The development from 2018 to 2024 is shown in the table below, with a linear trendline illustrating the path toward the 2030 target.

To achieve this goal, SDU is actively working to phase out fossil-fueled vehicles in its fleet and replace them with electric vehicles. It is estimated that a complete transition to electric vehicles will reduce SDU's direct CO_2 emissions (Scope 1) by up to 90%. The remaining 10% will require further transitions of other machinery and vehicles still using fossil fuels. The slight reduction from 2023 to 2024 is due to the phase-out of diesel-powered vehicles



Category (Tonnes CO₂e)	201 8	2023	2024	Reduction since 2023	2030-goal	Reduction since 2018
Petrol	28	39	42	8% ↑	-100%	52% 📍
Diesel oil	80	79	60	-24%↓	-100%	-25% 📍
Propane	2	3	4	33% ↑	-100%	63% 🔎
Total	110	121	106	-12% ↓	-100%	-3% •



The Role of Society

The electrification of the transport sector is crucial for reducing Scope 1 emissions. Denmark's expansion of charging infrastructure and phase-out of fossilfueled cars can support this transition.

SDU's Efforts

SDU is replacing fossil-fueled vehicles with electric cars, covering approximately 90% of the reduction target. The remaining reductions require the transition of other machinery and vehicles.





Employees and Students' Contribution

Employees and students can reduce CO_2 emissions by choosing public transport, cycling, or using SDU's electric vehicles as an alternative to fossil-fueled cars.



04 Scope 2



In 2024, SDU emitted 4,094 tons of CO_2e in scope 2, which covers electricity and heating consumption. This represents an overall reduction of 47% since 2018. Despite a slight increase from 2023 to 2024, the overall trend is declining, reflecting a positive development in the use of greener energy sources. Emissions from energy account for 11% of SDU's total CO_2e footprint in 2024.

Denmark's increased production of renewable energy has had a significant impact on the reduction, and SDU contributes by producing approximately 2% of its electricity consumption via solar panels. However, to achieve the goal of climate neutrality in scope 2 by 2030, further investments in green energy solutions and efficiency measures will be required.



* Heat consumption is estimated for 2024, based on the development of consumption from 2018 to 2023.

3,858



The Role of Society

7,791

Denmark's expansion of renewable energy reduces CO_2 emissions from electricity and heat production. Continued development of green energy is crucial to achieving climate goals.

4,094

SDU's effort

Total

SDU has reduced Scope 2 emissions by 47% since 2018 and produces about 2% of its own electricity via solar panels. Further investments in green energy and efficiency improvements are necessary to achieve climate neutrality by 2030.



-100%

6% ↑



Employees and Students' Contribution

Energy consumption can be reduced by turning off unnecessary lights and electronics, as well as optimizing heating and ventilation. Conscious energy behavior supports SDU's climate goals. -47%

05 Scope 3



since 2018



SDU has set ambitious goals to reduce CO_2 emissions within Scope 3. The target for business travel is a 57% reduction, while other categories aim for a 15% reduction. To achieve these goals, there is a particular focus on two central areas in SDU's Climate Plan 2.0: behavioral changes and sustainable procurement.

As part of this year's climate account, investments have been included as a new category under Scope 3. By integrating investments into the climate account, SDU can strategically work to shift its investment portfolio toward more sustainable solutions. This initiative is also part of Climate Plan 2.0. The significant reduction in CO_2e emissions from investments is mainly due to a decrease in the investment portfolio from DKK 867 million to DKK 445 million. However, a reduction in investments does not necessarily result in actual emissions savings, as the funds may have been reallocated to other areas with potentially higher emissions, such as the procurement of goods and services under Scope 3.

In addition, SDU continues its work to improve waste management. The current recycling rate of 51% will be increased to 60% by 2030, through better sorting, recycling, and collaboration with waste management partners.

Through a combination of behavioral changes, sustainable procurement, responsible investments, and improved waste management, SDU is working purposefully to reduce its Scope 3 emissions. In the following sections, the largest categories within Scope 3 will be discussed in more detail.

Category (Tones CO₂e)	2018	2023	2024	<i>Reduction</i> since 2023	2030-goal	Reduction since2018
Waste**	11	9	4	-56% ↓	-15%	-67% 🔍
Fuel and energy related emissions	1.698	1.748	1.746	0% →	-15%	3% •
Work-related travels	8.391	4.320	5.339	24% ↑	-57%	-36% 🔍
Water*	57	16	13	-19% ↓	-15%	-76% 🔍
Purchase of goods and services	21.772	32.251	24.155	-25% ↓	-15%	11% 鱼
Investments**	1.734	1.024	741	-28% ↓	-15%	-57% 🔍
Total	33.664	39.368	31.998	-19% ↓		-5% 🔎

*Water consumption is estimated for 2023 and 2024, based on the development of consumption from 2018 to 2022

**Data for waste and investments for the period 2018-2022 is based on estimates, which involves some uncertainty. Therefore, the results should be interpreted with caution. The focus is primarily on CO₂e-reducing efforts in the years where direct data has been recorded..

05.01 Work-related travels



Business travel is one of the categories with the highest CO_2e emissions at SDU, but also an area with significant ambitions for reduction.

As the graph above shows, SDU is currently below the linear trendline towards the 2030 target. However, emissions from business travel have been increasing since 2021. Air travel constitutes the largest part of this category, with 4,091 tons of CO_2e , which accounts for 77% of the total emissions from business travel. Despite this trend, the category has overall decreased by 36% since 2018, while air travel alone has been reduced by 44%. The distribution of transportation modes can be seen in the figure below; additionally, emissions from hotels, conferences, and catering amount to 600 tons of CO_2e . To ensure that emissions continue to decline, and the goal of a 57% reduction is achieved, it is crucial for SDU to maintain focus and actively promote and apply SDU's travel policy to identify the most sustainable forms of travel.

Tons C02e 2024





The Role of Society

Efforts are continuously being made to make transportation more fuel-efficient. Society will influence the reduction of emissions per kilometer; the question is how long this development will take.

SDU's Efforts

Support the possibility of choosing the best solution for each business trip. This is achieved through good options for public transport, as well as information on the travel modes with the lowest emissions. Additionally, strong support for online meetings and conferences can also contribute.





Employees and Students' Contribution

In every travel situation, one should explore online options and assess which is the most sustainable journey, considering both economy, time, and climate. Be open to new travel options that may take a little longer than the one usually chosen.

05.02 Purchase of goods and services

Purchasing of goods and services is the largest category in SDU's climate accounts, accounting for an emission of 24,155 tons of CO_2e in 2024 – nearly five times as much as the second-largest category, business travel. Emissions have increased by 11% since 2018, meaning the category is not following the linear reduction target towards 2030, where SDU aims for an overall reduction of 15%



To reverse this trend, SDU has sharpened its focus on sustainable consumption by introducing consumption principles. These principles serve as mandatory guidelines to help the university reduce consumption, reuse available resources, make sustainable choices in new purchases, and ensure that outdated items are disposed of responsibly. The consumption principles are divided into four core principles:

- 1. Reduce We must reduce our consumption.
- 2. Reuse We must use what is already available.
- 3. Respect We must buy sustainably when new purchases are necessary.
- 4. Recycle We must send items back into circulation.

These principles aim to ensure that SDU acts both wisely and circularly, optimizing resource consumption and reducing the CO_2 footprint. The impact of these measures will become clearer as the principles are fully implemented.

The three largest subcategories within procurement are:

- Laboratory and measuring equipment (24%)
- Information technology (9%)
- Building and construction as well as maintenance services (8%)

9% 24% 8%

These areas together represent a significant portion of SDU's total CO_2 footprint. SDU is actively working to enter agreements with suppliers who can offer climate-friendly solutions, as well as extending the lifespan of existing equipment through repair, reuse, and recycling.



The Role of Society

To promote sustainable consumption, production must become greener. This requires more renewable energy, increased local production, and stricter requirements for circular products with a longer lifespan.

SDU's Efforts

By implementing consumption principles, SDU creates better opportunities for internal reuse and prioritizes sustainable purchasing. Collaborating with climate-friendly suppliers is also an important effort.





Employees and Students' Contribution

Everyone can contribute by following the consumption principles, choosing reuse over new purchases, and ensuring sustainable choices in all purchasing situations.

05.03 Other Categories

In addition to business travel and the purchase of goods and services, Scope 3 includes several smaller categories:

- Fuel and energy-related activities: This covers the extraction, production, and distribution of fuel and energy before it reaches the consumption point. As this category is directly dependent on energy consumption in Scope 1 and 2, efforts are focused on reducing overall energy consumption through energy efficiency and the transition to green energy and is therefore not a primary focus area in Scope 3.
- Water and wastewater: Data for this category will be reported later in the year, so estimates are used for 2023 and 2024. However, emissions have significantly decreased since 2018, and the estimated development has already met the target of a 15% reduction by 2030. Although this category has a relatively small impact in the overall climate accounts, SDU continues to work on optimizing water consumption and wastewater management.
- Waste: While waste-related emissions are not one of the largest items in the climate accounts, waste management plays a crucial role in the circular transition. In 2024, SDU had a recycling rate of 51% and is working to increase it to 60% by 2030. Initiatives such as improved waste sorting, increased recycling, and collaboration with waste management partners are central to this effort.
- Investments: SDU has included investments in Scope 3 as a new focus area. Through Climate Plan 2.0, SDU is working to make its investment portfolio more sustainable by prioritizing companies and funds with a strong climate and ESG profile.

Together, these categories form an important foundation for SDU's climate work. Although some of them contribute a smaller share of the overall CO_2 emissions, they support the promotion of more sustainable operations across the university's activities.

06 Dictionary

Base year: The base year that a company/organization uses as a reference for the percentage reduction in CO_2e equivalent emissions. SDU's 57% reduction by 2030 is calculated based on the premise that Denmark must reduce its CO_2e 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.

 CO_2 equivalents (CO_2e): This is a collective term for the greenhouse gases: CO_2 , CH_4 , N_2O , HFCs, PFCs and SF_6 .

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 CO_2e 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.

07 Appendix

Kategori	Subkategori	Datakvalitet	S1 udledning	S2 udledning	S3 udledning	Kilde aktivitetsdata	Kilde emissionsfaktor
Waste	Waste	2.0			3.75	Marius Pedersen	GOV UK*
Fuel	Petrol	3.0	42.34		11.86	System for Purchase analysis	GOV UK*
Fuel	Diesel	3.0	60.47		14.7	System for Purchase analysis	GOV UK*
Energy	Electricity	1.9		1,857.14	956.08	Energinet forbrug, tab % fra Energinet	Energinet**, GOV UK*
Energy	Heat	4.0		2,237.05	763.49	Estimeret	Energinet**, GOV UK*
Natural gases	Propane	3.0	3.62		0.16	System for Purchase analysis	GOV UK*
Purchase of goods and services	Purchase of goods and services	4.5			24,155.47	CarbonKey	CarbonKey
Work-related travel	Bus	3.9			16.84	CarbonKey, zExpense	CarbonKey
Work-related travel	Flight	2.9			4,090.81	CarbonKey, CWT, zExpense	CarbonKey, CWT
Work-related travel	Ferry	3.4			7.81	CarbonKey, zExpense	CarbonKey
Work-related travel	Hotels, conference and board	1.8			600.83	CarbonKey	CarbonKey
Work-related travel	Driving own car	3.0			248.00	zExpense	GOV UK*
Work-related travel	Тахі	3.5			15.69	CarbonKey, zExpense	CarbonKey, GOV UK*
Work-related travel	Train	3.1			307.11	CarbonKey, CWT, zExpense, System for Purchase analysis	CarbonKey, CWT, DSB
Work-related travel	Other	3.0			51.74	CarbonKey, zXpense	CarbonKey, GOV UK*
Investments	Investments	2.0			740.52	CarbonKey	CarbonKey
Water	Water and Wastewater	5.0			13.43	Estimeret	GOV UK*
Total		3.3	106	4,094	31,998		

* 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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