EN

Sustainability Report

09.2022 - 08.2023

Hochschule Bochum
Bochum University
of Applied Sciences

CONTENT

FOREWORD BY THE PRESIDENT

Dear University Community,
Dear Sustainability Enthusiasts,

As the global challenges of climate change, resource use, and societal shifts become increasingly urgent, it is essential for our university to not only promote but also exemplify sustainable thinking and action.

In our Strategic Plan (HEP 2023-2028), we have made sustainability a core priority that touches every aspect of our institution—from teaching and research to community engagement and campus operations. To support this holistic approach, we encourage the exchange of ideas and the development of new projects that foster sustainability across disciplines and departments.

Our vision is to cultivate a university community actively engaged in building a sustainable future. We achieve this through close collaboration with students, staff, and partners in business, local government, and academia. The commitment of everyone involved is fundamental to our shared success.

This report highlights the progress we have made, the initiatives underway, and the opportunities ahead. It also emphasizes the critical role of collaboration and networking in driving meaningful, sustainable change—both within our university and beyond. Real change is only possible when we work closely with those impacted by our actions and decisions.

I would like to extend my sincere thanks to all who are dedicated to our mission and to advancing the global Sustainable Development Goals of the 2030 Agenda. Your commitment has already led to impressive results, and I look forward to continuing our journey toward fully implementing our sustainability strategy by 2025.

I also encourage everyone, both within our university and beyond, to get involved. Together, we can make a lasting, positive contribution to social progress. Let's continue shaping a future where sustainability and transformation are at the heart of our university and society.

Yours sincerely,
Andreas Wytzisk-Arens
President, Bochum University of Applied Sciences

FOREWORD BY THE CHANCELLOR

Dear contributors and interested parties,

Our university is meeting the challenges of a sustainable future with concrete measures that encompass operations, procurement and climate protection. With our activities and the commitment of the university community, we want to get even closer to our goal of becoming as climate-neutral as possible by 2030. As Chancellor of Bochum University of Applied Sciences with its diverse campus life and around 7,500 students and over 600 employees, I am pleased to say that sustainability and climate protection are not just an idea, but have become a living reality at the university.

Our joint commitment is clearly having an impact on the implementation of our sustainability strategy. I am pleased to announce that we have already achieved a third of our targets by the end of the reporting period (1 September 2022 - 31 August 2023. This success is a clear sign that the strategies and measures we have chosen are working and are being implemented effectively. For the entire implementation phase from 2021 to 2025, we will most certainly achieve 15 out of the 17 the remaining targets by the end of 2025.

We are achieving our ambitious plans through strong cohesion and joint efforts. I would like to thank all members of the university for this, especially our staff in the university administration, whose cooperation and support were crucial in developing our university-wide sustainability indicators and integrating their collection into our processes so that they can be reported on regularly in the future. Their high level of commitment and continuous striving for improvement make a significant difference.

With confidence I am already looking forward to the positive changes that our sustainability and climate protection activities will bring about at the university and beyond in the coming years.

Yours sincerely,
Markus Hinsenkamp
Chancellor, Bochum University of Applied Sciences

01

FIRST SUSTAINABILITY REPORT OF BOCHUM UNIVERSITY OF APPLIED SCIENCES

For the first time, our university is summarising its sustainability activities and achievements in this sustainability report. On the one hand, we look back on the historical development of the sustainable Bochum University of Applied Sciences and, on the other, on the goals set out in our Sustainability Strategy 2021-2025.

For the goals of our sustainability strategy for the fields of action

- **Governance,**
- **Teaching, studying and further education,**
- **Research and development,**
- **Operation, procurement and climate,**
- **Third Mission - fewer inequalities,**
- **Transparency and reporting**

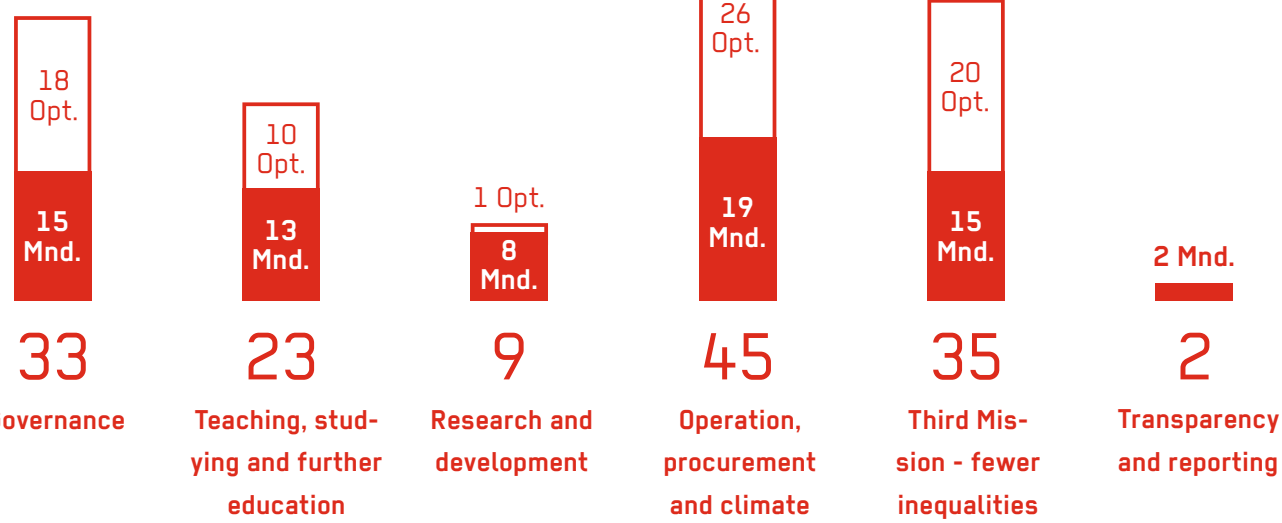
we have developed 147 specific indicators to measure our goals. 72 of these are mandatory indicators and 75 are optional indicators. The optional indicators are used for internal measurement, while the mandatory indicators are published and reflect the degree to which our strategy has achieved its goals. The mandatory indicators are labelled after the respective text sections (e.g.[Ind. 1.1.1]). We survey 56 of the indicators annually. **16 of the indicators were collected once**. The indicators that were collected once reflect our **initial activities** and were used to **integrate sustainability into our ongoing university processes and routines**. This applies, for example, to indicator 1.1.5: *The kick-off meeting of the round table took place and was documented.*

The required quantitative and qualitative data was **collected in September 2023 in collaboration with all status groups** at the university and reflects the content of the **reporting period September 2022 to August 2023**. Our **greenhouse gas balance sheet** was prepared for the years **2022 and 2023**. As we report every two years, we have included **additional projects** and content that lie **outside the reporting period** in the report and labelled them accordingly with **annual figures**.

In the chapter "Target achievement and potential", are all potentials of the fields of action explained. Each section is followed by a **tabular presentation of all objectives and the indicators of the corresponding field of action,** which provides an overview of the achievement of objectives. In addition, the indicators that were collected once are labelled with an *E*.

For the next Sustainability Report 2024/2025, we will revise our set of indicators and base them on the European VSME Standard (Voluntary ESRS for non-listed small- and medium-sized enterprises, or VSME ESRS for short), the voluntary sustainability reporting standard for small and medium-sized enterprises in the European Union.

147 indicators:
72 mandatory indicators and
75 optional indicators



02

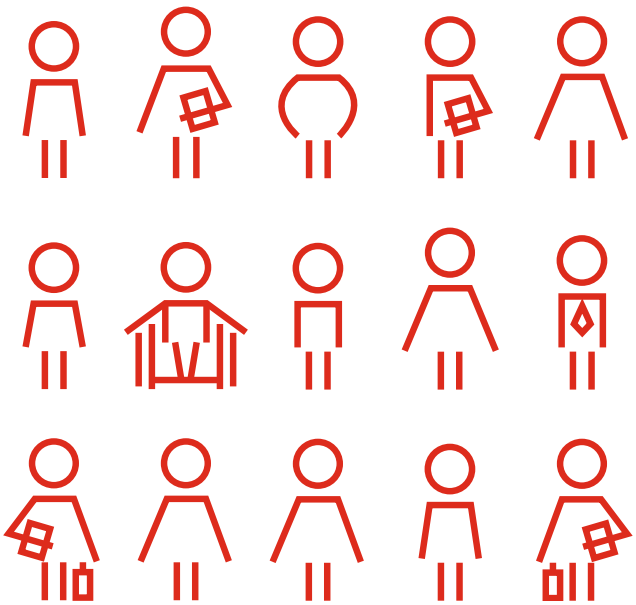
THE UNIVERSITY IN FACTS AND FIGURES

BO

Our university is represented at two locations:
The Bochum Campus in the Querenburg district **since 1971**
and the Velbert/Heiligenhaus Campus **since 2017**.

Top left: Image Bochum Campus view main entrance
Bottom left: Image Bochum Campus rear view
Bottom middle: Image Bochum Campus New building section H Completion 2020
Home of the Departments of Architecture and Civil & Environmental Engineering
Bottom right: Image Velbert-Heiligenhaus Campus

The university in facts and figures



7,676
NUMBER OF STUDENTS

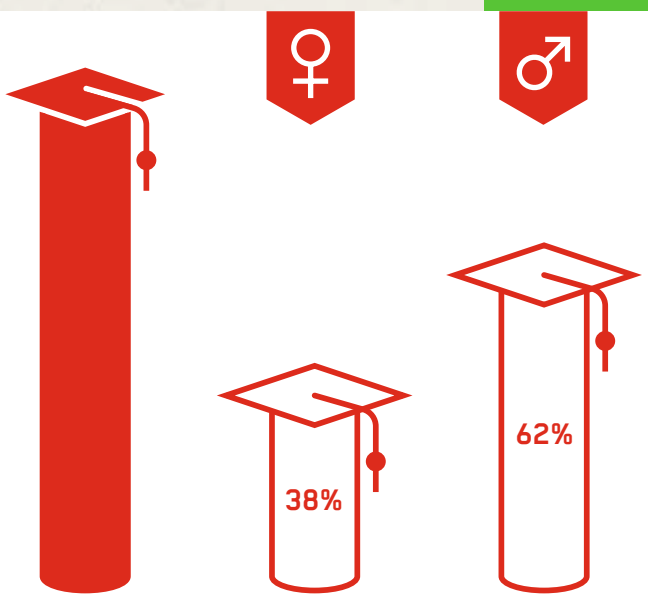
34% Of which female: **2,629**

19% Of which international students: **1,468**

GRADUATES (EXAMINATION YEAR 2022) BOCHUM CAMPUS AND VELBERT/HEILIGENHAUS

1,104

↳ Bochum Campus and Velbert/Heiligenhaus Campus (as of 31 December 2023)



Total: **1,104**

Female: **414**

Male: **690**

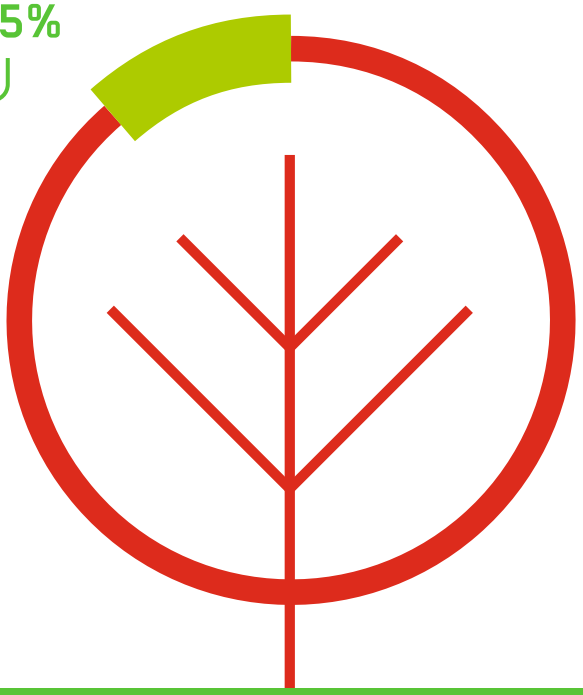
PROFESSORSHIPS FILLED IN 2022

↳ [as of 31/12/2023]

960

TOTAL NUMBER OF STUDENTS ON DEGREE PROGRAMMES RELATED TO THE ENVIRONMENT AND SUSTAINABILITY

12.5%



↳ [as of 31/12/2023]

NUMBER OF BACHELOR STUDENTS BY DEGREE PROGRAMME:

Sustainable Development	367
Environmental Engineering:	162
Renewable Energy Systems:	29

NUMBER OF MASTER'S STUDENTS BY DEGREE PROGRAMME:

Applied Sustainability	216
Sustainable Development	67
Environmental Engineering	99

↳ [as of 31/12/2023]

→ Further information on our degree programmes that focus on environment and sustainability: hs-bochum.de/studiengaenge-nachhaltigkeit

03 OUR SUSTAINABILITY VISION

Bochum University of Applied Sciences has anchored sustainability in studies, teaching, research and transfer as well as in the entire organisation. Campus life is characterised by the responsible use of all resources, the self-evident implementation of democratic values and a potential-oriented understanding of diversity.

We seize the opportunity of digitalisation in terms of sustainability and see the international orientation of the university as an enrichment for a global and multifaceted understanding of sustainability. Bochum University of Applied Sciences offers all members of the university the best possible learning and working environment and is committed to "good work".

Sustainability is a cross-cutting theme in our entire degree programme and forms the framework of our educational and research activities. All members of the university are taught comprehensive sustainability skills that enable them to incorporate sustainability into their everyday professional and private lives. The actions of all university members are guided by our understanding of values.

As a learning organisation, we strive to consolidate and continuously improve our sustainability activities and to evaluate our performance on an ongoing basis in accordance with scientific standards.

Bochum University of Applied Sciences acts as a shaper of sustainable development at its locations, in the Ruhr region and beyond its borders.

Our superordinate sustainability goals

The UN Sustainable Development Goals (SDGs) are the guiding framework for our 2021-2025 sustainability goals, and we make measurable contributions to achieving them.

04 OUR PATH TO SUSTAINABILITY

2008
- First certification as a family-friendly university (recertified every three years up to 2023)

2011
- Integration of sustainability in teaching, studies and further education with the 5-step plan

2012
- "Open Space" workshop - first open exchange between university members on the holistic implementation of sustainability at the university and beyond

2013
- Introduction of the Bachelor's degree programme "Sustainable Development"

2015
- First ÖKOPROFIT certification (recertified annually up to 2023)
- Extension of the 5-step plan to the 6-step plan (doctorate of sustainability topics)

2016
- Anchoring sustainability in the 2016-2022 University Development Plan

2017
- Development of the first sustainability strategy
- Introduction of the teaching research project "Sustainable University - Strategy, Implementation, Networking"
- Introduction of the first Master's degree programmes "Sustainable Development" and "Applied Sustainability"

2018
- Member of the university network Hoch-N
- Establishment of the "Sustainable Bochum University of Applied Science steering group"
- Introduction of the Bachelor's and Master's degree programme in Environmental Engineering

2019
- Anchoring the guiding principle of sustainable development in the fundamental

2020
- Foundation of the Hochschulallianz Ruhr (HAR)

2021
- Adoption and publication of the first Sustainability Strategy 2021-2025

2022
- "Sustainability, Transfer and Entrepreneurship" department included in the University's Presidential Board for the first time

2023
- Pilot university in the UNISIMS project to develop standardised sustainability indicators for universities
- Member of the DG Hoch N
- Filling the position of climate protection management
- Stakeholder workshop - reflection on the sustainability strategy with our stakeholder groups
- Establishment of the "Round Table Sustainable Univercity" operational working group to implement and monitor the sustainability strategy

2024
- "Regenerative Energy Systems" Master's degree programme starts in the winter semester 2024/25
- Further development of the sustainability strategy 2026-2030 via the steering group
- Publication of the first sustainability report
- Publication of the first climate protection concept

2025

2026

05 OUR GOVERNANCE

Our organisational management aims to **manage** sustainability **holistically** and integrate it into the university structure. We consider it a matter of course that our university members have the opportunity to participate in the long-term development and promotion process of sustainability. We attach great importance to creative freedom and **equal participation**. Our management model is based on participatory cooperation, in which there is room for open discussion, the development of goals and measures as well as critical reflection. In order to comprehensively establish sustainability at our university, our organisational structure consists of a strategic and an operational level.

The Sustainable Bochum University of Applied Science steering group

At a strategic level, the *Sustainable Bochum University steering group* was founded in 2018. **It consists of 20 members from all status groups, including students, employees in teaching and research, technology and administration as well as representatives of all interest groups.** The members of the steering group work together to develop the sustainability strategy. We organise the development process in a fair, effective, cross-status and participatory manner.

Following the successful adoption of the first sustainability strategy in 2021, the steering group resumed its work in January 2024 and initially reflected on the previous 2021-2025 sustainability strategy. As a result, new fields of action and cross-cutting topics as well as potential for the subsequent strategy were identified and the joint working method was defined.

↳ Members of the steering group at the kick-off meeting 2019

The aim of the steering group is to formulate the new sustainability goals for the university for the years 2026 to 2030 by the end of 2025, adopt them with the involvement of all committees and publish them.

→ **More information:**
hs-bochum.de/governance

Department "Sustainability, Transfer and Entrepreneurship" in the Presidential Board of the university

With the change of office of the Presidential Board in February 2022, Bochum University of Applied Sciences established the "Sustainability, Transfer and Entrepreneurship" department for the first time, which is currently coordinated by Professor Dr Mi-Yong Becker. This has emphasised and visibly strengthened the university's strategic orientation towards sustainable development in the sense of a "whole institution approach". Bochum University of Applied Sciences wants to play an effective role in shaping a sustainable future and consolidate its role as an educational and research institution that actively addresses the dynamic requirements of the transition to sustainability.

Climate protection and sustainability management


Miriam Trümper

As part of the project "Integrated climate protection concept and climate protection management for Bochum University of Applied Sciences", the university established and climate protection management in September 2022. The climate protection manager, Miriam Trümper, a graduate of our Sustainable Development degree programme, has developed an integrated climate protection concept for Bochum University of Applied Sciences. Based on the assessment of our greenhouse gas emissions, the identification of reduction potentials and the implementation of initial measures, we have already taken significant steps towards promoting university-wide climate protection.


Anna Skorka

In 2023, sustainability management was established in the Department of University Development and Academic Quality Management (headed by Thorsten Bordan) for the operational and strategic anchoring of sustainability. Our sustainability manager, Anna Skorka, also a graduate of our Sustainable Development degree programme, is responsible for monitoring, implementing and reporting on our sustainability goals.

Questions from students to the heads of sustainability:

This time Professor Dr Mi-Yong Becker, Vice President for Sustainability, Transfer & Entrepreneurship

"As Vice President, you have broad responsibility for various aspects of the university. What is your vision for the integration of sustainability into the overall structure and activities of the university?"

"In my vision, Bochum University of Applied Sciences plays a pioneering role for socio-ecological change and sustainable development in the region. We make a visible contribution to bringing about positive change at a local and regional level by promoting a sustainable mindset and practice in education, research and community engagement. In doing so, we make measurable contributions to greater resilience and the future viability of our university and our society. Sustainability is a joint endeavour. As a university community - students and employees alike - we actively participate in achieving sustainability goals in our core missions of teaching, research and transfer together with our stakeholders and within the framework of our networks and collaborations. In our actions, we stand up for diversity, basic democratic principles and social cohesion."


Professor Dr Mi-Yong Becker

She makes a significant contribution to the organisation of our collaborations and networks and acts as the interface between the university management, administration, departments and university committees within the university.

Miriam Trümper and Anna Skorka are the primary contacts for all members of the university when it comes to climate protection and sustainability. They work closely together and develop creative formats based on scientific knowledge that inform, sensitise and encourage participation. These concepts are actively implemented on campus in order to reach both students and employees. Various partnerships are involved, such as the EssBo! association in the implementation of the plant swap meet. The key success factors of their work are partnership-based communication and cross-status group cooperation. Ind. 1.1.1, 1.1.2, 1.3.1, 5.4.2

The Round Table Sustainable Univercity

The "Round Table Sustainable Univercity" was established in 2022 as an operational working group within the governance structure. The student body, the administration, the departments and the Presidential Board are represented at the round table. In addition, expertise from specific university departments is brought in as required.

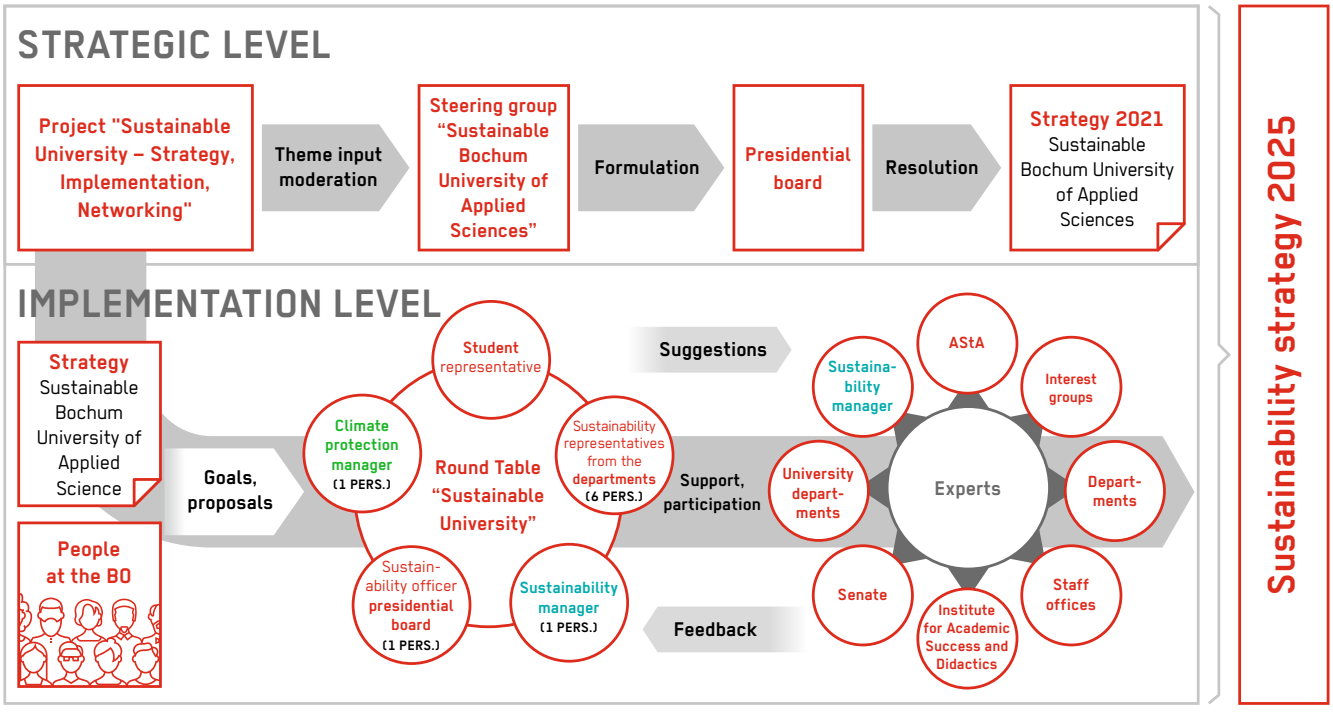
The task of the round table is to actively **implement** the **goals** set out in the sustainability strategy. The Round Table's responsibility for the **non-material and financial support of ideas** submitted for the sustainable transformation of the university should be emphasised in particular. Two to four meetings are held each semester. By involving all status groups of the university, the round table promotes an equal dialogue and transparency and creates an open internal working level for implementation. Ind. 1.1.3 – 1.1.5

→ **The results of the meetings and further information on the round table can be found on our website: hs-bochum.de/rundertisch** Ind. 1.1.6

Financial support for sustainability and climate protection

The sustainable transformation of Bochum University of Applied Sciences should also be reflected in a **budget** earmarked for this purpose. For the first time, a budget of EUR 2,000 was allocated to the Round Table operational committee for 2023. An expenditure concept for 2023 and 2024 was developed in close collaboration with representatives of the working group. The decisive factor here was the determination that the available funds would be used specifically **for high-profile events, awareness-raising and educational campaigns** and the implementation of submitted **ideas** in the interest of sustainability.

Our governance model:



A successfully implemented event took place in December 2023 as part of the Fairtrade University certification. Santas made from Fairtrade certified chocolate were purchased via the budget. University members were able to win these on 6 December 2023 in the canteen gallery by taking part in a quiz on the topic of fair cocoa cultivation. The aim was to sensitise university members to the differences in cocoa cultivation, such as working conditions, market prices, etc. The event enjoyed lively participation and positive feedback from the visitors saying they would consume chocolate more consciously in the future.

The **aim of** these and similar **high-profile events** is to **communicate** the issues of sustainable development **within the university on a broad scale and to encourage participation**. [Ind. 1.2.1, 1.2.2]

Involvement of our stakeholders

We see participation as a core element of our governance. We want to offer our **internal and external stakeholder groups** regular opportunities to participate in easily accessible formats. In June 2022, we organised the Stakeholder workshop - reflection on the sustainability strategy with our stakeholder groups, which invited our stakeholder groups to participate, exchange ideas and network. 89 participants discussed their thoughts, ideas, questions, suggestions and also criticisms of the 2021-2025 sustainability strategy.

The **sustainability strategy** was **successfully reflected upon** and content for its further development was gathered. The results of the workshop are now available for everyone to read in the form of a booklet. The "Sustainable Bochum University" round table has been working with the results of the workshop since June 2023. These are discussed and prioritised at the meetings and the resulting implementations are planned and initiated. Workshop participants will be informed about the current status of implementation via our website. [Ind. 1.3.2-1.3.4]

Student Project
Sustainable University Bochum

Since 2017, the student **research project "Sustainable University - Strategy, Implementation, Networking"** has been supporting and shaping the process towards a sustainable university in Bochum. Students on the Bachelor's and Master's degree programmes in Sustainable Development and the Master's degree programme in Applied Sustainability have the opportunity to **develop skills in the areas of strategy development, reporting and public relations and to contribute their own ideas to the design of a sustainable university.** The students support the The Round Table Sustainable Univercityin the conceptualisation and further development of the sustainability strategy and prepare the meetings of the round table. They are also actively involved in the preparation of the sustainability report. In the area of climate protection, they developed a mobility survey in the winter semester 2022/23 to determine commuting behaviour and the resulting carbon emissions.

→ **You can find the booklet in German here: hs-bochum.de/stakeholder-workshop-2022**

↳ Impressions of the "Sustainable Bochum University" workshop in the Bluebox on 1 June 2022

Questions from students to the heads of sustainability:

This time Joshua Kampmann, a Master's student in "Applied Sustainability"

Joshua Kampmann

"How are students involved on the way to a sustainable university? What co-determination rights do they have?"
"As students, we are a crucial factor in promoting sustainable development at our university. We have the right to actively participate in decision-making processes, be it through direct co-determination in university committees (through the representation of the AStA - the general students' committee) or through participatory projects such as the Sustainable Bochum University - Strategy, Implementation, Networking project group. By contributing our ideas and visions as potential guests at the round table, we can make a significant contribution to the organisation. In addition to these direct opportunities to influence processes, there is always the option of using the ideas form to initiate projects and actions that can drive sustainable development forward."

Further participation via the university-wide ideas management programme

Since 2007, the university has had a contact point for students and employees to submit ideas and suggestions for improvements to the campus, teaching and operations. Called VVV - Vorschlagen-Verbessern-Vereinfachen (Suggest, Improve, Simplify) at the time, over 130 suggestions have been submitted since then and processed by the Department of Finance and Organisation. For example, more seating on campus, an exchange shelf for books and the installation of additional rental lockers have been implemented.

Currently, ideas that are directly related to sustainability are submitted via the **ideas form on our website** or directly to the Sustainability and Climate Protection Management.

Students from the teaching research project *Sustainable Bochum University - Strategy, Implementation, Networking* have the task of discussing these ideas in the project group and examining their potential feasibility. **A selection of ideas is discussed and prioritised at the round table meetings and implementation is initiated.** In the reporting period from September 2022 to August 2023, seven ideas were submitted, four of which were implemented. Ind. 1.1.7 & 1.1.8

→ **Here you can contribute your own ideas: hs-bochum.de/idee**

Fairtrade Universities

We are currently pursuing the idea submitted by a student to become a certified Fairtrade University. The first events took place in June and December 2023 after the Presidential Board and the Climate Protection Management agreed to this endeavour. The aim is to hold two events per semester to raise awareness of fair trade among university members.

Overview of participation options and formats

Sustainable Bochum University steering group:

Participation of all status groups at Bochum University of Applied Sciences. Do you have a concern about the strategic orientation of Bochum University of Applied Sciences? Then contact your representative in the steering group:

→ **hs-bochum.de/governance**

Teaching research projects at Bochum University of Applied Sciences:

- For **students**
- For **professors and lecturers**
- For **external parties**

→ **hs-bochum.de/studentische-projekte**

THALESruhr:

Open to all university members and external parties who have an interest in the sustainable development of the Ruhr metropolis and who would like to talk to the THALESruhr project team and explore opportunities for participation.

→ **Contact: Dr Aukje van Loon**
thalesruhr@hs-bochum.de

Ideas management at Bochum University of Applied Sciences:

Open to all university members and external parties who would like to contribute an idea for the sustainable Bochum University of Applied Sciences:

→ **hs-bochum.de/idee**

MoVe (Mobile Networking Centre)

- For **professors, lecturers** and **researchers**
- For **student groups** at Bochum University of Applied Sciences
- For **employees** of the administration
- For **external parties**

Stakeholder workshop in autumn 2025:

Open to all members of the university and external parties who have an interest in a sustainable Bochum University of Applied Sciences and would like to engage in dialogue with us and advance the joint design process.

06 TEACHING, STUDIES AND FURTHER EDUCATION

TSF1: We empower all members of the university to implement sustainability in their workplace by offering appropriate further education.

TSF2: We embed sustainability in our courses and impart a basic understanding of sustainability to every graduate of our university.

TSF3: We promote student sustainability projects and theses.

TSF4: We promote the exchange between lecturers on sustainability topics.

TSF5: We are in the process of developing a new continuing education programme, which includes in particular in-service certificate studies, in order to transfer competences on sustainable development to the broader community.

As a university community, we attach great importance to **supporting and promoting** our students and employees **throughout their entire educational journey**. We offer a wide range of services prior to their studies, from information events at schools to special events such as "Girls' Day" and digital podcasts for students "BO to go!".

During the degree programme, we offer a **variety of Bachelor's and Master's degree programmes with a clear focus on sustainability and the environment**. After completing their studies, our graduates have various options open to them, be it through support for **doctoral projects, business start-ups or on the path of in-service training,** such as the "Sustainability Reporting" certificate programme. We also invest in the continuous development of our **teaching staff** and **employees** through skills-oriented workshops, such as those offered as part of our **"L³ - Lehre hoch 3 - Räume öffnen" event series**.

Podcast BO to go!
Take a listen!

Goal TSF1:
We enable all members of the university to implement sustainability in their workplace through appropriate continuing training programme

Our vision is to enable all university members to carry out their day-to-day activities in the workplace as sustainably as possible. This includes activities that affect their work directly, such as the procurement of items and materials, or indirectly, such as the use of available resources like paper, light, heat and water. Initial measures have already been implemented at the university in the area of procurement. In **2023**, for example, **individual employees from procurement took part in a training course on sustainable procurement.** On the one hand, **the training focused on understanding global connections within the supply chains**, such as on site working conditions and our responsibility as consumers, and on the other hand on identifying ways to **procure more sustainably in practice, taking social, environmental and economic criteria into account**. Ind. 2.1.1

In addition, a training programme for employees is being planned for 2024.

Goal TSF2:
We embed sustainability in our courses and convey a basic understanding of sustainability to every graduate of our university

In the area of teaching, our university sees itself as a **provider of knowledge on sustainability for all degree programmes offered**. All degree programmes are therefore taken into account because the necessary changes affect all areas of society and therefore all professions and we want to help facilitate change in all areas. The **aim is to give all students a basic understanding of how to tackle the ecological, social and economic challenges that are coming** to a head as a result of advancing climate change in a joint and transdisciplinary manner. Raising students' awareness of the need for transformation directly during their education should **enable them to shape and implement sustainable aspects in** their later **professional and private careers**. As of January 2024, nine degree programmes have already implemented the **compulsory module "Fundamentals of Sustainable Development"** in their curriculum. We have agreed with all departments that all Bachelor's degree programmes will integrate the content of a compulsory module worth 2.5 ECTS into their curricula in their next accreditation cycle. Due to different accreditation cycles, this will be implemented by 2028 at the latest. Ind. 2.2.1

Our degree programmes with a focus on sustainability and the environment

Bochum University of Applied Sciences currently offers **six degree programmes related to sustainability and the environment.** Three of these are Bachelor's and three are Master's degree programmes. These include the degree programmes ***Sustainable Development (B.Sc. and M.Sc.)***, ***Applied Sustainability (M.Sc.)***, which enables students to contribute to solving global challenges such as climate change, water scarcity and social inequality. The ***Regenerative Energy Systems*** degree programme ***(B.Sc.),*** which focus on renewable energies, is also offered. ***Environmental Engineering (B.Sc. and M.Sc.)*** deals with current social challenges, including energy, transport, technical climate protection and environmental protection.

→ **More about our degree programmes: hs-bochum.de/studiengaenge-nachhaltigkeit**

Bachelor's Degree Programmes

Sustainable Development (B.Sc.)

Regenerative Energy Systems (B.Sc.)

Environmental Engineering (B.Sc.)

Master's Degree Programmes

Applied Sustainability (M.Sc.)

Sustainable Development (M.Sc.)

Environmental Engineering (M.Sc.)

Central courses in sustainability: *The Studium PLUS programme*

The Studium PLUS programme was developed for all students at Bochum University of Applied Sciences who can attend optional or curricular seminars on key competences.

Since **2009,** the topic of **sustainability has been firmly** anchored in the ***Studium PLUS* programme of the ISD (Institute for Academic Success and Didactics).** Current topics are taken into account as they arise in other educational contexts or are dealt with in sustainability research. It is ensured that a variation of ecological, economic and social focal points can be selected in the programme, sometimes alternating, in order to sensitise students from all degree programmes to the holistic approach of sustainability. In the winter semester 2022/23 and summer semester 2023, a total of 122 students took part in a Studium PLUS module related to sustainability, which corresponds to around 11 per cent of all students taking part in Studium PLUS courses (number of all course participants: 1037). [Ind. 2.2.2, 2.2.3]

Courses offered in the winter semester 2022/2023:

1. Sustainable project management abroad
2. Bees and other pollinators in the context of sustainability
3. Change agents in action*
4. Education for sustainable development*
5. Climate change and planetary boundaries: The unclear or clear future of polar bears, koalas, beach holidaymakers and winemakers*

* Due to low registration numbers (<5), this event did not take place

Courses offered in the summer semester 2023:

1. Bees and other pollinators in the context of sustainability
2. Education for sustainable development
3. Change agents in action
4. Ecodesign: on the aesthetics of sustainability
5. Introduction to the debate on sustainable development
6. Climate change and planetary boundaries: The unclear or clear future of polar bears, koalas, beach holidaymakers and winemakers
7. The concept of sustainability for the implementation of successful structural change (held in English)

→ **Course descriptions and contents can be found in the Studium Plus module catalogues: hs-bochum.de/isd/angebote-des-isd/studium-plus**

Questions from students to the heads of sustainability

This time Professor Dr Friedbert Pautzke, Head of the Sustainable Development programme (2013-2021)

"Why was it important for you to establish the Sustainable Development degree programme at the university in 2013? And how do you rate the introduction of the programme now, more than 10 years later?"

"The holistic approach of sustainability, with the simultaneous and equal realisation of environmental, economic and social goals, is indispensable and leads to the necessity of interdisciplinary cooperation. The socio-political necessity of establishing such a degree programme at a German university prompted me to assume responsibility for the introduction of the "Sustainable Development" degree programmes at Bochum University of Applied Sciences. In the meantime, the sustainability degree programmes have become one of the main pillars of Bochum University of Applied Sciences. In particular, the unique selling point of interdisciplinary cooperation as opposed to an independent department has proved very successful. Interdisciplinarity is the basis for the success of social change. It is therefore right and important to expose oneself to the field of tension of interdisciplinarity during one's studies and to develop strategies for successful implementation in professional practice."

Professor Dr Friedbert Pautzke

Student project BOase

The BOase teaching research project focuses on the **permaculture garden** at Bochum University of Applied Sciences, our little oasis on our campus in the centre of Bochum. The project was set up by students in 2018, launched with the university's management and has since been maintained, supported and researched by students under the supervision of Johannes Tangen. The special feature of the BOase is the permaculture concept on which it is based. The term "permaculture" is a portmanteau of the English words "permanent" and "agriculture". Permaculture attempts to work with nature rather than against it by **restoring natural cycles.** The permaculture approach thus represents a direct contrast to monoculture, which is often used in agriculture today. The overarching aim of permaculture is to protect people and nature and to share resources fairly. This approach has also been adopted in the BOase and combines an ecological and social level in a special way through communal gardening. The BOase not only aims to **create ecological added value in urban spaces** (biodiversity), but also a space to stay and **form communities** (sociodiversity) on its own campus and beyond.

Goal TSF3:
We promote student sustainability projects and theses

We see ourselves as a **practice-orientated university** that promotes student engagement during their studies through active participation in project studies. Students can participate in various **sustainability-related projects** over two semesters. The variety of projects has grown steadily. The following projects were offered in the winter semester 2022/2023 and summer semester 2023: Ind. 2.3.1 – 2.3.4

STUDENT PROJECTS IN THE FIELD OF ENERGY, CLIMATE PROTECTION AND THE CIRCULAR ECONOMY:

- **Sustainable Energy Impact**
  Development of a product system for the production, storage and reconversion of green hydrogen in Ghana
- **Carbon sequestration @ NRW**
  Permanent storage of CO2 emissions through the pyrolysis of biomass
- **Urban Mining Lab**
  Returning urban waste to the material cycle
- **ANKE (Autonomous Sustainable Disaster Protection Energy Supply)**
  Further development of the autonomous and energy self-sufficient drinking water and energy system
- **SolarSwarm**
  Development of an autonomous swarm of solar vehicles to collect rubbish

STUDENT PROJECTS IN THE FIELD OF AGRICULTURE, BIODIVERSITY:

- **OnTop - RoofTop-Farm**
  Planting of the roofs with an automated irrigation system
- **BOase**
  Gardening in the university garden according to the permaculture principle
- **BIOMEILER**
  Utilisation of green waste to produce high-quality compost and use of the heat generated in the process
- **Biodiversity City**
  Conception and realisation of species-rich biotopes in the city of Bochum

Johannes Tangen from the community garden Hof Bergmann e. V.

Johannes Tangen, biologist and geographer, is the founder and operator of the Hof Bergmann e.V. community garden. **The collaboration between the university and Johannes Tangen began in 2019 with** the aim of running the university garden ***BOase*** with students and interested parties according to the principle of permaculture. Since then, the university garden has been characterised by a high level of biodiversity and a variety of fruit, vegetables, herbs and flowers. Johannes Tangen has also been involved in the ***OnTop*** project, **the** university's **rooftop farm,** since 2021 and shares his expertise in the cultivation and care of vegetable plants. In 2020, he also became a partner in the ***Carbon Sequestration @ NRW*** project. On the grounds of his community garden ***Hof Bergmann e.V.,*** he worked with students from the university and the Geographical Institute of the Ruhr University Bochum to produce biochar from pyrolysed wood chippings, which binds CO_2 from the atmosphere in the long term. This biochar was then worked into the soil on test areas of the farm with the aim of analysing the effect of the biochar on agricultural yields.

Picture and source: Johannes Tangen

STUDENT PROJECTS IN THE AREA OF SOCIAL DIMENSIONS IN SUSTAINABILITY:

- **Enactus Bochum**
  Implementing international social innovations
- **Repair culture in Bochum - network education and sustainable lifestyle**
  Repairing instead of throwing away in cooperation with the AStA of the Ruhr University
- **Sustainable Bochum University - strategy, implementation and networking**
  Development of the sustainability strategy via the steering group and implementation of the sustainability strategy via the round table
- **SusConGen (Sustainable Consumption from a Gender Perspective)**
  Research on changing gender-specific consumer behaviour
- **MoVe (Mobile Networking Centre)**
  Implementation of information and discussion events on campus for all university members

STUDENT PROJECTS IN THE FIELD OF MOBILITY:

- **Cargo pedelec project**
  Design and construction of e-cargo bikes
- **Bobby Sharing - urban. smart. sustainable.**
  Research into innovative mobility and energy services
- **SolarCar and Solar Buggy**
  Promoting the mobility transition with specially designed solar vehicles

→ **Contacts and further information on the projects: hs-bochum.de/studentische-projekte**

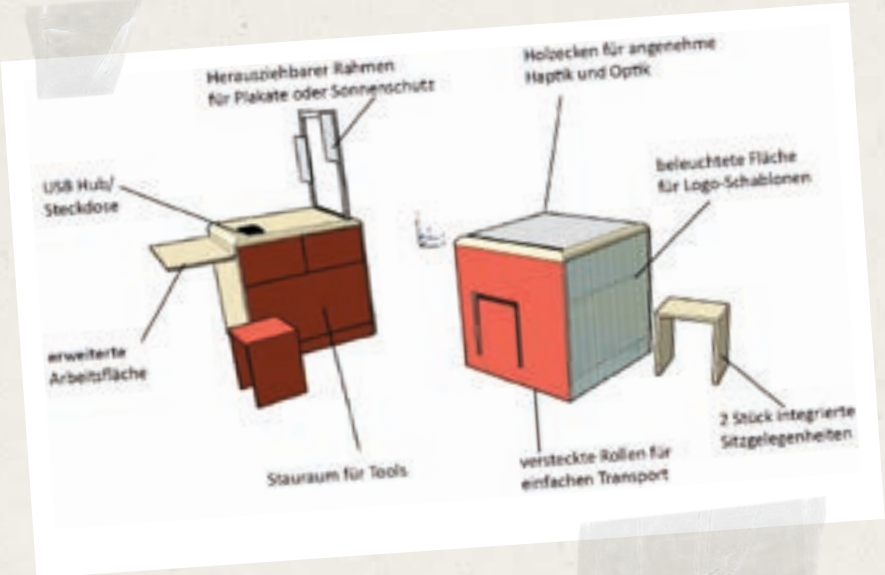
Promotion of final theses

VfL Bochum 1848 sponsors two **interdisciplinary sustainability prizes**, one for the **best final thesis at Bachelor's level and one for the best final thesis at Master's level**, each worth EUR 1,000, i.e. a total of EUR 2,000 per year. The first competition will take place in the 2024 summer semester. Applications for this prize are open to recent alumni from all departments. In 2024, theses by graduates who successfully completed their Bachelor's or Master's thesis at Bochum University of Applied Sciences and received their degree certificate in the period from 1 October 2023 to 30 September 2024 can be nominated for this award. Ind. 2.3.5

→ **Further information on the cooperation with VfL Bochum 1848 on page 53**

Student project MoVe – Mobile Networking Centre:

The Mobile Networking Centre (MoVe) is an innovative project with the aim of creating a place for **networking and visibility of sustainability, which is to be established both inside and outside Bochum University of Applied Sciences.** Consisting of two cubes on wheels and equipped with digital and analogue materials, the MoVe offers a wide range of uses for students and employees of the university as well as for external parties who cooperate with the university. One possible way to use the MoVe is to organise 'coffee lectures'. These short, informal lectures by lecturers and external experts on the topic of



sustainability, followed by a discussion round and **interaction with students and staff, are intended to raise awareness of sustainability and promote interdisciplinary dialogue**. The MoVe is currently still under construction and is expected to be completed and ready for use in summer 2024.

→ **Further information: hs-bochum.de/move**

Goal TSF4:
We promote the exchange between lecturers on sustainability topics

L³ workshop series

With the **event series *L³*** *- Teaching to the power of 3 - Opening up spaces,* Bochum University of Applied Sciences offers its **lecturers a** continuous programme of **informative and advanced training workshops. L³** includes formats that broaden knowledge horizons and provides tools and methods that lecturers can use for their courses and examinations in order to keep teaching up-to-date and professional in challenging everyday life. This provides them with a space in which they can exchange ideas and learn from each other.

In the format *L³ - Teaching to the power of 3 - Opening up spaces,* eight events were held for teaching staff and employees in the 2023 summer semester on the topics of *the introductory phase of studies, sustainable data management, compensation for disadvantages, ChatGPT, gamification, university structure, QVM (Quality improvement agents) and research funding, examination law*

Out of a total of 590 employees, 143 of whom are professors (as of Dec. 2022; lecturers are not included), 163 have taken part in an L³ event. As the participants are not documented by name, it is possible that people are counted twice. The number of participants per event varies between less than ten to up to eighty people. The aim is to further develop the programme according to the demand. Ind. 2.4.1, 2.4.2

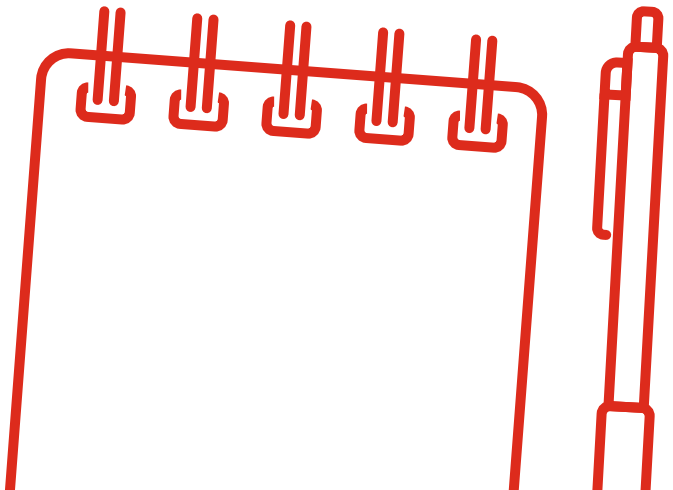
Goal TSF5:
We are developing a new further education programme, which includes in particular part-time certificate studies, in order to bring sustainable development skills to the wider society

Part-time certificate "Sustainability Reporting"

Bochum University of Applied Sciences has been offering a **part-time certificate course in "Sustainability Reporting"** since the 2023/24 winter semester. This is primarily intended to prepare employees of reporting companies for standardised reporting in accordance with the Corporate Sustainability Reporting Directive (CSRD). The 21 participants were **taught key skills** such as **managing operational sustainability risks and integrating regulatory requirements into reporting**. Upon completion of the module, including an examination, the certificate is awarded with a final grade and 5 ECTS credit points. The second certificate course started in March 2024 with 25 participants. Ind. 2.5.1, 2.5.2

→ **Further information at: Part-time certificate in sustainability reporting**

In future, further continuing education programmes are to be developed at the university to meet the needs of our stakeholder groups. They are fed by the ongoing dialogue with our external stakeholders and use the impetus and insights gained from this to tailor innovative programmes to meet requirements. The aim of our further education programmes is primarily to enable participants to implement their own transformative solutions, particularly in companies and local authorities.



Questions from students to the heads of sustainability

This time Lisa Kränke, programme coordinator for Sustainable Development and Applied Sustainability (Department of Electrical Engineering and Computer Science)

Lisa Kränke

"As coordinator for the sustainability degree programmes, you are involved in designing the curriculum. How are the degree programmes structured to ensure that our graduates develop a deep understanding of the principles of sustainability?"

"The Sustainable Development degree programme is designed to provide students with a holistic understanding of the principles of sustainability. The curriculum covers a wide range of topics, including ecology, social sciences, economics and technology. Particular emphasis is placed on an inter- and transdisciplinary perspective to address the complex challenges of sustainable development. Students have the opportunity to specialise in one of the three areas of "Construction - Space - Environment", "Engineering" or "Economics" and deal with topics such as sustainable infrastructure planning and land management, sustainable design of technical solutions or sustainable economics and management."

07 RESEARCH AND DEVELOPMENT

RD1: We embed sustainability in our research and development activities by developing tangible sustainability goals and guidelines by 2022, demonstrating how the results of our research and development activities can contribute to the sustainable development of our society.

RD2: We document our sustainability achievements from research and development activities and can illustrate how these contribute to the achievement of the SDGs (research database).

RD3: Our results and findings related to sustainable develpment from research and development activities are communicated transparently to our stakeholders.

RD4: We are expanding our multiplier role and developing a sustainability network with our stakeholders. The purpose of this network is to communicate and exchange findings from development activities related to sustainable development and to initiate cooperation/ projects in the field of sustainable development.

RD5: We present a clear overview of our range of services for the social provision of knowledge, such as formats for scientific and professional further education or scientific consulting services.

As a university of applied sciences, our **focus** in the area of **research and development is on** promoting **innovative solutions in technology, engineering and management** that directly address practical challenges in a variety of disciplines. In doing so, we focus on the key research areas of "Data-Driven and Smart Technologies", "Smart Mobility and Building" and "Resources and Sustainability". In line with the university's sustainability profile, innovations that relate to the Sustainable Development Goals (SDGs) are a particular focus. These include **urban developments, water management, resource-efficient production processes, intelligent transport systems, innovative construction projects, the promotion of the circular economy and renewable energies**.

Goal RD1:
We embed sustainability in our research and development activities by developing specific sustainability goals and guidelines by 2022, thereby demonstrating how the results of our research and development activities can contribute to the sustainable development of our society

The role of **sustainability and its integration into research was set out in the University Development Plan 2023-2028 (HEP).** Together with the departments, institutes and interest groups, the Presidential Board of Bochum University of Applied Sciences developed goals and measures for future university development, which were summarised in the university development plan.

In the area of research, the key research areas "Data-Driven and Smart Technologies", "Smart Mobility and Building" and "Resources and Sustainability" have been defined. These directly or indirectly reflect various aspects of sustainability. We are guided by the associated Sustainable Development Goals in each case. The "**Data-Driven & Smart Technologies**" research focus area **examines** the **application of data in conjunction with artificial intelligence and data science as well as the integration of software into mechanical and electronic systems**. The collaboration between the Interdisciplinary Institute for Applied AI and Data Science Ruhr (AKIS) and BO Smart Factory enables research into solutions for urban development, water management and resource-efficient production technologies. A particular focus is on the application of computer science topics in the areas of smart city & smart home, education and production technology. Currently, 20 projects are being implemented in this research focus area. These include for example: "Digital mentoring" or "ProComE - Analysis of combined hydrological and meteorological extreme events".

→ **More information on the "Data-Driven & Smart Technologies" research projects**

The **"Smart Mobility & Building"** research programme focuses on the **development of resource-efficient concepts for mobility and modern infrastructures for buildings**. Researchers concentrate on designing sustainable transport systems, intelligent mobility solutions and innovative construction projects. The research projects involve collaboration at national, European and international levels and benefit from the cooperation of various institutions at Bochum University of Applied Sciences, including the Institute for Electromobility, the Institute for Mobility and Transport Systems and the BIM Institute (Building Information Modelling). Current projects include, for example, "MoNal - Thinking mobility sustainably across the life cycle", "SEGuRo - SEcure Grids for Redispatch 2.0" and "BIM.Ruhr - Network Building Information Modelling Central Ruhr Area".

→ **More information on the research projects: Smart Mobility & Building**

Bicycle professorship:

Cycling has gained enormously in importance in North Rhine-Westphalia (NRW) in recent years. The state government is recognising this fact with the future-oriented development of cycle path infrastructure. In the future, more and more specialists will be needed to drive forward the planning and construction of cycling infrastructure. For this reason, the state government is funding a **professorship for cycling**. A jury of experts selected Bochum University of Applied Sciences to integrate the professorship due to its practice-orientated concept. **Promoting sustainable mobility** is a key concern for us. We strategically anchored the topic of cycling in research, teaching and transfer at an early stage. Therefore, the acquisition of the professorship and the associated substantial strengthening of the teaching and research field of "cycling" represents a success of great strategic importance for the university.

The research focus area "**Resources and Sustainability**" focuses on the responsible use of resources and the management of water and energy in accordance with sustainable principles. The researchers deal with topics such as the energy transition, securing supplies, adaptability to environmental changes and the creation of a circular economy for a sustainable future. Through a comprehensive inter- and transdisciplinary approach, they endeavour to develop innovative business models and solutions that take the entire life cycle into account and promote the responsible use of resources. Key projects include "GH2GH - Green hydrogen for decentralised energy systems in sub-Saharan Africa", the "Integrative sustainability concept using the example of the International Garden Exhibition Ruhr Metropolis 2027" and "GiVEn - Fair interregional distribution of the costs and benefits of the energy transition". Ind. 3.1.1

→ **More information on the research projects: Resources and sustainability**

In accordance with the sustainability profile of Bochum University of Applied Sciences, all research fields have a special focus on the importance of innovations related to the Sustainable Development Goals (SDGs). Through applied research and close cooperation at local, regional and international level, Bochum University of Applied Sciences strives to develop solutions to pressing challenges and to shape sustainable paths of change.

Goal RD2:

We record our sustainability performance from research and development activities and can demonstrate how these contribute to achieving the SDGs

In future, our **sustainability performance** in the area of research, in the form of **publications, research infrastructure, third-party funding, patents and spin-offs as well as the promotion of young talent, will be primarily** recorded **via a digital research information system (RIS).** The development of the database is at an advanced stage as of March 2024. The planned data is to be entered into the database in the first quarter of 2024. By the end of 2024, there should be a link to our website to make information from the database publicly available in English and German.

In the winter semester of 2023, **SDG sponsorships** were established across the university and in the departments to highlight the **research projects** with which **we support the global Sustainable Development Goals**. Ind. 3.2.1

The Laboratory for Sustainability in Technology

The Laboratory for Sustainability in Technology (LNT) is headed by Professor Dr Semih Severengiz. It consists of an **interdisciplinary scientific team** of currently 19 employees. The research work is organised into three working groups: **Energy, Mobility and Circularity**. The LNT works closely with companies to translate research findings into practical applications. Through strategic partnerships with industry, research expertise is integrated into real environments and its effectiveness evaluated. The aim is to **analyse and evaluate sustainable technologies in order to reduce environmental impact** and promote sustainable development. Research focuses on **life cycle engineering, mobility and energy supply concepts, decentralised regenerative energy systems with green hydrogen technology, circular economy and eco-design as well as innovative qualification concepts.**

Professor Dr Semih Severengiz

→ **Further information can be found at: hs-bochum.de/labor-nachhaltigkeit-technik/uebersicht**

Energy Transition Institute

The newly founded Energy Transition Institute (EnWI) at Bochum University of Applied Sciences brings together the expertise of members from **all departments** at Bochum University of Applied Sciences - Architecture, Civil and Environmental Engineering, Electrical Engineering and Computer Science, Geodesy, Mechatronics and Mechanical Engineering, and Economics - to **promote interdisciplinary research and teaching in the field of renewable energy systems and for a sustainable design of the energy transition. The aim is to develop innovative solutions for the sustainable implementation of the energy transition together with partner universities, the regional economy and civil society.** The participating researchers will kick off the dialogue with all those interested in the energy transition with a series of lectures starting on 13 June 2024 with a contribution to the "NRW Heat Study" by the State Office for Nature, Environment and Consumer Protection of North Rhine-Westphalia (LANUV). The consortium of the heat study, consisting of the Fraunhofer IEG, IFAM, UMSICHT, the Solar Institute Jülich and Bochum University of Applied Sciences, is developing a regional heat plan for NRW. This involves fundamentally revising the heat demand model, determining the renewable and climate-friendly potential and creating scenarios for a climate-neutral heat supply.

SDG SPONSORSHIPS

Cargo Pedelec project at Bochum University of Applied Sciences

Since 2015, the Cargo Pedelec project at Bochum University of Applied Sciences has enabled students to expand and apply their theoretical knowledge in a practice-orientated project. In interdisciplinary teams based on the so-called ***problem-based learning approach***, i.e. learning that is made possible through the development and application of solutions for concrete, real-world problems, students are researching new mobility options for the future. The main aim is to **develop cargo pedelec prototypes that combine the advantages of bicycles and cars, but offer an alternative, efficient and more sustainable form of everyday mobility.** The project not only promotes in-depth learning of theoretical content, but also enables practical experience in teamwork and vehicle development, thereby expanding professional and personal skills. The project contributes in particular to the UN Sustainable Development Goal **SDG 11** (Sustainable Cities), relates to **sustainable mobility patterns** in cities and thus contributes to sub-goal 11.2 (Affordable and sustainable transport systems). The project has already produced four unique prototypes, including **solutions for small families, freight transport and commuting**.

Supervision:
Professor Dr Günter Lützig

› Further information at:
www.eelo.eu

› And on YouTube:
youtu.be/Uo4NqnpO4uk

Goal RD3:

Our results and findings relating to sustainable development from research and development activities are communicated transparently to our stakeholders

We are in constant dialogue with our practical partnerships from business and civil society. A **high percentage of the externally funded projects at Bochum University of Applied Sciences are carried out in practical partnerships**, which means that we maintain a **close dialogue with our regional stakeholders** in our research projects. Stakeholders in the region are informed about the current progress via various channels, either directly via the cooperation or via reports on our website and the sustainability report. In future, information will be provided in a transparent and structured manner via the research information system described above from objective RD1. [Ind. 3.3.1]

→ **Further research projects under:**
hs-bochum.de/forschungsschwerpunkte

SDG SPONSORSHIPS

Biopile project at Bochum University of Applied Sciences

A large amount of landscaping material is produced at Bochum University of Applied Sciences and in the surrounding area. This biomass is to be composted using a bio-piler in order to produce **high-quality compost that** can be distributed to a wide range of users in the neighbourhood. Composting organic material can produce high-quality substrate, which is primarily used to improve the soil and return nutrients to agricultural land or gardens. In particular, this **increases the humus content in the soil, which leads to an improvement in soil structure and an increase in biodiversity.** The greater **ability to store water also supports resilience against increasing periods of drought**. High-quality soils are the basis of all life, as they provide valuable nutrients for a variety of living organisms. The project therefore supports **SDG Goal 15** (Life on Land) in particular, and especially **Target 15.1 (Conserve and restore terrestrial and freshwater ecosystems). The heat generated within the bio-pile is to be dissipated and used to heat individual buildings or greenhouses.** This is intended to support an energy supply that is as climate-neutral as possible. The provision of affordable and clean energy is the focus of SDG 7.

Supervision:
Professor Dr Mandy Gerber and
Professor Dr Peter Hense

› Further information on:
hs-bochum.de/studentische-projekte/biomeiler/

Goal RD4:
We are expanding our role as a multiplier and developing a sustainability network with our stakeholders. It should serve to communicate and exchange findings from development activities related to sustainable development and to initiate cooperation and projects in the area of sustainable development

The university has steadily expanded its networking activities within the Ruhr region with other universities. Overlapping interests and complementary synergies have been utilised to form lasting partnerships. One of the most recent alliances is **HochschulAllianz Ruhr (HAR),** an association of our Bochum University of Applied Sciences, Dortmund University of Applied Sciences and Arts and Westfälische Hochschule Gelsenkirchen University of Applied Sciences, which was founded in 2020. Based in Herne, the HAR focuses on the **three synergy clusters of research funding, internationalisation and academic continuing education**.

The joint alliance of the three universities sees itself in the role of a proactive shaper by providing **social, economic, ecological and educational development impulses** through cooperation with contributors and active participants **in the region.** Innovative joint **research initiatives, offers of continuing academic education, the use of joint potential for internationalisation** and the organisation of coordination and decision-making processes are designed to contribute to solving these challenges in the region and beyond.

Two initiatives were founded from the HochschulAllianz Ruhr: ruhrvalley.tech and the Applied Excellence Department (AED). The **AED**, funded by the Ministry of Science and Culture of the State of North Rhine-Westphalia, acts as a **driving force for regional development by innovatively connecting science, business and society**. It is dedicated to current **challenges in the areas of mobility, energy, digitalisation and climate protection**. For example, as part of an innovation competition, solutions were sought for the use of old industrial areas (or blueprints) as **"sustainable future districts"**, which are exemplary in terms of energy supply and use as well as mobility solutions from a digitalisation and climate protection perspective. Seven projects were selected as part of this innovation competition. These transformation projects represent the AED's first real-world laboratory project.

ruhrvalley.tech is an innovation network that uses **research-intensive technologies to develop and implement substantial innovations for the further development of the Ruhr metropolis**. The focus here is on the use of deep tech.

SDG SPONSORSHIPS

"EffMi" Tiny House on the Velbert/Heiligenhaus campus

The "EffMi" is an efficient **tiny House on the Velbert/ Heiligenhaus campus** is an innovative research project in which living in a compact space is to be improved using technical possibilities. The researchers receive crucial suggestions for improvement from homeless people. As part of a development project, a Master's student worked on the construction of an improved tiny house. The **focus was on analysing insulation materials and moisture regulation.** The house was equipped with suitable **measurement technology** for this purpose. **In the future,** questions regarding energy supply, the use of more sustainable materials and the **optimisation of water supply and fire protection** will be addressed. The Tiny House will also be presented as a university project at trade fairs and students will have the opportunity to get involved with student project work on the topics. The project supports **SDG 11** (Sustainable Cities and Communities) and in particular sub-goal 11.1 (Safe and Affordable Housing).

Supervision: Dipl.-Ing. Sonja Podjawerschek, Professor Dr Dietmar Gerhardt and Professor Dr Stefan Breuer.

Supervision: Dipl.-Ing. Sonja Podjawerschek, Professor Dr Dietmar Gerhardt and Professor Dr Stefan Breuer

› Further information:

What makes ruhrvalley.tech **special** is the **collaboration between people, companies and organisations from different sectors such as science, SMEs, large corporations, start-ups and public organisations**. They all contribute their expertise and ideas to jointly find solutions to challenges such as the digital transformation, climate change and the energy and mobility transition.

The activities of ruhrvalley.tech include not only research and development, but also the **practical testing of new solutions on site** in order to improve the quality of life of people in the region. The cooperation is characterised by professional exchange, transdisciplinary research and development projects as well as joint marketing and start-up activities.

The innovation network has been funded by the Federal Ministry of Education and Research (BMBF) since 2017 and has launched more than 20 research and development projects since then. One of the tasks within this project is to strengthen the ruhrvalley brand at a regional, national and international level. Ind. 3.4.1

Goal RD5:
We provide a clear presentation of our range of services for the social provision of knowledge, such as formats for scientific and professional development or scientific advice

Our publication database serves the transfer of knowledge and technology and is intended to enable local authorities, commercial enterprises and the civilian population to search specifically for the results of our current research and find them using a simple keyword search. The **bundled access to our domain knowledge and the corresponding contact persons should also simplify the development of new co-operations**. Furthermore, **scientific and professional training formats** can also **be found by keyword,** making access to our programmes more visible and thus easier.

08

UNIVERSITY OPERATIONS, PROCUREMENT AND CLIMATE PROTECTION

PC1: 2030 we will be a climate-neutral university.

PC2: We will develop a climate protection concept for the university by theend of 2023, which will outline the possibilities for achieving climate neutrality by 2030. The climate protection concept includes all emissions that can be influenced by the university according to the Green House Gas Protocol (especially Scopes 1 and 2 and, to a limited extent, Scope 3).

PC3: We will specifically implement resource conservation and increase our resource efficiency from 2023 onwards in accordance with the achievement levels of the climate protection concept (PC2).

PC4: From 2023 onwards, we will set out the extent to which we use natural resources as part of sustainability reporting processes.

PC5: From 2023 onwards, we will set out which other social and ecological criteria apply to our procurement processes in accordance with the procurement guidelines of the state of North Rhine-Westphalia.

PC6: We enable all members of the university to implement sustainable procurement criteria by providing suitable training and awareness-raising measures.

In line with our self-image as a sustainable university, our **focus in climate protection over the next few years will primarily be on reducing our greenhouse gas emissions in operations**. How and to what extent this is possible was set out in the **university's first climate protection concept,** which was published in **February 2024.** In the area of procurement, we are also endeavouring to **take** further **ecological and social criteria into account when selecting products**, in addition to our previous efforts. Furthermore, climate protection measures also include the promotion of **biodiversity.** This is promoted on the university campus, for example, through our species-rich **university garden, the *BOase,*** and in Bochum and the surrounding area through the student **project *Biodiversity City*,** which is concerned with the planting of public spaces.

Goal PC1:
We will be a climate-neutral university by 2030

In our Sustainability Strategy 2021-2025, we have set ourselves the ambitious goal of achieving climate neutrality in university operations by 2030. In accordance with our sustainability strategy, the feasibility of this goal should be assessed by introducing climate protection management at the university. Funded by the National Climate Initiative (NKI) of the Federal Ministry for Economic Affairs and Climate Protection, Miriam Trümper, our climate protection manager since September 2022, has drawn up a **climate protection concept** that includes 1) an initial assessment of greenhouse gas emissions, 2) an analysis to identify potential savings and 3) a catalogue of measures to continuously improve the climate impact of Bochum University of Applied Sciences. The development of various scenarios, in which climate protection efforts of varying intensity were analysed, was intended to provide information on the feasibility of climate neutrality. Along the ***trend scenario*** (continuation of the previous development and the setting of minor reduction targets), the ***climate protection scenario*** (compliance with legal requirements and the setting of increased, achievable reduction targets) and the ***climate protection plus scenario*** (compliance with legal requirements and, in addition, the setting of ambitious reduction targets), measures and their effects on the emissions load of Bochum University of Applied Sciences were analysed.

→ **You can find our greenhouse gas balance on p. 29 in the climate protection concept of Bochum University of Applied Sciences:**

The goal of climate neutrality relates to university operations and is therefore limited to Scopes 1 and 2 (for an explanation of the scopes, see info box System boundaries). Scope 3 emissions are therefore excluded for the time being. In order to reduce mobility-related emissions in particular, a long-term approach is required that works towards behavioural changes over several years. When considering the reduction paths in the formulated climate protection scenarios, emissions can be reduced by 36 per cent in Scopes 1 and 2 in the *trend scenario*, by 60 per cent in the *climate protection scenario* and by 83 per cent in the *climate protection plus scenario.* If Scope 3 is also included, this means a savings potential of 10 per cent in the trend *scenario*, 32 per cent in the climate protection *scenario* and 54 per cent in the climate protection plus *scenario*.

The results of the calculations make it clear that Bochum University of Applied Sciences is unlikely to become climate-neutral by 2030, even with ambitious **reduction targets**. This realisation requires a reformulation of the goal of climate neutrality by 2030, based on the scenarios developed in the climate protection concept. The trend scenario is omitted, as the targets are not ambitious enough and do not sufficiently reflect the endeavours of Bochum University of Applied Sciences. The climate protection scenario presents the university with the challenge of implementing ambitious measures such as the expansion of renewable energy and the associated reorganisation of the energy supply as well as the energy-efficient refurbishment of existing buildings within a limited period of six years. Structural changes to the buildings at Bochum University of Applied Sciences, such as energy-efficient refurbishments, require close coordination with the state of North Rhine-Westphalia (NRW) as the owner and its property service provider, the Bau- und Liegenschaftsbetrieb of the state NRW (BLB NRW).

Both external and internal decision-making processes, the actual implementation and the necessary lead time until the realisation of savings successes require time, which can be considered very limited until 2030. In addition, the measures relevant to climate neutrality are associated with investments for which the university must provide financial resources. This has not been possible to date, as the measures to reduce emissions were not available until the climate protection concept was finalised and could therefore not be included in the budget planning. In order to achieve the reduction targets, these investments must be integrated into future budget management. The climate protection concept therefore **proposes alignment with the *climate protection scenario* and the 60 per cent reduction in operations, i.e. Scopes 1 and 2**. The scope of the measures and the associated successes are assessed as realisable and therefore targeted.

The results of the climate protection concept and the associated need to realign the main objective in the area of *university operations, procurement and climate* were discussed and debated intensively with the members of the Presidential Board. There was agreement that the **goal of climate neutrality** should be **adjusted in line with the results of the potential analysis**, that the existing wording should be corrected and that the decision in this regard should be monitored transparently. The Sustainable University Steering Group will analyse the results of the climate protection concept and make a recommendation to the university management regarding climate protection objectives and submit it for approval.

The greatest levers for climate protection lie in the expansion of renewable energy, particularly in the supply of heat and, with regard to all scopes, in the area of mobility. Together with Ruhr University Bochum and the Fraunhofer Institute for Energy Infrastructures and Geothermal Energy IEG, geothermal potential is to be tapped and, among other things, the university's Bochum campus is to be supplied with climate-neutral heat. Key measures to reduce emissions from commuting include **promoting cycling** and providing a platform for carpooling. In particular, the aim is to increase the attractiveness of alternative modes of transport to the car. [Ind. 4.1.1]

System boundaries

In accordance with the Greenhouse Gas Protocol (GHG Protocol), all emission sources over which Bochum University of Applied Sciences has full control are recorded. This corresponds to all energy consumption and the resulting emissions on the campuses of both locations. These sources can be divided into three areas:

Scopes – The emission categories

› Scope 1:

Direct emissions from sources owned/controlled by Bochum University of Applied Sciences

- Vehicle fleet
- Purchase of gas
- Coolants

› Scope 2:

Indirect emissions from purchased energy

- Purchase of electricity
- District heating

› Scope 3:

Indirect emissions from upstream and downstream corporate activities along the value chain

- Procurement (paper)
- Mobility (commuting, student mobility abroad)
- Water and waste water
- Waste

Goal PC2:

By the end of 2023, we will draw up a climate protection concept for the university that demonstrates the possibility of achieving climate neutrality by 2030. The climate protection concept covers all emissions that can be influenced by the university in accordance with the Greenhouse Gas Protocol (in particular Scopes 1 and 2 and, to a limited extent, Scope 3).

The **climate protection concept** serves as a decision-making and planning aid for the implementation of climate protection in university operations and includes an inventory of consumption in the areas of (waste) water and waste, procurement and resource conservation, energy, buildings and properties, mobility and organisation and structures. Consumption and the resulting emissions are summarised in an **energy and greenhouse gas balance sheet**. Based on the balance sheet, potential savings are identified and **targets and guiding principles** are defined in collaboration with the relevant interfaces at Bochum University of Applied Sciences.

As part of a workshop in October 2023, all university members were invited to develop ideas and suggestions for promoting climate protection at the university. With the help of these measures, climate protection is to be increased in the areas of action under consideration and the reduction targets set are to be achieved. To review the effectiveness of the measures implemented, a ***controlling concept*** is being developed that will enable continuous monitoring of all relevant data sets.

To ensure that climate protection management is permanently established at the university, a ***continuation strategy*** is being developed that sets out how it can be continued beyond the development of the concept until 2030 and beyond until 2045. Transparent and targeted ***communication*** is important along all components of the concept. All relevant information should be made available via digital and analogue channels and the opportunities for participation should be communicated to all members of the university. The focus is on involving students and employees in the management processes. Participation should be facilitated through information and discussion rounds as well as interactive and playful formats.

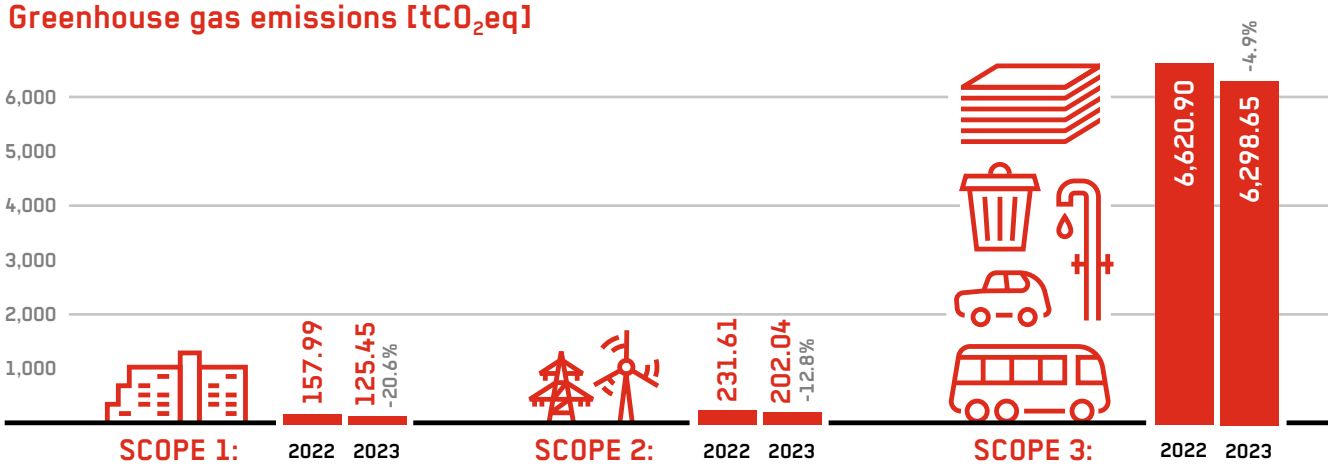
The climate protection concept was presented to the university management in February 2024. The Presidential board follows the recommendations of the concept and has decided to implement the measures contained therein. [Ind. 4.2.1]

→ **The elaboration is published on our website:**

Our greenhouse gas balance

Recording the gross volume of direct greenhouse gas emissions (Scope 1), indirect energy-related GHG emissions (Scope 2) and other indirect energy-related GHG emissions (Scope 3) [Ind. 4.4.1]

Greenhouse gas emissions [tCO_2eq]



Scope	Range	emissions [tCO_2 eq] 2022	2023	
1	Vehicle fleet	1.84	0.72	↓
1	Gas supply	145.70	114.28	↓
1	Refrigerant	10.45	10.45	○
2	Electricity	0.64	0	↓
2	District heating	230.97	202.04	↓
3	Procurement (paper)	5.16	3.95	↓
3	Shuttle service	6,454.85	6,252.26	↓
3	Student mobility abroad	123.84	3.54	↓
3	Water and waste water	2.84	3.20	↑
3	Waste	34.20	35.72	↑
Scope 1 Total		**157.99**	**125.45**	↓
Scope 2 Total		**231.61**	**202.04**	↓
Scope 3 Total		**6,620.90**	**6,298.65**	↓
SCOPES 1-3 TOTAL		**7,010.50**	**6,516.14**	↓

In 2023, less heat was consumed, meaning that Scope 2 emissions fell slightly. A decrease in Scope 3 emissions is largely due to a decrease in emissions from commuting. These were extrapolated to the current number of university members, which is lower than in the previous year, based on the results of a mobility survey from 2023.

Award for project Carbon Sequestration @ NRW (CSEQ@NRW)

The teaching research project **CSEQ@NRW at Bochum University of Applied Sciences was honoured in the nationwide "Project Sustainability" competition**. The prize was awarded by the Regional Network Centres for Sustainability Strategies (RENN) and the German Council for Sustainable Development (RNE). The project is researching the topic of biochar. **Biochar** is produced by pyrolysis (carbonisation) of biomass and is one way of removing **CO_2 from the atmosphere in the long term**. Biochar can also be used in agriculture to **improve the soil.** The project is closely linked to the "Regional Climate Alliance" transfer project in the THALESruhr transformation project. The aim of the transfer project is to disseminate and use biochar as a CO_2 offsetting method, with the project addressing a wide range of target groups such as companies, private individuals and educational institutions.

↳ Student Jan Ole Diekmann (2nd from left), research assistant Mianfen Jenny Chong (3rd from left) as well as project manager Professor Dr Mandy Gerber (4th from left) and Professor Dr Marcus Schröter (5th from left) accept the award. Moderated by Dr Dorothea Schostok, Head of the "Sustainable Development, Coordination of Sustainability Strategy NRW, Environmental Trends" department at the Ministry of the Environment, Nature Conservation and Transport of the State of North Rhine-Westphalia (1st from left). (Photo: ©RENN.west / Simon de Lima)

Goal PC3:

In accordance with the achievement levels of the climate protection concept (PC2.), we will implement targeted resource conservation and increase our resource efficiency from 2023 onwards

Conserving resources and increasing resource efficiency have already been initiated or implemented in many processes, particularly in the area of procurement. For example, product groups such as paper or IT equipment have been identified as critical due to their production, consumption quantities or resource origin and should therefore be analysed particularly closely. The **procurement process is in the process of digitalisation**; publicly accessible printing devices have already been largely eliminated and replaced by scanners. The conservation of resources in business and teaching operations is incorporated into our everyday university life in information campaigns on general sustainability and climate protection topics, e.g. via the university's own Instagram account and the intranet.

The university will also take various measures to reduce the use of natural resources and increase resource efficiency. For example, the **second-hand furniture exchange** is to be revitalised and made more widely known, which can lead to a reduction in the number of new purchases if it is widely used. The extent to which an extension to other items, such as IT equipment or even the use for private adverts, is

Climate protection measures workshop October 2023:

More than 40 people from various status groups took part in the workshop to develop ideas to promote climate protection at the university and came up with a variety of measures. We have summarised the results of the measures workshop on our website for you to read:

→ **Results of the measures workshop**

↳ Workshop on climate protection measures at Bochum University of Applied Sciences: More than 40 university members took part in the development of measures to promote climate protection at the university

feasible should also be examined. In the area of procurement, the aim is also to work out how sustainability and climate protection criteria can be integrated into tenders in order to influence the consumption of resources, particularly in the case of long-term, high-volume procurements.

The **introduction of a waste separation system is a major factor** for the university and its community. This first requires the establishment of an infrastructure and the corresponding coordination with the service provider. Accompanying communication to inform and sensitise users is important for successful implementation. As there are separate disposal options for paper and recyclable materials on campus, it is already recommended that waste is separated independently. This should be communicated and advertised more strongly until the introduction of structured waste separation in the buildings.

For concrete implementation, **students** from the teaching research project *Sustainable University Bochum - Strategy, Implementation, Networking* have **developed a waste management concept** that addresses the two components of **waste avoidance and waste separation**. The concept includes an inventory of the current situation on site, provides an overview of the waste quantities of the fractions, makes suggestions for the organisation of waste separation as well as for measures to promote waste avoidance and for a controlling system to check effectiveness.

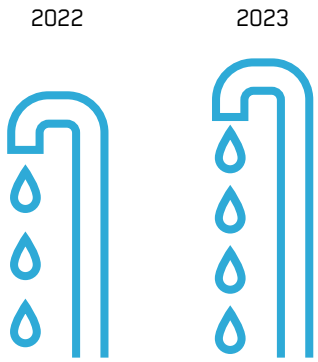
EMAS certification

An initial discussion with the university's chancellor has shown that the **introduction of an environmental management system in accordance with EMAS** makes sense due to a large overlap with the data collected as part of climate protection management. In a next step, the **requirements for certification** must be **examined** and, in consultation with the responsible departments, the extent to which capacities and infrastructure are available for implementation must be investigated. In addition to the self-imposed goal, the "Act to Increase Energy Efficiency in Germany" now requires public bodies to introduce an energy or environmental management system. Bochum University of Applied Sciences is covered by the law as it exceeds the threshold value for energy consumption and is now obliged to implement this programme by 2026. [Ind. 4.3.4]

Goal PC4:

From 2023 onwards, we will use appropriate sustainability reporting to explain the extent to which we utilise natural resources

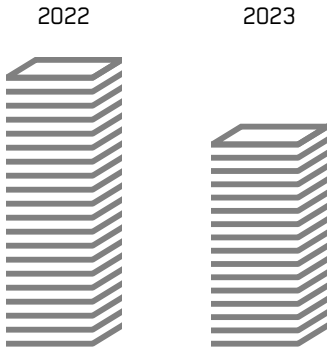
4.1.1 Recording of water consumption [m^3]



	2022	2023
Total	**4,570**	**5,138**

↳ With the resumption of on-site operations in 2022 following the coronavirus pandemic, water consumption returned to pre-2020 levels. [Ind. 4.4.2]

4.1.2 Recording of paper [sheet]



	2022	2023
Total	**1,250,000**	**962,500**
Recycled ratio	96%	100%

Paper consumption is determined by the amount of paper procured. In 2023, **around 23% less paper** was **purchased** than in 2022 due to the use of leftover stock from the previous years, the reduction in printer devices and ongoing digitalisation processes in the administration. In addition, only **100% recycled paper** has been procured since 2023. [Ind. 4.4.3]

Professor Dr
Oliver Stengel

Questions from students to the heads of sustainability

This time Professor Dr Oliver Stengel, Professor of Sustainability (Department of Electrical Engineering and Computer Science)

"In your opinion, what is the key to sustainability and climate protection at Bochum University of Applied Sciences?"

"The broad support at the university, perseverance and people who take care of the implementation of sustainability-related measures on a full-time basis."

Goal PC5:

In compliance with the procurement guidelines of the state of North Rhine-Westphalia, we will set out which other social and ecological criteria apply to our procurement from 2023 onwards

There are currently no specific procurement guidelines at our university that take social and ecological criteria into account. In order to counteract this deficit, an **orientation paper on more sustainable procurement** was drawn up by students of the project "Sustainable Bochum University - Strategy, Implementation, Networking" in the winter semester 2023/24 and is currently being evaluated as of April 2024. Subsequently, more detailed ecological and social criteria are to be finalised for recommendation in consultation with the relevant departments at the university. Some employees at the university already attach importance to ecological aspects in procurement out of their own conviction, especially when procuring office materials, including copy paper. Since 2023, this has consisted of one hundred per cent recycled paper fibres and is certified with the "Blauer Engel" label. Notepads, writing utensils, glue sticks and adhesive tape are also purchased from ecologically sound materials. [Ind. 4.5.1]

Goal PC6:

We enable all members of the university to implement sustainable procurement criteria through suitable further training and awareness-raising programmes

To **raise awareness and sensitise** all members of the university, attention is drawn to the implications of resource consumption via various channels and at **events**. This concerns the **areas of mobility, energy-saving behaviour and the reduced use of paper and water**. The next step is to integrate these individual measures into a campaign so that all fields of action relevant to the university are covered and regular reports on content, tips and recommendations for action are provided. In addition, there will also be active formats such as a "Clean-Up Day", where waste lying on the ground on campus or in Bochum's neighbourhoods is collected together to raise awareness of how to deal with waste. The overarching goal is to **report on effective measures** and to help reduce consumption and the associated greenhouse gas emissions and sustainably reduce the impact on the climate. [Ind. 4.6.1]

09 LESS INEQUALITY – THIRD MISSION

TM1: In the Bochum "Haus des Wissens" (House of Knowledge/ HDW) we offer barrier-free educational opportunities for underrepresented groups in society.

TM2: We actively cooperate with UniverCity Bochum and report on the resulting unifying activities at the nexus of academia, community, business and urban society.

TM3: We increase and record our socio-ecological commitment to the municipality and the region.

TM4: We promote sustainable development across society through knowledge and technology transfer as well as sustainability-related start-up support.

The third mission, activities and measures that go beyond the university's statutory mandates, already shape our organisation and our actions in many ways. **Memberships in networks** that also include civil society groups, business and other educational institutions, e.g. UniverCity, Hochschulallianz Ruhr (HAR), VfL Bochum 1848, Qualification Centre for Refugees (QUAZ), Ruhrtriennale or DG HochN, Fairtrade University, Hof Bergmann community garden or the steering group "Globale Nachhaltige Kommune Stadt Bochum" (Global Sustainable Community City of Bochum), illustrate how Bochum University of Applied Sciences sees itself in this dimension of action.

Other activities in the course of refugee support, the integration of volunteer work in business studies, repair cafés and swap meets or the increased consideration of inclusive development options are also contributions to fewer inequalities within society. Considerations as to how **education** can be made **even more open, participatory and lifelong** (e.g. as part of Open Science) form the bridge to active involvement in the House of Knowledge and the accompanying measures during the development phase. The university also strengthens existing partnerships internationally and establishes new ones.

Goal TM1:
At the Bochum House of Knowledge (HDW), we offer barrier-free educational programmes for underrepresented social groups

The Bochum House of Knowledge will be the **central education centre of the city of Bochum with the city library, the adult education centre, UniverCity** and a market hall in the historic post office building. It serves as an **open meeting place for lifelong learning, experience and recreation**. With a **focus on reading and media use,** it offers an extensive media collection as well as workstations, digital services and high-quality communication areas. The **opening is planned for 2026**. The target group of the Bochum House of Knowledge (HDW) includes the entire Bochum urban community. The educational formats of the House of Knowledge are based on the topics of the Bochum Strategy. In 2023, the focus was on the topic of "Social Diversity". This topic was brought to life with various events. Each event is always organised in cooperation with the adult education centre or the library. Bochum's universities do not appear individually, but as part of the UniverCity network.

International project GH2GH "Green hydrogen for decentralised energy systems in sub-Saharan Africa"

The aim of the project "Green hydrogen for decentralised energy systems in sub-Saharan Africa" (GH2GH) is the **sustainable implementation of green hydrogen technology for local energy systems in sub-Saharan Africa**. To this end, a system for the production, storage and utilisation of green hydrogen in a **solar-powered mini-grid system** is being developed and tested. Environmentally harmful practices, such as the use of diesel generators in off-grid energy systems, can thus be avoided and **energy self-sufficiency and social acceptance promoted**. In addition, a legal, political and administrative framework will be created to support the introduction of the technology. The project also includes the **development of future scenarios and the identification of further use cases** for green hydrogen as well as qualification measures for the long-term utilisation of the system on site. The innovative core lies in the **holistic view of the hydrogen system** over its **entire life cycle and its integration into a software platform based on blockchain technology for efficient energy trading**. The project is being funded by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) as part of the "Environmental Protection Export Initiative" and will run until the end of 2025.

↳ Realisation concept for a hydrogen generation and storage unit powered by solar energy with a 20kW PEM electrolyser and a 10kW fuel cell

↳ Stakeholders at the kick-off meeting of the GH2GH project at the Don Bosco Campus in Tema (Ghana) with Bochum researcher Yara Matschalow (2nd from right).

The programme of events is planned with the entire Bochum House of Knowledge team. All network participants are contacted to identify suitable topics and event formats.

In August 2022, Bochum University of Applied Sciences was represented at the public event "On the way to the House of Knowledge" on the square in front of the town hall with the Library of Things, a clothes swap and the Repair Café. In June 2023, the International Café was held in the city library during "Europe Week", which was supported by the university's International Office. Ind. 5.1.2, 5.1.3

→ **The event formats for 2024 have been published on the website: Calendar of events House of Knowledge 2024**

Mining Museum Bochum, Bochum Marketing GmbH, the City of Bochum and the EconomicDevelopmentCompany Bochum mbH.

With the appointment of a new director, Sherin El Safty, we are working together on the reorientation of UniverCity. In 2023, our university presented the THALESruhr project with various sub-projects on the UniverCity stage at the Bochum Music Summer Festival. As part of the Year of Science, the university was represented by the Department of Geodesy at the kick-off event. Ind. 5.2.1

→ **Further and new formats are being planned and will be published on the website in the course of 2024: www.univercity-bochum.de**

Goal TM2:
We actively cooperate with UniverCity Bochum and report on the resulting connecting activities at the interface of science, community, business and urban society

UniverCity sees itself as Bochum's **knowledge network in the fields of science, research and education**. The network's partnerships are the Bochum universities: the EBZ Business School, the Protestant University of Applied Sciences Rhineland-Westphalia-Lippe, the Georg Agricola University of Technology, the Ruhr University Bochum, the Folkwang University of the Arts, the University of Applied Sciences for Health and Bochum University of Applied Sciences. Cross-institutional partner organisations are the Fraunhofer IEG, the Chamber of Industry and Commerce IHK Mittleres Ruhrgebiet, the Max Planck Institute for Security and Privacy, the Akademisches Förderungswerk Bochum (AKAFÖ), the German

Goal TM3:
We increase and record our socio-ecological commitment to the community and the region

We would like to **develop and offer our socio-ecological commitment through various programmes via the House of Knowledge in collaboration with university partnerships**. Our aim is to organise significantly more educational programmes from 2025 onwards. Preparations are underway and the planning of further formats should pick up significantly in the course of 2024. Our university is offering an event on the House of Knowledge programme for 2024, which we are organising with the Georg Agricola University of Applied Sciences. The event took place as a **student conference on the topic of sustainability on 5 and 6 September 2024**. Students and doctoral candidates presented their sustainability-related theses and the results of their research work. Interested pupils and young people in training and school could also take part. Ind. 5.3.1

2! Questions from students to the heads of sustainability

This time Katrin Heymann, Chairwoman of the Senate

Katrin Heymann

"What was it like to work on the sustainability strategy as a member of the Sustainable University steering group? What does sustainability at Bochum University of Applied Sciences mean to you?"

"Working in this group feels meaningful to me, I experience **young people** who are **results-oriented and very committed to their work**. For me, sustainability at our university is characterised by the fact that the field of sustainability is anchored in the Presidential Board and is therefore visible, and that there are dedicated study programmes at Bochum University of Applied Sciences."

Student project Biosdiversity City

The **student project Biodiversity City** aims to **promote and preserve biodiversity in urban habitats**. Despite the general decline in biodiversity worldwide and also in Germany, cities can harbour an astonishing variety of life forms and thus increase biodiversity. Even small measures can help to promote biodiversity in urban areas. In this project, **students** from the "Sustainable Development" and "Applied Sustainability" degree programmes are **working on developing and implementing concepts to make various places in the city more biodiverse.** This includes the selection of suitable plants, the construction of nesting aids and insect hotels, the creation of raised beds, sandaria and wildflower meadows as well as the greening of facades. These measures are intended to promote and protect biodiversity in urban areas. This project contributes to SDG 15 Life on land and, above all, supports the lower target 15.5 "[...] halt biodiversity loss[...]".

Supervision by Professor Dr Oliver Stengel, Professor of Sustainability with a Sociological Focus, Department of Electrical Engineering and Computer Science

Seed library of Bochum University of Applied Sciences

Our technology library has been a home to a seed library since March 2024. All university members are welcome to take seeds in trial sizes free of charge. The selection is very diverse and ranges from **herbs and vegetables to (edible) flowers.** All varieties are suitable for growing on the balcony as well as in the garden. By using **high-quality, regional and organically certified seeds,** the seed library also promotes local biodiversity. This way, the university supports Sustainable Development Goal 15 "Life on land" with the sub-goal 15.5: "[...] halt the loss of biodiversity [...]"

Goal TM4:
We bring sustainable development to the wider society through knowledge and technology transfer and by promoting sustainability-related start-ups

At present, we do not yet systematically record the committee activities of our university members across the university. Activities related to sustainability at state level can be highlighted for this report:

Professor Dr Petra Schweizer-Ries

Professor in the Sustainable Development teaching and research focus area, has been appointed to the **Bioeconomy Council of the state of North Rhine-Westphalia** for the **expansion of a sustainable bio-based economy**. Since January 2024, she is working with 14 other personalities from business, science and civil society on the Bioeconomy Council for North Rhine-Westphalia for the next three years. The task of the council is to **analyse both the opportunities and challenges of the bioeconomy**. The council is to develop solutions for conflicting objectives such as the best possible utilisation of scarce renewable resources. The council's recommendations are to be incorporated into a bioeconomy strategy for NRW. The state government also aims to develop a future programme for the bioeconomy that supports the economy in the use of renewable, sustainable raw materials and identifies viable alternatives to fossil resources.

Professor Dr Christoph Mudersbach

has been a member of the **"Flood Protection in Times of Climate Change" commission** of the state government of North Rhine-Westphalia, which was convened by the Ministry of the Environment, Agriculture, Nature Conservation and Consumer Protection NRW, since January 2022. The task of the commission is to provide technical support and **advice on the implementation of the "Flood protection in times of climate change" work plan and its further development**. The work plan comprises a total of ten fields of action for flood protection and the management of heavy rainfall events. It serves as a basis for the main tasks in the area of flood protection in the coming months and years.

Professor Dr Christoph Mudersbach

has been a **member of the Advisory Board of the Higher Education Network NRW (HN NRW)** since 2023. HN NRW is an association of 21 state and state-funded universities of applied sciences in North Rhine-Westphalia. HN NRW was founded as a project in 2004 with the aim of raising the profile of university of applied sciences research in the political area Since its foundation, the HN NRW has received funding from the Ministry of Science of the State of North Rhine-Westphalia. The HN NRW has the task of making the research strengths of its member universities visible and thereby providing impetus, initiating political processes, creating synergies and strengthening the exchange between science, politics, business and society. **On the Advisory Board**, Mi-Yong Becker **strengthens the strategic management of network activities in the field of sustainability**. [Ind. 5.4.1]

Start-ups at Bochum University of Applied Sciences

StartUpLabs@BO

Start-ups are promoted at our university through the **StartUpLabs@BO** project, which is supported by the Federal Ministry of Research and Education in the "Research at Universities of Applied Sciences" funding programme. StartUpLabs@BO aims to increase the **start-up skills of our graduating alumni, create** a university-wide infrastructure of labs for **practical solutions, promote women's start-ups and offer a part-time degree programme**.

In July 2023, 2,602 of the 7,290 students at the university were female (as of 18 July 2023). With a focus on engineering and business, women are underrepresented in most subject areas. Nevertheless**, the number of enquiries from women interested in start-up coaching increased by 27 per cent in 2022 compared to the previous year**. These are often female students from the "Sustainable Development" and "Applied Sustainability" degree programmes. Since these degree programmes were established in 2013 and 2017, the demand for advice on social and sustainable start-up ideas has increased significantly. The aim is to further develop an advisory concept for social and sustainable start-ups as well as tools for impact measurement. There is a need for comparable opportunities for financing and funding, such as those available to tech start-ups. [Ind. 5.4.3, 5.4.4]

Nine sustainability-related start-ups were recorded at Bochum University of Applied Sciences in the period from September 2022 to August 2023:

1. Sustainable business fashion for women
2. The sustainability agency
3. Platform for farmers and restaurateurs for the local economy
4. Sustainable ear stick
5. Edelweiss - Platform for the realisation of sustainable events
6. 7stepssolution - Tool for implementing sustainable supply chains
7. Habaneo - growing box for the cultivation of culinary herbs, reduction of transport chains, waste etc.
8. Vegan food truck
9. VillageU - sustainable construction of housing estates that can be dismantled and offer more privacy despite community and intergenerational living

EXIST potentials

EXIST-Potentials is an initiative launched by the Federal Ministry of Economics and Climate Protection (BMWK) in 2019. A competition encouraged universities across Germany to apply for funding to strengthen entrepreneurial independence at universities. During the four-year funding period, the aim is **to create the necessary framework conditions for innovative and high-growth start-ups in the field of science and implement an activating start-up culture at the university**. This is expected to create jobs in the region in the medium term. Bochum University of Applied Sciences, the Westphalian University of Applied Sciences and Dortmund University of Applied Sciences successfully entered the competition and received the funding. In the mean time, the rurvalley Start-up Campus has emerged from this.

ruhrvalley Start-up Campus

The ruhrvalley Start-up Campus **aims** to **establish a start-up culture and facilitate spin-offs for university members.** The project has organised over 200 events with more than 2,000 participants and has already supported over 150 people and teams interested in founding a company. It offers a variety of events and counselling formats to cover different phases of the start-up process. The programme is designed in three phases: "Get inspired & motivated!", "Scout & Match!" and "Start-up & Boost!". It **includes coaching and networking** and also offers **weekly workshops on start-up-related topics as** part of an academy as well as seminar and workshop formats in the Studium Generale programme and in individual departments. All employees act as start-up coaches in order to create a close link to the counselling and qualification offers. Networking with the start-up ecosystem in the region is an important part of the project.

The "EXIST-Women" programme

Women are particularly encouraged to become self-employed at our university. We are supported by the **"EXIST-Women"** programme, an initiative of the Federal Ministry of Economics and Climate Protection (BMWK). The programme aims to **encourage women at universities and research institutions to become self-employed**. In view of the persistently low proportion of women founding start-ups in Germany, there is great potential for promoting women in the area of business start-ups. The "EXIST-Women" programme supports participants for twelve months through **workshops and events in their personal development as well as in finding ideas and shaping a business idea**.

The programme is accompanied by offers from the BMWK that enable participants to **network** with other **aspiring female founders from all over Germany**. There is also the opportunity to receive a three-month scholarship, the amount of which depends on the qualification. Up to ten women can be supported by Bochum University of Applied Sciences via the BMWK. The programme started in January 2024 and is now supporting ten motivated female scholarship holders.

→ **Further information on: EXIST-Women**

Co-operation partnerships

Bochum Theatre

As part of a cooperation agreement, Bochum University of Applied Sciences is supporting **Schauspielhaus Bochum** in its endeavours to **further advance the theatre's internal development towards sustainability**. In cooperation with the sustainability manager of the Schauspielhaus, two master's theses were advertised in autumn 2023, which were taken on by students of the "Sustainable Development" course. One analyses the environmental impact of a play ("Die Hermannsschlacht"), which is being performed in the current season, for the first time in Germany. The second identifies structures and change processes that are necessary for the introduction of an effective sustainability strategy in cultural institutions. The work aims to **discuss both potential challenges in implementing such strategies and possible solutions in order to develop a practical guide for cultural institutions to achieve sustainable management**. The contact person for this cooperation is Professor Dr Oliver Stengel (Department of Electrical Engineering and Computer Science)

SCHAUSPIELHAUS BOCHUM

KULTUR RUHR GmbH

Since 2021, Bochum University of Applied Sciences has been in a lively and close dialogue with **Kultur Ruhr GmbH** as part of a cooperation on sustainability. By 2022, **two final year theses** on sustainability issues had been written by students at Bochum University of Applied Sciences from the "Sustainable Development" department, in which **practical sustainability issues in the organisation of the Kultur Ruhr GmbH were examined. They are currently working together on the conceptualisation of energy-efficient refurbishment of the Ruhrtriennale's venues (international culture festival events)** and deriving possible joint project goals. The contact person for this cooperation is Professor Dr Volker Huckemann (Department of Architecture).

KULTUR RUHR GmbH

VfL Bochum 1848 wins "WestDerby Future" sustainability award

VfL Bochum 1848 and Bochum University of Applied Sciences have been working closely together since 2021 to conduct joint research in the field of sustainability and ensure knowledge transfer. This cooperation played an important role in **VfL being awarded the "WestDerby Zukunft" prize**. The jury particularly emphasised the club's **sustainability strategy and materiality analysis,** which were strengthened by the **collaboration with the university.** Joint projects and theses make a significant contribution to sustainable development. Being recognised with this award and nominated for the German Sustainability Award for Sport underlines the effectiveness of their joint efforts.

↳ (f.l.t.r.): Martin Sauer (laudator and EM 2024 representative of the City of Dortmund), Matthias Mühlen (Head of Sustainability/CSR VfL Bochum 1848), Angelina Biela (Sustainability/CSR VfL Bochum 1848) and Dominik Meier (Sustainability/CSR VfL Bochum 1848). Photo: RENN.west / Magunia

VfL Bochum 1848

The cooperation between Bochum University of Applied Sciences and **VfL Bochum 1848** has been in place since April 2021, focussing on the topic of sustainable development in the areas of teaching, research, transfer and consulting. By 2022, **three final year theses on sustainability management issues** at VfL Bochum 1848 had been written by students at Bochum University of Applied Sciences, the results of which were directly incorporated into the CSR and sustainability management. Further theses are currently being prepared that deal with the implementation of the ESRS (European Sustainability Reporting Standards) in light of the sustainability guidelines of the German Football League (DFL).

As part of this cooperation, long-term **joint projects in the context of education, social responsibility and sustainability are to be implemented in the future**. It should also be emphasised that VfL Bochum 1848 will sponsor a university-wide prize for the best sustainability-related final thesis at both bachelor's and master's level in the summer of 2024 with an annual prize of EUR 1,000 each. The contact persons for this cooperation are Professor Dr Marcus Schröter (Department of Economics) and Professor Dr Mi-Yong Becker (Vice President for Sustainability, Transfer & Entrepreneurship and Department of Economics).

Knowledge and technology transfer

Transfer project THALESruhr

The sustainability transformation is a joint task. This is a fundamental principle of action for Bochum University of Applied Sciences. With the THALESruhr project (Transfer Hub for the Advancement, Livability and Efficacy of Sustainability Transformations), it acts as a platform provider and agent of transformation in the Ruhr metropolitan region. Together with Bochum's citizens, local authorities, regional companies and organisations, THALESruhr works on the practical implementation of technical, economic and social innovations. The aim is to create "the greenest industrial region in Europe".

Nine transfer projects are part of THALESruhr and are spread across the transformation fields of "Resilience, mobility, energy", "Sustainable living and business" and "Production, planning, construction". They deal with practical solutions and their implementation in the areas of more efficient land use, resilience to extreme weather, climate-neutral construction, active climate protection, greater public welfare through a regional repair and share network and the redesign of road traffic areas.

The THALESruhr kick-off conference took place in June 2023 under the motto "Starting signal for transformation". It was attended by 132 visitors from science, local authorities, society, companies and organisations. At the market of opportunities, they were able to talk to the teams from the projects in the transformation fields and network.

↳ Market of opportunities in front of the Blue Box at Bochum University of Applied Sciences as part of the kick-off conference "Startschuss Transformation" in the THALESruhr project (June 2023)

As a "transfer hub for the promotion, viability and effectiveness of sustainability transformations", THALESruhr is one of the projects of the "Innovative University" funding initiative, which is supported by the Federal Ministry of Education and Research (BMBF) and the Joint Science Conference (GWK).

Innovative Hochschule

Bundesministerium für Bildung und Forschung

Gemeinsame Wissenschaftskonferenz GWK

The "THALESruhr Sustainability Alliance" kick-off event with the transformation network took place in February 2024. This laid the foundations for broad networking with each other and with the projects at Bochum University of Applied Sciences as well as for a common understanding of the field of "sustainability for the further development of the region". THALESruhr actively cooperates with UniverCity Bochum to network the Bochum MakerSpaces (open workshop) with joint event planning and mission statement development. **Ind. 5.4.7 - 5.4.10**

→ **Find out more: www.thalesruhr.de**

10 TRANSPARENCY AND REPORTING

TR1: We are making sustainability visible at our university and report on our sustainability activities and achievements every two years in a sustainability report. Our first sustainability report is scheduled to be published in 2022.

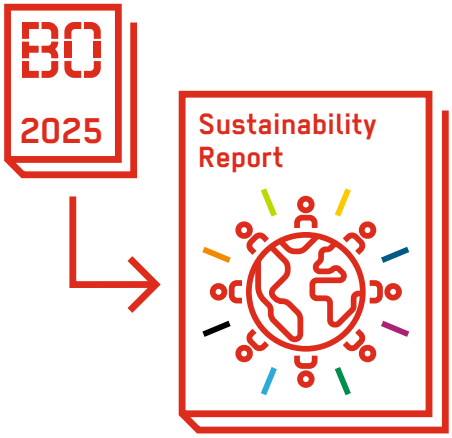
TR2: From 2025, we will present our sustainability report and our annual report as an integrated report.

Communicating our sustainability and climate protection activities within and outside the university is very important to us. Our first sustainability report summarises these activities and achievements for this purpose in a compact format. We also endeavour to **use our communication channels in a target group-oriented manner, primarily digitally, but also on campus**. We use social media such as Instagram, our own website, intranet posts and newsletters, as well as notices and posters on site, to inform students and employees and get them talking to us. We constantly strive to **report openly and transparently on our decisions and activities and to find new creative formats to not only inform but also encourage participation.**

Goal TR1:

We make sustainability visible at our university and report on our sustainability activities and achievements every two years in a sustainability report. Our first sustainability report is scheduled to be published in 2022.

Our first sustainability report was originally planned for 2022, but publication was delayed, in particular due to coordination processes regarding the indicators for measuring the targets. It was important for us to coordinate all content and responsibilities well, in particular to ensure the long-term collection of indicators. In April 2023, the position of sustainability management was filled and the task of preparing the first sustainability report was established and handed over within the university's organisation. **The first survey of indicators for the period from September 2022 to August 2023, which forms the reporting period and thus the basis for this sustainability report, began in September 2023.** Ind. 6.1.1



Goal TR2:

From 2025, we will present our sustainability report and our annual report as an integrated report

The consolidation of the annual report and the sustainability report is still being reviewed as of April 2024 in consultation with the departments involved and the Presidential Board. Ind. 6.2.1

Professor Dr
Christian Bockermann

Development of a database for recording sustainability indicators

A **database for collecting the indicators** has been **under development** since December 2022. **This project is being led by Professor Dr Christian Bockermann** from the Department of Economics. The aim is **to collect and collate the data for the next Sustainability Report 2025 in a digitalised, systematic and bundled form via the programme**. In the long term, the data will then be transferred into a document that can serve as a basic building block for further sustainability reports. In the future, we would also like to enable other universities to use our database for their own data collection and reporting.

11 TARGET ACHIEVEMENT AND POTENTIAL

In our sustainability strategy, we have opted specific goals for the period 2021 to 2025 for the following areas of action:

- Governance,
- Teaching, studying and further education,
- Research and development,
- Operation, procurement and climate,
- Third Mission - fewer inequalities and
- Transparency and reporting.

With **a total of 25 objectives,** we want to further promote and consolidate sustainability and climate protection activities at the university, introduce new processes and structures and at the same time bring about sustainable transformations together with our university members, companies, society, local authorities and as part of international collaborations. **To measure our goals, a total of 72 specific quantitative and qualitative indicators have been developed** that reflect the depth and breadth of the goals. However, the indicators should be seen more as a directional indicator for the achievement of the goals and not as proof, as they are often unable to fully reflect the degree of implementation and the dynamics of the goal achievement. Additional information on the targets is therefore required, which is also used to identify the greatest potential in the fields of action. **The indicators were collected in September 2023 for the period September 2022 to August 2023**.

A **tabular overview of the targets and indicators can be found in the sub-chapters on *target achievement by area of action***. The **achievement of objectives** is colour-coded. A target is highlighted in **green if it has been fully achieved and yellow if** the **target** is **almost achieved. Orange** means that we have **first initial measures to achieve the target** and **grey** means that we have **not yet started to pursue the target.** The following list illustrates this procedure:

Target fully achieved

Target almost achieved

Target achievement started

Target not yet achieved

Status of overall target achievement

Since the strategy was published in 2021, a lot has happened in terms of implementing the targets. After more than two years (as of April 2024), i.e. after just under half of the planned five-year period, we have already **achieved eight**, i.e. a third of our 23 **sustainability goals**. According to estimates and the current progress, we will be able to **achieve** a majority (**13 targets) by 2025**.

Goal TSF2, which we are pursuing with the mandatory establishment of the module "Fundamentals of Sustainable Development" in all Bachelor's degree programmes, is unlikely to be achieved by 2025, but by 2028 due to the ongoing accreditation cycles.*

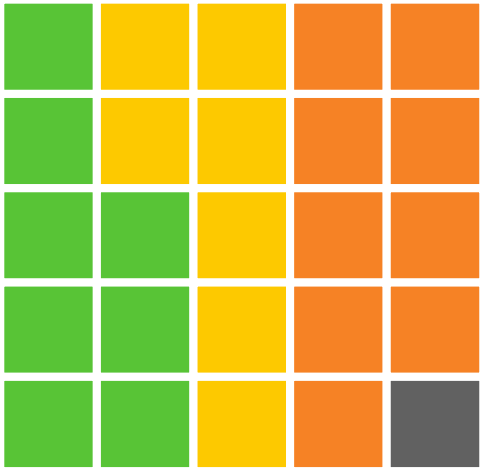
↳ *TSF2 We embed sustainability in our courses and impart a basic understanding of sustainability to every graduate at our university; for an explanation, see the section on Achievement of objectives and potential in the area of teaching, studies and continuing education

In all likelihood, we will not achieve target 3.1. of climate neutrality by 2030 after a comprehensive review.** The results of the calculations of the savings potential as part of our climate protection concept (drawn up in 2023) make it clear that Bochum University of Applied Sciences is unlikely to become climate-neutral by 2030, even with ambitious **reduction targets**. Even the climate protection plus scenario (83 % reduction in emissions by 2030) presents the university with the challenge of implementing ambitious measures such as the expansion of renewable energy and the associated reorganisation of the energy supply as well as the energy-efficient refurbishment of existing buildings in a limited time period of just six years. Structural changes to the buildings at Bochum University of Applied Sciences, such as energy refurbishments, require close coordination with the state of North Rhine-Westphalia as the owner and its property service provider, the Bau- und Liegenschaftsbetrieb from the state of North Rhine-Westphalia (BLB). Both external and internal decision-making processes, the actual implementation and the necessary lead time until the realisation of savings require time, which is considered to be too limited until 2030. For this reason, the climate protection concept **proposes a focus on the *climate protection scenario* and a 60 per cent reduction in operations, i.e. Scopes 1 and 2**. The extent of the measures and the associated successes are assessed as realisable and are therefore targeted.

↳ **Goal 3.1 Climate neutrality by 2030; Explanation of section Goal achievement and potential in the area of teaching, studies and continuing education.

Overall, it can be said that we are on a satisfactory and productive path towards achieving our goals. According to **current assessments, the chosen time horizon of five years and the associated realisability of our objectives, as well as the human resources available, seem appropriate.** This is evident from the measurement of the indicators and the additional qualitative statements from employees. Ultimately, this can only be assessed after the end of 2025. Of course, the commitment, motivation, enthusiasm and drive of all members of the university and the partnerships involved will continue to be required in order to bring about sustainable change at our university, in the region and beyond.

Target achievement



8 targets: target fully achieved

7 targets: target almost reached

9 targets: target achievement started

1 target: target not yet achieved

Target achievement and potential in the area of action Governance

We have made great progress in the area of governance in recent years. In addition to new working groups for the development of the sustainability strategy and its implementation, the filling of positions in sustainability and climate protection management, the budgets for sustainability and measures for participation, we see the greatest potential in motivating students and employees even more to actively participate in the sustainable transformation within the university. The biggest challenge is to win over people who have so far shown little or no interest in sustainability and climate protection or who do not know who they can turn to in this process. We hope to promote this with MoVe events (Mobile Networking Centre), ideas management and further public relations work. Playful formats such as quizzes on fair trade and the like have already shown that many students and employees are interested in these topics and are willing to make changes, for example in their consumer behaviour. However, raising awareness is an ongoing process, which we will endeavour to do more of in the long term.

We also aim to increase attendance at the "Sustainable Bochum University Steering Group" and the "Sustainable University Round Table" in order to increase participation and achieve equal representation.

We will also inform our stakeholder groups by mid-2024 about the extent to which we can take their feedback from the 2022 stakeholder workshop into account and what measures we have initiated or will initiate in this regard. Unfortunately, this information has been delayed due to various parallel processes. The "Sustainable University Round Table" has already dealt with a large number of the comments and will address the remaining ones in the next meetings. The results will then be published on our website so that indicator 1.3.4* is fulfilled in this area.

↳ *Indicator: 1.3.4: No later than six months after each stakeholder workshop, the stakeholder representatives receive a summary of the way in which we take their feedback into account or translate it into measures

Overview of goals and indicators in the area of governance:

1.1		We shape the long-term anchoring of sustainability through our governance	Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	1.1.1	Filling the position of sustainability manager	⊙	●
	1.1.2	Filling the position of climate protection manager	⊙	●
	1.1.3	Appointment of the sustainability officers of the departments	⊙	●
	1.1.4	Appointment of the members of the Round Table and their representatives	⊙	●
	1.1.5	The kick-off meeting of the Round Table took place and was documented [E]	⊙	●
	1.1.6	Regular meetings of the Round Table. Digital availability of the minutes on the university website.	⊙	●
	1.1.7	Number of implementation activities and projects proposed by university members by status group	⊙	●
	1.1.8	Number of realised plans and projects brought to the Round Table	⊙	●

1.2		We establish sustainability activities in our household	Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	1.2.1	The cost centre is established for the 2023 financial year [E]	⊙	●
	1.2.2	The Round Table submitted its first annual expenditure plan for 2023 by June 2022. The Round Table submits all further spending plans for each year by November of the previous year	⊙	●
	1.2.3	The budget has been made available and also includes the sponsorship funds for a sustainability prize (€1000) for final year theses	⊙	●

1.3	We maintain a comprehensive dialogue with our stakeholders		Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	1.3.1	Appointment of a contact person to conceptualise and coordinate cooperation with our stakeholders with regard to our sustainability management [E]	⊙	●
	1.3.2	Organisation of a stakeholder workshop to critically assess our sustainability management, our strategy and our sustainability reporting	⊙	●
	1.3.3	The stakeholder workshop is documented, including the recommendations of the stakeholders	⊙	●
	1.3.4	No later than six months after each stakeholder workshop, stakeholder representatives receive a summary of how we have taken their feedback into account or translated it into action.	⊙	○*

* We have yet to receive feedback on the extent to which we are taking our stakeholders' feedback into account and this will be implemented by summer 2024.

E = Indicators measured once

Target achievement and potential in the area of teaching, studies and continuing education

We want to empower our employees to act sustainably at their workplace through targeted training programmes. So far, we have been able to achieve this through training courses on sustainable procurement, for example, in which individual employees from Purchasing took part during the reporting period. A further **course on "Sustainability in the workplace" for 15 employees** has not yet taken place. This is **planned for 2024**.

In the area of teaching, we have raised the profile of Bochum as a university location with our special study programmes "Sustainable Development" (Bachelor's and Master's) and "Applied Sustainability" (Master's) as well as "Renewable Energy Systems" and "Environmental Engineering", both Bachelor's and Master's programmes. Our aim is to **provide all students** at Bochum University of Applied Sciences with **an understanding of sustainability and climate protection**. This is to be realised via the **module "Fundamentals of Sustainable Development" as a compulsory course in all degree programmes.** However, due to the different accreditation cycles of the degree programmes, it will not be possible to implement the cross-departmental introduction until **2028**. Special attention will therefore initially be paid to the development, testing and staffing of the module. The evaluation of the surveys on fields of action in sustainable development at Bochum University of Applied Sciences has shown that we need to tailor the content more closely to the teaching content of the respective degree programme in order to further increase acceptance of the module. The revision of the module's content has already been initiated and agreed between the Presidential Board and the departments.

For all those who have successfully completed their studies at Bochum University of Applied Sciences, an annual **prize of EUR 1,000 will be awarded for the best Bachelor's and the best Master's thesis related to sustainability.** The first call for entries will take place in summer semester 2024. The prize is sponsored by VfL Bochum 1848. [Ind. 2.3.5]

As of April 2024, it is not possible to determine the exact number of lecturers and professors who have taken part in an L^3 - Teaching to the power of 3 - Opening up spaces - event, as there is no allocation to a status group due to data protection regulations. It is therefore currently not feasible to track whether the target figure of five per cent per year has been achieved (indicator 2.4.2). The indicator will be adjusted accordingly.

Overview of goals and indicators in the area of teaching, studies and continuing education:

2.1	We provide appropriate training programmes to enable all university members to implement sustainability in their workplace		Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	2.1.1	Depending on demand, we offer at least one course on "Sustainability in the workplace" for 15 employees.	⊙	○*
		* So far, employees have only taken part in individual training courses on sustainability in the workplace; a course for 15 employees is being planned and should be realised by the end of 2024.		

2.2	We embed sustainability in our courses and impart a basic understanding of sustainability to every graduate of our university		Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	2.2.1	Establishment of the module "Introduction to Sustainable Development" as a compulsory course in all degree programmes	⊙	○*
		* The module "Introduction to Sustainable Development" will be established in all degree programmes by 2028. This will not happen until after 2025 due to different accreditation cycles.		
	2.2.2	The ISD course programme within the framework of Studium PLUS (in the field of sustainable development) is designed and offered	⊙	●
	2.2.3	The number of participants in the ISD course programme of Studium PLUS (in the area of sustainable development) is recorded annually	⊙	●

2.3	We support student sustainability projects and theses		Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	2.3.1	The annual public presentation of student projects in an appropriate setting (which helps to professionalise the projects) has taken place.	⊙	●
	2.3.2	The number of projects and participants was recorded	⊙	●
	2.3.3	The event was evaluated by the participants	⊙	●
	2.3.4	Improvement measures were derived from the participant evaluation and implemented for the project presentation in the following year	⊙	●
	2.3.5	The prize was publicised throughout the university, the winner was chosen and the prize was awarded	⊙	○*
		* A sponsor has been found to provide financial support for the best final year thesis. The first call for proposals will take place in the 2024 summer semester.		

2.4	We promote dialogue between teaching staff on sustainability topics		Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	2.4.1	Concept for a rotating system for "L " is available [E]	⊙	●
	2.4.2	At least 5% of all lecturers and teaching staff at the university take part in an L event each year	○*	○*
		* At present, we can only record the number of participants and do not record university affiliation for data protection reasons; a vote will be held in summer 2024 to change the recording process.		

2.5	We are developing a new continuing education programme, which includes in particular extra-occupational certificate courses, in order to disseminate sustainable development skills to the wider community		Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	2.5.1	The commercial continuing education programme Sustainability Reporting (external to the university) is designed and offered	⊙	●
	2.5.2	The number of participants in the commercial continuing education programme Sustainability Reporting (external to the university) is recorded annually	⊙	●

E = Indicators measured once

Target achievement and potential in the area of research and development

With our new research focus areas "Data-Driven and Smart Technologies", "Smart Mobility and Building" and "Resources and Sustainability", we are providing extensive support for the sustainable transformation of the region in collaboration with our cooperation partnerships.

We are working on the **development of a research database** (Research Information System, FIS for short) in order to bundle our research activities and organise them in a more targeted manner. The database will **collate and store all publications, projects, patents and start-ups at the university in one system**. The aim is to fill the FIS with the relevant data by the end of 2024, **set up an interface to our website and make relevant components available in English and German**.

It was not yet possible to **determine the proportion of third-party funding for projects related to sustainability and climate protection** for this report due to the high manual effort involved. This is to **be facilitated and ensured in future via the FIS**. We will also be able to determine and report the number and proportion of publications in the field of sustainable development and climate protection.

Overview of goals and indicators in the area of research and development:

3.1	We embed sustainability in our research and development activities		Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	3.1.1	Publication of sustainability targets and guidelines for research and development activities [E]	⊙	●

3.2	We record our sustainability performance from research and development activities and can demonstrate how these contribute to achieving the SDGs		Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	3.2.1	The research database is designed and filled with relevant data * The research database will be tested and filled with data in the first quarter; its launch is planned for the end of 2024.	⊙	○*
	3.2.2	University-wide sponsorships for SDG-related research and development will be found, with activities specifically aimed at contributing to the achievement of the SDGs.	⊙	●

3.3	Our results and findings relating to sustainable development from research and development activities are communicated transparently to our stakeholders		Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	3.3.1	The research database is available on our homepage in English and German * Research database still under development; interface between database and website to be created by the end of 2024	⊙	○*
	3.3.2	Recording the proportion of third-party funding for sustainability-related projects in relation to total third-party funding * At present, it is only possible to determine the proportion of third-party funding related to sustainability with a great deal of manual effort; this should be able to be determined automatically with the new research database by the end of 2024.	○*	○*

3.4	We are expanding our role as a multiplier and developing a sustainability network with our stakeholders		Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	3.4.1	Our sustainability networks are being further developed and targets for network impact have been set [E]	⊙	●

3.5	We provide a clear presentation of our range of services for the social provision of knowledge		Indicator measured ⦿ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	3.5.1	Recording the number of publications on the topic of sustainability through a publication database and corresponding queries	○*	○*
	3.5.2	Recording the proportion of publications on the topic of sustainability in relation to the number of all publications	○*	○*
		*As soon as the research database has been finalised, the number and proportion of publications in the field of sustainability can be determined. This should be realised by the end of 2024.		

E = Indicators measured once

Target achievement and potential in the area of operations, procurement and climate:

The target of achieving climate neutrality by 2030 for Bochum University of Applied Sciences is no longer achievable. As a result, the target must be readjusted. The scenarios developed in the climate protection concept serve as a basis for decision-making. The climate protection management team recommends pursuing the "climate protection scenario", which aims to achieve a **reduction of 60 per cent** in operations **by 2030.** This reduction in emissions within six years is considered both feasible and ambitious by the climate protection management team. In order to achieve the target, investments would also have to be taken into account and integrated into the university's budget planning from 2026 onwards, including, for example, the increased expansion of renewable energies and their use at the university sites. The realignment of the target was discussed with the Presidential Board and will be discussed in the next step with the steering group so that it can, if necessary, draw up a recommendation for a resolution in this regard.

In the context of procurement, the three **product groups paper, wood and IT equipment were defined as critical** and now need to be quantified. Paper is already recorded quantitatively via the order quantities. Data on wood and IT equipment is not yet available, as there are no internal structures and processes in place for recording them. These are to be developed in consultation with the responsible departments to enable **future data collection**. [Ind. 4.3.1]

A **revision of the procurement guidelines** is also planned. In addition to generally applicable requirements, social and ecological criteria are to be integrated in order to take greater account of sustainability in new purchases.

In order to implement improved waste management at the university, students from the teaching research project "Sustainable Bochum University - Strategy, Implementation, Networking" have drawn up an orientation paper on waste management. The inventory of local conditions (e.g. collection points and separation processes) and the recording of waste quantities of different types of waste form the basis for developing measures to promote waste avoidance and for **testing a waste separation system at the university**, which will be tackled in 2024. [Ind. 4.3.2]

In the area of **digitalisation**, various initiatives are being driven forward to optimise and digitally transform administrative processes at our university. These include the **introduction of a cross-university solution for the administration of third-party funding projects as well as the digitalisation of business trip applications, travel expense reports, procurement applications, invoices, fault reports in building management, training applications and teaching assignments**. These projects are carried out on the basis of a document management system and include intelligent forms and workflow combinations to actively support the application. Further digitisation projects are planned for the future, including solutions for "replacement scanning of paper documents" and "e-payment". [Ind. 4.3.3]

We aim to **introduce the EMAS (Eco-Management and Audit Scheme) environmental management system by 2026.** EMAS is intended to systematically record, monitor, evaluate and continuously improve our environmental performance, i.e. the environmental relief or revitalisation we have triggered. It will help us to utilise existing resources more efficiently and reduce our environmental impact. The next steps towards implementation are to review the requirements for certification in consultation with the relevant departments.

Broader **awareness-raising among university staff** will include bringing together various measures and initiatives in a comprehensive awareness-raising campaign. This campaign will focus on the areas of mobility, energy consumption, paper and water use. The aim is to provide increased and regular information on content and recommendations for action. In addition to this campaign, active formats are also planned, such as a "Clean-Up Day", on which waste is collected together in the vicinity of the university, thus raising awareness of responsible behaviour towards the environment. The overarching aim of these measures is to implement effective strategies to reduce resources and greenhouse gas emissions and thus measurably and effectively reduce the negative impact on the climate.

Overview of goals and indicators in the area of university operations, procurement and climate:

			Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
4.1		**We will be a climate-neutral university by 2030**		
Indicators	4.1.1	Feasibility study on climate neutrality is available [E]	⊙	●
		The feasibility study on climate neutrality, which is part of the climate protection concept, suggests that Bochum University of Applied Sciences will not become climate neutral in its operations (Scope 1 and 2) by 2030 despite the best possible efforts. The aim is to reduce emissions by 60% in operations by 2030. From 2026, investments must be integrated into budget planning so that we can achieve our emissions targets.		
4.2		**By the end of 2023, we will draw up a climate protection concept for the university, which will show the possibilities for achieving climate neutrality by 2030**		
Indicators	4.2.1	Climate protection concept adopted and published [E]	⊙	●
4.3		**In accordance with the achievement levels of the climate protection concept (BK2.), we will implement targeted resource conservation from 2023 and increase our resource efficiency**		
Indicators	4.3.1	Identification of the scope of selected natural resources (product groups such as paper and wood) that are critical and are being used through procurement processes.	⊙	○*
		*Three product groups were defined as critical: Paper, wood and IT equipment were defined as critical, of which paper is recorded quantitatively via the order quantities. Data on wood and IT equipment is not yet available. Internal structures and processes are to be created with the responsible departments by the end of 2025.		

4.3	In accordance with the achievement levels of the climate protection concept (BK2.), we will implement targeted resource conservation from 2023 and increase our resource efficiency	Indicator measured ⦿ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
	4.3.2 Waste prevention concept has been adopted and published [E]	⦿	○*
	* An initial orientation paper on waste management at the university was drawn up by students from the "Sustainable Bochum University" teaching research project. Building on this, measures to promote waste minimisation and the testing of a waste separation system are to be implemented by the end of 2024.		
	4.3.3 Digitalisation of internal procurement processes [E]	⦿	●
	4.3.4 The review of the feasibility of EMAS certification will be completed by the end of 2022 [E]	○*	○*
	* The introduction of the EMAS environmental management system is to be realised by 2026 at the latest.		

4.4	From 2023, we will use appropriate sustainability reporting to explain the extent to which we utilise natural resources	Indicator measured ⦿ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	4.4.1 GHG emissions recorded and analysed	⦿	●
	4.4.2 Recording of water consumption by water type	⦿	●
	4.4.3 Recording of paper procurement and the proportion of recycled paper in total consumption (of A4 paper) has not decreased	⦿	●

4.5	In compliance with the procurement guidelines of the state of North Rhine-Westphalia, we will set out the other social and environmental criteria that apply to our procurement from 2023 onwards	Indicator measured ⦿ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	4.5.1 The university's voluntary commitment to sustainable procurement, including procurement criteria, has been adopted and published [E]	⦿	○*
	* The revision of the procurement guidelines to take into account social and ecological criteria, which are to be taken into account for new purchases in future, is to be realised by the end of 2024.		

4.6	Through suitable training and awareness-raising programmes, we enable all university members to implement sustainable procurement criteria	Indicator measured ⦿ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	4.6.1 Establishment of a university-wide awareness-raising programme for all university members regarding paper consumption, water conservation and waste avoidance in the workplace	⦿	○*
	* The individual measures implemented so far to raise awareness among our university members with regard to resource consumption are to be incorporated into a holistic campaign, which is to be planned by the end of 2024 and implemented in 2025.		

E = Indicators measured once

Target achievement and potential in the area of action fewer inequalities – Third Mission

Our aim is to offer a broad and open educational programme to all and in particular underrepresented social groups in Bochum's urban society, especially via the Bochum House of Knowledge. In order to make this offer as needs-orientated as possible, we **plan to carry out a local needs analysis and target group identification after the opening of the House of Knowledge**. As the Bochum House of Knowledge is still physically under construction and is expected to be **completed in 2027**, we will be increasingly involved in educational formats that are already underway. As a university, we are already working on developing and offering suitable programmes for citizens. Due to capacity constraints, we were only able to do this to a limited extent during the reporting period. **In 2024, we are therefore aiming to develop a more comprehensive programme for 2025. The thematic focus will be on climate protection and private influence.** Ind. 5.1.1

In the reporting period, no patents were registered that relate directly to a specific sustainability achievement. We support and promote the realisation of patents in general, but also those related to sustainable development, through advisory services at the university. Ind. 5.4.5

Overview of goals and indicators in the area of fewer equality - Third Mission:

5.1		**We offer barrier-free educational programmes for underrepresented social groups at the Bochum House of Knowledge (HDW).**	Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	5.1.1	Carrying out a needs analysis and target group identification	⊙	○*
	5.1.2	Recording the number of affordable (free and publicly accessible) events at the HDW for underrepresented social groups	⊙	○*
	5.1.3	Development of a programme offered by Bochum University of Applied Sciences for the HDW[E]	⊙	○*

* As the construction of the Bochum House of Knowledge continues to be delayed, it has not yet been possible to carry out a needs analysis on site. Nevertheless, an offer for Bochum's urban society for the year 2025 is to be planned by our university by October 2024.

5.2		**We actively cooperate with UniverCity Bochum and report on the resulting connecting activities at the interface of science, community, business and urban society**	Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	5.2.1	Recording the number of co-operative projects or exhibitions within the framework of UniverCity, such as HDW	⊙	○*

* Although we record the number of cooperative projects within Univercity, our aim is to develop significantly more programmes. However, this was not possible due to personnel restructuring in the UniverCity network. The planning for 2025 is in the first stages.

5.3	We increase and record our socio-ecological commitment to the community and the region		Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	5.3.1	Our themed sponsorships and associated (barrier-free) offers are presented on the HDW website * Our current educational programmes via the House of Knowledge are already presented on its website. This offer is to be significantly increased after the opening of the House of Knowledge (expected at the end of 2026).	⊙	○*

5.4	We bring sustainable development to the wider society through knowledge and technology transfer and by promoting sustainability-related start-ups		Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
Indicators	5.4.1	Recording the number of university members who act as scientific advisors in regional, national and international committees related to sustainability	⊙	●
	5.4.2	The university-wide contact point for student engagement has been set up and publicised accordingly on its own website [E]	⊙	●
	5.4.3	Recording of start-ups with a sustainability focus in their core business	⊙	●
	5.4.4	Every six months, the website will feature a Founder Story about a sustainability-focused startup.	⊙	●
	5.4.5	Recording of patents that relate directly to a specific sustainability performance	⊙	●
	5.4.6	Annual cooperation report for all sustainability cooperations is available by 1 March of the following year for the previous year * No cooperation report could be published in the reporting period (Sept. 2022 to Aug. 2023) for capacity reasons. This was subsequently written in March 2024.	⊙	○*
	5.4.7	The networking meetings with our transfer partners took place as scheduled	⊙	●
	5.4.8	The number of participants in the networking meeting and their affiliations were recorded	⊙	●
	5.4.9	The networking meeting was evaluated by the participants	⊙	●
	5.4.10	Improvement measures were derived from the participant evaluation and implemented for subsequent networking meetings	⊙	●

E = Indicators measured once

Target achievement and potential in the area of transparency and reporting

Our first sustainability report was supposed to be published in 2022. This was delayed due to coordination processes regarding the content of the indicators for measuring our goals. The sustainability management, which was appointed in April 2023, took over the preparation of the report and began collecting the indicators in September 2023. These form the basis for the report content. Following the publication of the sustainability report in October 2024, there are firm plans to critically reflect on the entire process of preparing the report with the people involved in terms of organisation, responsibilities and time management. In addition, a survey will be conducted from November 2024 to gather feedback, opinions and ideas from university members, which will be taken into account for preparing the next report. Our next sustainability report is due to be published in 2026. In consultation with the Presidential Board, we are still examining whether this will be published again as a separate report or merged with our annual report.

Overview of goals and indicators in the area of transparency and reporting:

			Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
6.1		**We make sustainability visible at our university and communicate our sustainability activities and achievements every two years in a sustainability report. Our first sustainability report is due to be published in 2022.**		
		Bochum University of Applied Sciences' first sustainability report has been adopted and published [E]	⊙	○*
		* Our first sustainability report was originally planned for 2022, but publication was delayed in particular due to coordination processes for the indicators used to measure the targets.		

			Indicator measured ⊙ = Yes / ○ = No	Indicator fulfilled ● = Yes / ○ = No
6.2		**From 2025, we will present our sustainability report and our annual report as an integrated report**		
Indicators	6.2.1	A concept for the integration of the sustainability report and the annual report has been developed and approved. It will be implemented from 2025 [E]	⊙	○*
		* The merging of the annual report with the sustainability report is still being examined as at March 2024 in consultation with the departments involved and the Presidential Board. A decision on this is to be made by the end of July 2024.		

E = Indicators measured once

PARTICIPATION

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