

Climate Responsibility: Background Report

1. Initial situation

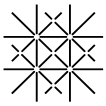
In the spring semester of 2022, the President's Board established the "Climate Steering Group", which consisted of representatives from various faculties and university groups¹ and was tasked with developing recommendations for the target year of a climate-neutral University of Basel and the measures required to achieve this. The steering group, in collaboration with the Sustainability Office, worked intensively on these issues from May 2022 to March 2023. It then compiled the results of its work in the "Climate Responsibility" report. The report served as the basis for the University's climate strategy, which was adopted by the President's Board in February 2024 (see "Climate Responsibility. Climate Strategy of the University of Basel 2024 – 2030").

2. Context

According to the Synthesis Report of the Intergovernmental Panel on Climate Change (IPCC) from March 2023, contrary to earlier assumptions, global warming of 1.5 °C will already be exceeded in the early 2030s, unless significant measures are taken. In the Basel region, the average temperature is expected to rise by around 2.3 °C by the middle of the century.² According to the IPCC report, man-made CO₂ emissions must be reduced by 45% by 2030.³ With regard to the 2019 Paris Climate Agreement, Switzerland has set itself the goal of halving its greenhouse gas emissions by 2030 compared to 1990, and become climate neutral or reach net zero by 2050.⁴

In the canton of Basel-Landschaft, the climate strategy published for consultation at the end of 2022 defines the goal of reducing direct emissions by 40% by 2030 and by 90% by 2050 compared to 2020. The remaining unavoidable emissions will be offset through negative emissions and only if necessary be compensated by emission certificates, so that net zero is achieved by 2050.⁵ In the canton of Basel-Stadt, the electorate voted in November 2022 in favor of a net zero target by 2037.⁶ The cantonal climate protection strategy "Net zero 2037" was adopted in September 2023.⁷ An action plan to implement the climate strategy with specific measures will be presented in 2024. Additional measures are planned in the "Climate-neutral administration" program for administrative buildings.⁸

Universities are particularly in the spotlight when it comes to the climate crisis. Their influence on events also depends on whether and how they themselves act as role models for climate protection. In addition to their contributions in research and teaching, visible and effective changes in university operations and management are therefore important.⁹ The desire for ambitious reduction targets towards climate neutrality is also a clear demand from students and academic funding structures.¹⁰



3. Baseline: Climate footprint of the University of Basel 2019

3.1. System boundaries

As a starting point for calculating reduction paths, the Sustainability Office has drawn up an extended carbon footprint for 2019 that follows international standards such as the Green House Gas Protocol.¹¹ The GHG Protocol divides greenhouse gas emissions into three emission categories¹²:

- **Scope 1 emissions** originate from direct emission sources within the system boundaries under consideration, such as the company's own heat generation and vehicle fleets. At the University of Basel, these include only a few vehicles, laboratory gases and heat generation from natural gas in some buildings.
- **Scope 2 emissions** arise from the external generation of electricity and heat that is purchased. At the University of Basel, this includes the purchase of electricity from several sources and district heating from IWB.
- **Scope 3 emissions** are all other emissions caused indirectly by organizational activities. For the university, these include business travel, catering operations, waste disposal, indirect emissions from energy provision and emissions generated during the construction of buildings (gray energy buildings).

3.2. Carbon footprint

The University of Basel's total emissions for 2019 amounted to 9,665 tCO₂-eq.²

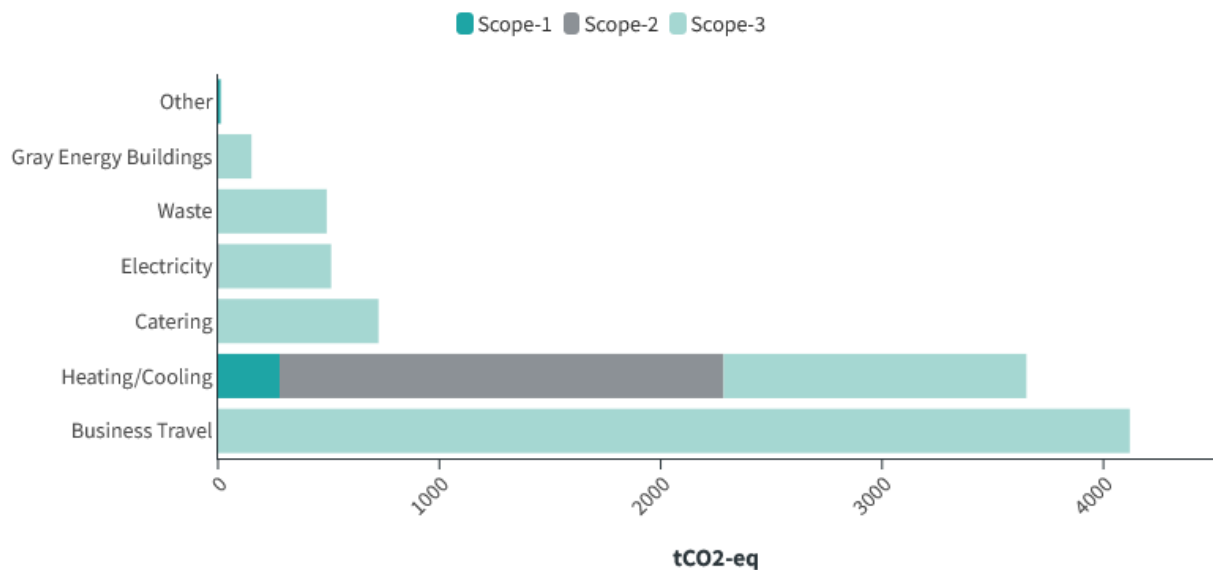
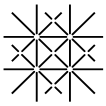


Figure 1: Climate footprint of the University of Basel (2019, in tCO₂-eq). According to the SIA standard, the "Gray Energy Buildings" section accounts for emissions from new buildings that occur over the life cycle of the building materials, until disposal at the end of use, calculated over 60 years. Only new buildings and renovations of buildings owned by the University are included. The carbon footprint for 2019 does not yet include the new buildings Biozentrum and DSBG, as the balance sheet is only drawn up from the reference year onwards. The energy data (heating, cooling, electricity) relates to all buildings used by the university. The topic waste includes the disposal of hazardous waste and other non-recyclable materials. Catering includes the quantities of food and products purchased by the canteens and cafeterias, excluding vending machines. Business travel includes all flights, car, train and bus travel and accommodation paid for by the university. The topic "Other" includes emissions from university vehicles and laboratory gases.



4. Reduction paths: Climate strategy of the University of Basel 2024-2030

4.1. Fields of action

Based on the greenhouse gas balance from 2019 and considerations of societal impacts, the University of Basel has identified five priority fields of action aiming to reduce emissions and have the greatest possible impact on sustainable development and climate protection. These include:

Campus & Management (energy demand, energy procurement and production / gray energy buildings / resilient campus / catering / recyclables / procurement / financial assets)

The Campus & Management field of action results from its relevance for the climate footprint and the role model function that the university can assume. This is to be achieved, among other things, by saving energy through operational optimization and energy-efficient renovations, expanding renewable energies, increasing the range of vegetarian and vegan food on offer and increasing recycling rates. The further implementation of the investment regulations to align the investment portfolio with sustainability goals (ESG criteria) plays a role here, as does a resilient campus adapted to climate change in order to maintain a pleasant and attractive study and work environment even in hot months. In the area of procurement, the aim is to establish greenhouse gas monitoring in order to develop measures for more climate-friendly, sustainable purchasing.

Mobility

Key measures for more climate-friendly business travel include the continuation of the "less for more" program to reduce flight emissions and the further expansion of rooms, equipment and support for online and hybrid meetings.

Teaching

In teaching, the university can enable its students and doctoral students to become change agents for a climate-friendly society by imparting knowledge and transformative design skills. As an important building block in this field of action, the establishment of a cross-faculty, complete Bachelor's degree course in Sustainable Development should be considered. In addition, an interdisciplinary and cross-faculty PhD program should be appraised. The stronger integration of climate and sustainability-related courses into the curriculum should also be further promoted and the development of a further education program with a sustainability focus should be explored.

Research & Dialog

Strong inter- and transdisciplinary research on climate and sustainability-related topics provides an important basis for decision-making in politics and business in order to advance the transformation to a net-zero society. To this end, interdisciplinary and transdisciplinary research into the development of evidence-based solutions to mitigate climate change is to be strengthened. Applied research on the campus, which functions as a living lab, contributes to the achievement of campus management climate targets. The dissemination of research results outside the academy and the continuation of a topic-specific dialog with societal stakeholders improve the university's positioning as an important climate and sustainability player in Switzerland and the Upper Rhine region and increases its attractiveness for new research contracts.

Commitment & Culture

The commitment of university members and a living culture of sustainability that is visible on campus are important catalysts for the planned measures. To this end, regular information campaigns, an innovation and ideas incubator and the development of a concept for the introduction of "Sustainability Accelerators", which promote sustainability at the decentralized organizational units, are to be implemented.

4.2. Target year and reduction path

The aim is to achieve the targets set by **2030**.¹³ By implementing the key measures defined in the report, the University of Basel's greenhouse gas emissions are to be **reduced by an average of 35%** across all areas already quantified by 2030, starting from the base year 2019. The quantitative reduction targets defined by the supporting cantons for 2037 and 2050 only relate to Scope 1 emissions. The university's reduction targets, on the other hand, also include Scope 2 and 3 emissions. Figure 2 below illustrates the desired path of change up to the target year 2030.

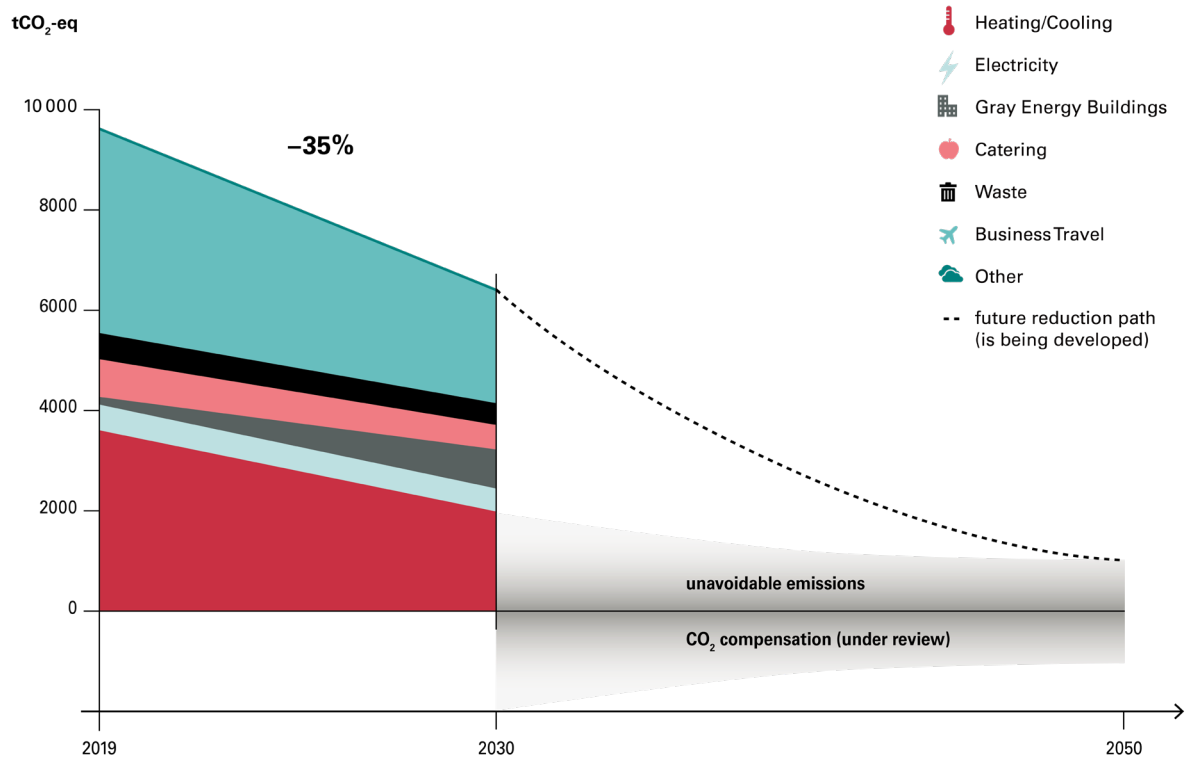
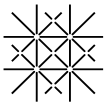


Figure 2: Reduction paths from 2019 to 2030. According to the SIA standard, the "Gray Energy Buildings" section accounts for emissions from new buildings that occur over the life cycle of the building materials, until disposal at the end of use, calculated over 60 years. Only new buildings and renovations of buildings owned by the University are included. The carbon footprint for 2019 does not yet include the new buildings Biozentrum and DSBG, as the balance sheet is only drawn up from the reference year onwards. There will therefore be an increase in emissions in this area by 2030. The energy data (heating, cooling, electricity) relates to all buildings used by the university. The topic waste includes the disposal of hazardous waste and other non-recyclable materials. Catering includes the quantities of food and products purchased by the canteens and cafeterias, excluding vending machines. Business travel includes all flights, car, train and bus travel and accommodation paid for by the university. The topic "Other" includes emissions from university vehicles and laboratory gases.

4.3. Offsetting the remaining emissions

As part of the climate strategy, reducing our own emissions is an absolute priority. However, according to the IPCC, offsetting residual emissions is also necessary in order to achieve the targets defined in the Paris Agreement. For the target year 2030, it is not possible for the university to reduce emissions completely. Offsetting the remaining emissions from 2030 onwards is being considered. There are various options for offsetting:

- Offsetting - or compensation - means that emissions are offset by investing in global projects that reduce future greenhouse gas emissions (e.g. energy efficiency, renewable energies).



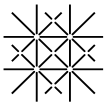
- Negative emission technologies (NET), on the other hand, aim to permanently remove existing CO₂ from the atmosphere and store it. There are technical and biological approaches for this solution.

Promising solutions will be carefully examined by 2030 and a proposal for the President's Board will be drawn up in the Sustainability Commission. The expertise of Basel researchers can be drawn on in the process.

5. Implementation

The responsible central departments have been instructed to begin the necessary project planning to implement the measures. Operationally, the climate strategy is anchored at the General Secretariat, in the the Sustainability Office. This is where central project management, data collection, monitoring and reporting can be coordinated. Infrastructure & Operations also has a central role to play in coordinating and implementing the many tasks and projects in the Campus & Management field of action. Some former members of the "Climate Steering Group" are represented on the newly established (Fall 2023) Sustainability Committee. In future, the commission will be able to provide important feedback from the organizational units and groups on the further development of the climate strategy. Students are involved via the commission and the student initiative "AG Nachhaltigkeit" and will provide valuable input in many areas.

As usual, the most important key figures on greenhouse gas emissions are reported annually at the university's annual report. Every two years, the key figures and the implementation status of the measures are presented to the President's Board as part of the established sustainability reporting. A progress report including new targets and measures for the period from 2030 will be prepared at the end of 2030.



¹ The members of the steering group were Prof. Dr. Jens Gaab (Delegate for Sustainability and Chair), Prof. Dr. Frank Krysiak (Environmental Economics, Climate and Energy Policy, WWZ), Prof. Dr. Ruth Delzeit (Global and Regional Land Use Change, Phil.Nat. Faculty), Prof. Dr. Ulf Hahnel (Sustainability and Behavior Change, Faculty of Psychology), Dr. Annika Sohre (Senior Researcher Sustainability Research, Managing Director Research Network Sustainable Futures), Jodok Happacher (PhD student in Physics), Jeannine Fluri (Master's student in Biology, member AG Nachhaltigkeit), Aline von Jüchen (Master's student in Sustainable Development), Dr. Irmo Lehmann (Head of Facilities, Infrastructure & Operations), Markus Kreienbühl (Head of Portfolio Management, Infrastructure & Operations) and Mike Rümmele (Head of Controlling & Finance, Finances).

² <https://www.nccs.admin.ch/nccs/de/home/klimawandel-und-auswirkungen/schweizer-klimaszenarien.html>

³ Synthesis Report from 20.03.23: <https://www.ipcc.ch/report/sixth-assessment-report-cycle/>

⁴ The terms climate neutrality and net zero are not always used consistently in the context of climate protection. For the purposes of this report, the two terms are used interchangeably in line with the definitions of the IPCC and FOEN. Climate neutral or net zero for organizations means that no more greenhouse gases are emitted than can be absorbed by natural and technical reservoirs. However, unavoidable emissions can be removed from the atmosphere through so-called negative emissions technologies (NET) or compensated for through offsetting at home and abroad.

⁵ <https://www.baselland.ch/politik-und-behorden/direktionen/bau-und-umweltschutzdirektion/umweltschutz-energie/klima-1/klimastrategie>

⁶ <https://www.pd.bs.ch/ueber-das-departement/Fachstelle-Klima/Klimapolitik/Klimaschutzstrategie-Kanton-Basel-Stadt--Netto-Null-bis-2037.html>

⁷ <https://www.pd.bs.ch/ueber-das-departement/Fachstelle-Klima/Klimapolitik.html>

⁸ <https://www.pd.bs.ch/ueber-das-departement/Fachstelle-Klima/Klimapolitik/instrumente-der-klimaschutzpolitik/klimaneutrale-verwaltung.html>

⁹ ALLEA (2022) Towards Climate Sustainability of the Academic System in Europe and Beyond. Berlin. DOI 10.26356/climate-sust-acad

¹⁰ See among others: "Call to action" by Science Europe, ISCN and others: https://www.scienceeurope.org/media/kwklp0o/2021nov08_sci4net0_calltoaction.pdf as well as the "Student paper on sustainability", adopted by the Student Council of the University of Basel in October 2021.

¹¹ The university's system boundaries follow the principles of the globally established Green House Gas Protocol and, in the area of district heating, the Swiss KBOB standard, and are based on the specifications of the Science Based Target Initiative (SBTi), which sets standards for science-based reduction paths for companies.

¹² While larger entities such as cantons often (still) limit their climate accounting to Scopes 1 and 2, it has become standard practice for companies and organizations to also address Scope 3 emissions in particular.

¹³ The target year 2030 was chosen in particular against the background of the reduction target of 50% by 2030 defined in the Paris Agreement and recommended globally by the IPCC, the Federal Administration's requirements for the two Federal Institutes of Technology, various student initiatives and the goals of the "education race to zero" initiative supported by the UN Environment Program, which has already been joined by over 1,200 universities worldwide.