TECHNISCHE UNIVERSITÄT
CHEMNITZ

Sustainability Report for Chemnitz University of Technology

Period 2015 until March 2021

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Sustainability Report for Chemnitz University of Technology

About the report

The cradle of the forest-scientific roots of the concept of sustainability is to be found in Saxony. More than 300 years ago, Hans Carl von Carlowitz, born in Oberrabenstein near Chemnitz, laid the foundations for sustainable (forest) management. The Chemnitz-based Sächsische Hans-Carl-von-Carlowitz-Gesellschaft e. V. is thus a long-standing cooperation partner of Chemnitz University of Technology.

Sustainability is an understanding of values in dealing with resources, people, animals, plants and nature, as well as cycles, both today and tomorrow. The journey towards sustainability calls for us to adhere to these values and act in a way that gives equal weight to ecological, economic and social principles and goals. We are far from getting there as a society, which is why sustainability is the central motif of the UN Agenda for 2030. According to the German sustainability strategy, sustainable development is to be consistently applied as a guiding principle in all areas and all decisions, including in the context of (higher) education and science. In addition to the German sustainability strategy, in its 2018 Sustainability Strategy for the Free State of Saxony (p. 9), the Saxon State Government emphasises that municipalities and their effective organisations are "essential actors and a driving force for achieving the global sustainability goals".

As the central educational institution in the region and a major local employer, Chemnitz Universtity of Technology acts as a role model for the realisation and achievement of the sustainability goals. The aims of Chemnitz University of Technology first sustainability report are thus manifold – in addition to compiling information and taking stock of sustainability progress at Chemnitz University of Technology, the report is intended to serve as an incentive for continuing to push forward sustainable development topics in various individual areas in the future. In addition, the report is intended to show readers how rich the topics of sustainable development are, how sustainability is integrated into the processes at Chemnitz University of Technology, and how members and affiliates of Chemnitz University of Technology can get involved or increase their involvement.
The first compact sustainability report of Chemnitz University of Technology encourages and inspires all university members to actively engage in sustainable development and to get involved in the various topic areas.

This **first sustainability report** for Chemnitz University of Technology provides an insight into the ecological, economic and social activities and contributions of Saxony's third largest university for the first time. The report highlights sustainability-related activities and developments in the **period from 2015 to March 2021**, based on available key figures.

The report is oriented towards a holistic view of sustainability – as shown in the Sustainable Campus of Zittau/Görlitz University of Applied Sciences Modular System (cf. Figure 1). The report outlines the understanding of sustainability of Chemnitz University of Technology, which was developed in a participatory process in 2020, and contains

important key figures, current development needs and future goals. Exemplary research projects and courses that deal with aspects of sustainable development are presented.

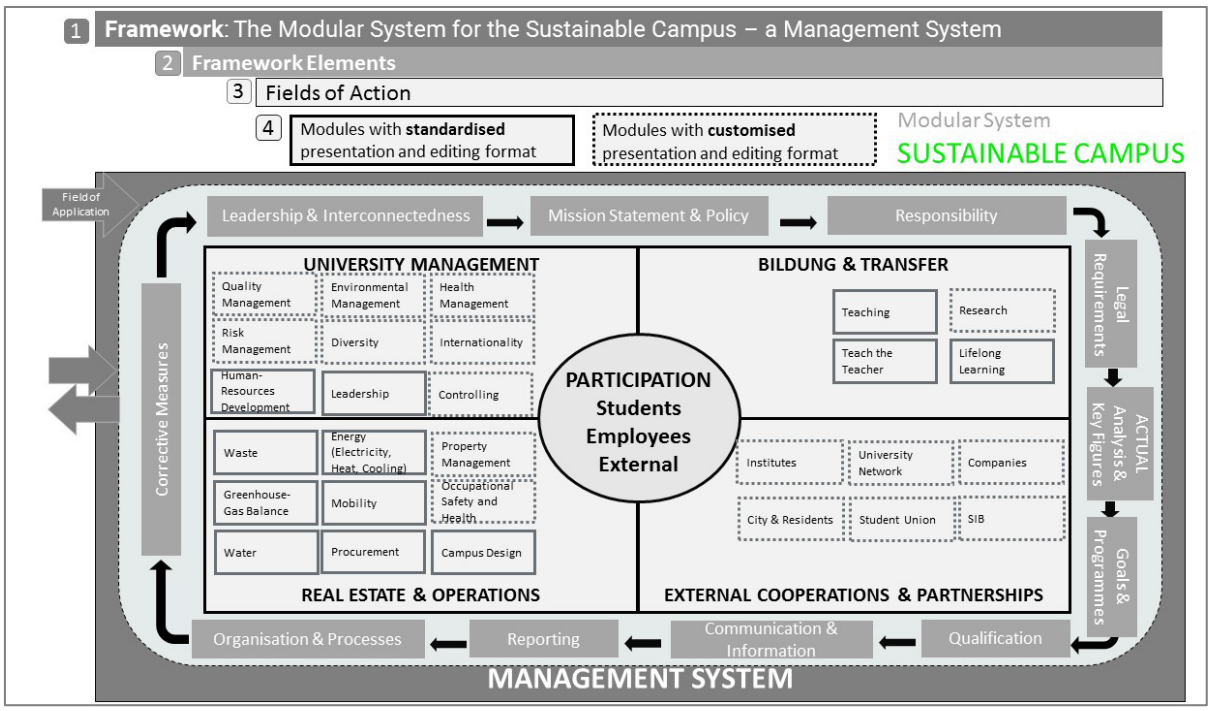

Figure 1: Sustainable Campus of the Zittau/Görlitz University of Applied Sciences modular system
© HSZG Sustainable Campus Modular System & Brauweiler, J. (2017).
The "Sustainable Campus Modular System" – an instrument for implementing sustainability management and reporting at universities.
uwf UmweltWirtschaftsForum, 25 (1–2), 147–157. https://doi.org/10.1007/s00550-017-0441-z.
Last accessed: 31 March 2021 (Translated into English)

This first sustainability report of Chemnitz University of Technology is a joint effort and signals the appreciative cooperation that exists within the university, which is also practised beyond the university boundaries. In addition to my heartfelt thanks to all colleagues in administration, research and teaching who made this report possible, I would also like to extend special thanks to our partners, the Chemnitz-Zwickau Student Union and the Sächsisches Immobilien- und Baumanagement (SIB) state enterprise, who provided us with valuable data. Without the great and unwavering commitment of our students who helped to prepare the report, it would not be what it is now – a big thank you goes to Simon Fronczek and Jana-Leonie Hofmann, as well as to Alina Vogel, Susann Güth, Nilay Akre, Vipul Jhod, Anton Hofmeister and Alexander Kraus.

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Sustainability Concept of Chemnitz University of Technology

The following sustainability concept was developed in participatory cooperation between university members and staff:

The 17 global sustainable development goals of the 2030 Agenda address ecological, economic and social-development aspects that also have an impact on the work and actions of Chemnitz University of Technology. Chemnitz University of Technology sees itself as holding a special social responsibility for regional, national and international development towards sustainability. Chemnitz University of Technology wishes to contribute to the 2030 Agenda by serving as a **role model** and to anchor sustainability in teaching and research on an ongoing and permanent basis. The aim is to create an environment in which all members and affiliates of the university are encouraged to think and act sustainably across the board.

Figure 2: The 17 Sustainable Development Goals (SDGs)

©German Federal Government (https://www.bundesregierung.de/breg-de/themen/nachhaltigkeitspolitik/ziele-fuer-eine-nachhaltige-entwicklung-weltweit-355966, last accessed: 7 August 2021 and https://www.bundesregierung.de/breg-en/issues/sustainability/global-goals-for-sustainable-development-355956, last accessed: 18 January 2022)

The university is committed to **linking disciplinary fields** with sustainable development requirements in teaching and research, and **strengthening interdisciplinarity**. In doing so, it is considered a matter of course to comply with legal requirements and to reduce environmental pollution as much as possible. The university supports transnational participation and exchange opportunities for staff and students, and creates incentives and framework conditions for sustainability-oriented activities and commitment.

The following fields of action also focus on specific sustainability aspects:

Research, teaching and transfer: Chemnitz University of Technology promotes the understanding of Education for Sustainable Development (ESD) and provides options for implementation. Innovative, environmentally sound and socially beneficial research is promoted and actively supported. The university is committed to a **public discourse on sustainability issues**, and pursues sustainability topics in research, teaching and further

education. The aim is to encourage students, learners and citizens to **think and act** in a sustainable way and to build sustainable competences.

Resource and environmental management: Chemnitz University of Technology promotes the **responsible use of resources** and a reduction in environmental pollution both in campus operations and within the framework of all structural units of Chemnitz University of Technology. All environmental media and ecosystem services and how they interact are taken into account. Damage to the natural environment is avoided as far as possible.

Information and communication: Through the **transparent communication** of activities and information, Chemnitz University of Technology ensures that all members and affiliates of the university are encouraged to participate, including with regard to thematic areas of sustainable development and key social aspects. Legal requirements are seen as minimum standards and frameworks to be met, and these should be exceeded wherever possible. In order to be able to present information in a comprehensible and transparent manner, data on the sustainable university is regularly collected and made available to everyone in **detailed reporting**. Awareness of, and commitment to, the environment at the university is to be promoted through **external and internal cooperation and partnerships** with various stakeholders.

Campus development and social sustainability: Members and affiliates of the university are **supported by Chemnitz University of Technology** in sustainability projects and in the context of university cooperation and life as regards **sustainability**. **Further development of the outdoor space** is encouraged.
The university offers an open atmosphere with a special focus on **equal opportunities for** all members and affiliates, regardless of nationality, gender, religious affiliation, cultural and sexual orientation. The corresponding range of services is intended to create a **family-friendly and fully accessible environment** and to promote diversity. The multifaceted relationships with universities and other research institutions should also help to emphasise the special importance of **internationality** at Chemnitz University of Technology.

Chemnitz University of Technology – An International University

Future and existing **tasks relating to the Sustainable Development Goals (SDGs)** can only be **solved internationally and transnationally**. Universities have an important role to play here, as they can also facilitate **cross-national work** and strengthen **cultural skills**.

In view of its comprehensive range of exchange programmes and the international coexistence of its members and staff, Chemnitz University of Technology can identify itself as an international university. This is reflected in the number of **non-European and intra-European exchange students**. For example, in the 2019/20 winter semester, approximately 27% (2,653) of all students at Chemnitz University of Technology were foreign students enrolled in a full degree programme at Chemnitz University of Technology. An additional 142 foreign students visited Chemnitz University of Technology for one or more semesters. Thus, more than a quarter of all students enrolled at Chemnitz University of Technology are considered international students. This makes Chemnitz University of Technology one of the most international universities in Germany.
The students come in particular from the Asian region. The top countries in 2019 were India (805 students) and China (729 students), followed by Pakistan (168 students) and Bangladesh (115 students).

Likewise, year after year, Chemnitz University of Technology students take advantage of the opportunity to spend one or more semesters at universities outside Germany in order to improve language skills and gain intercultural experience. In 2019, 117 Chemnitz University of Technology students studied at European universities via the Erasmus+ programme. An additional 34 students were in countries outside Europe. These figures were lower in 2020 due to the coronavirus pandemic. A total of 41 students ventured into a European country. Ten students studied outside Europe, although some students were obliged to break off their stay due to the pandemic.

Some partner universities are also located in non-European countries, especially in Russia, South Korea, Vietnam, Thailand, China, Japan, Brazil and Peru. This promotes international study and exchange among students.
Together with seven other partner universities, Chemnitz University of Technology is receiving funding for three years with EUR 450,000 as a "**UNIVERS – European Cross-Border University**" by the German Academic Exchange Service. With regard to the **vision of a European University**, the primary objectives of the funding are to establish an appropriate cooperation structure and a common digital working basis.

Teaching and Learning for Sustainability

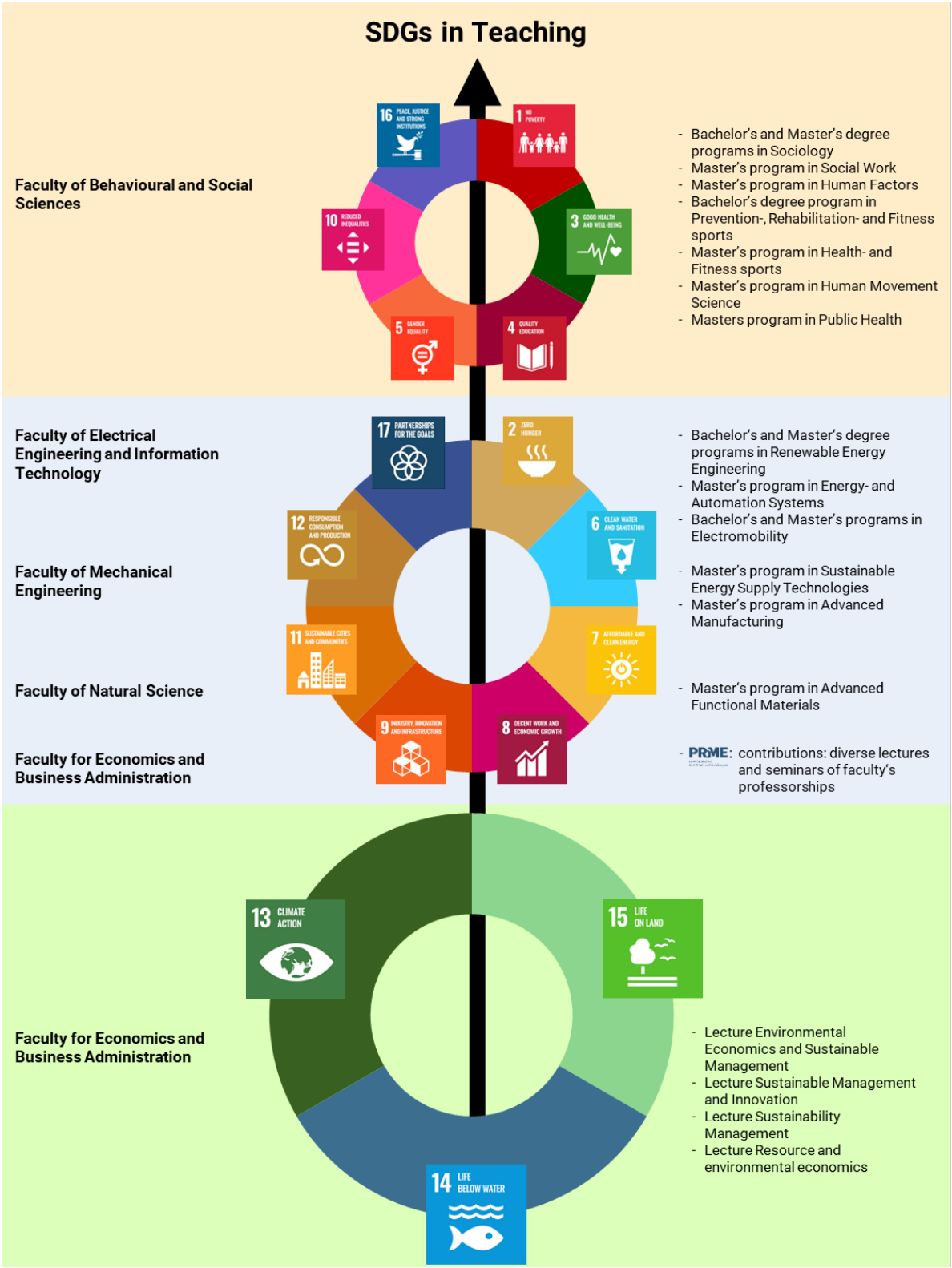

Figure 3: Sustainable Development Goals in teaching at Chemnitz University of Technology
Faculties on the left, degree programmes or modules on the right.
Source: Chemnitz University of Technology, own diagram

Projects and Working Groups – Sustainability in Research

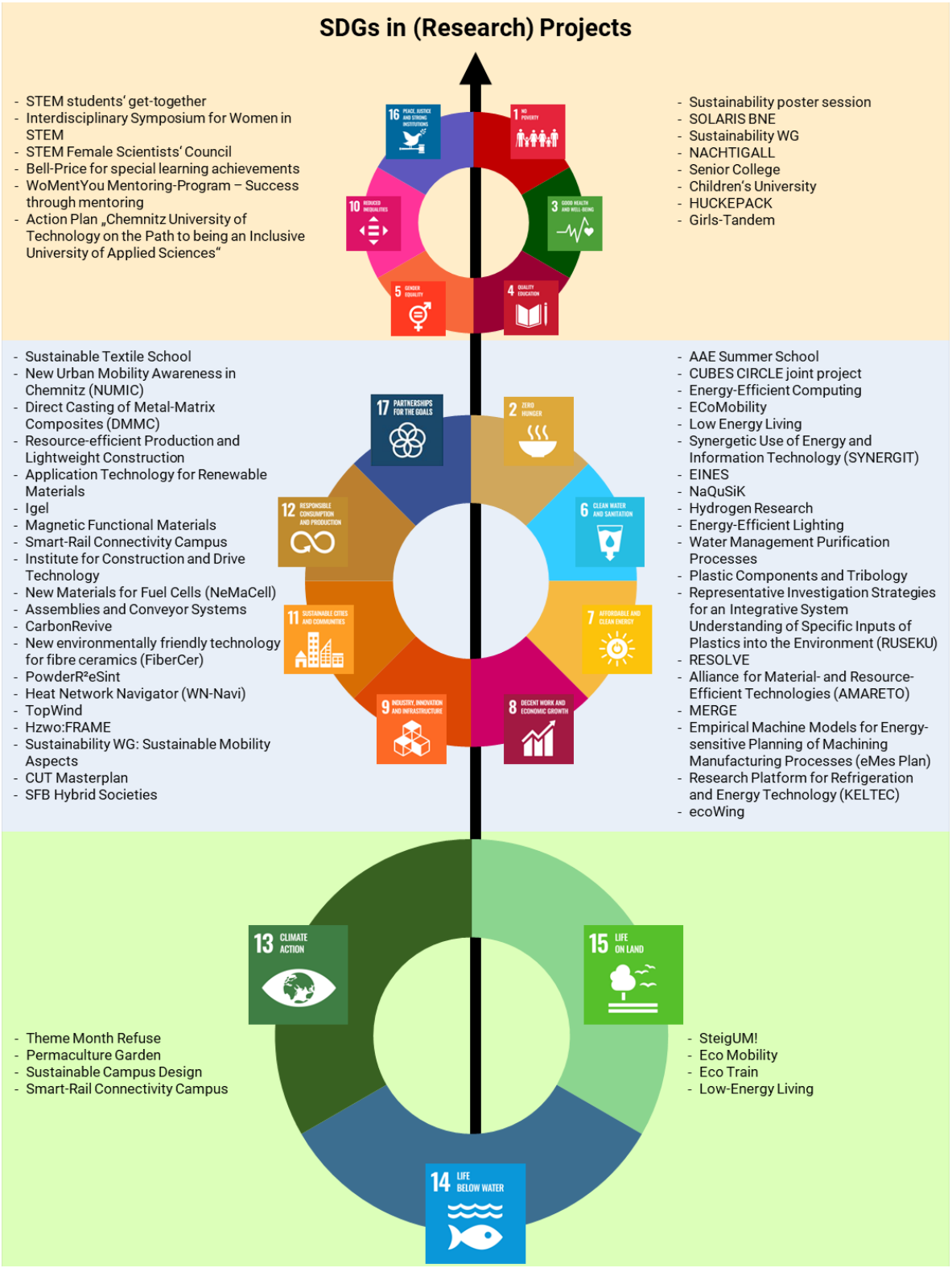

Figure 4: Sustainable Development Goals in (research) projects at Chemnitz University of Technology
Acronyms of projects and working groups. Source: Chemnitz University of Technology, own diagram

- Interdisciplinary research and university-wide activities

In addition to the projects of individual professorships or faculties listed above, **interdisciplinary research** is practised at Chemnitz University of Technology. The variety of projects and research fields in which several Chemnitz University of Technology faculties or professorships work shows how well the university is internally integrated.
Outside of research, all interested university members and staff can get involved in the **Sustainability Working Group** and **jointly discuss and drive forward sustainability-oriented ideas**. In 2020/21, for example, Chemnitz University of Technology took part in the state-wide participatory campaign **Doll's Houses Wanted – Flowering Meadows for Saxony's Butterflies**. In total, three areas of approx. 2,150 m^2 of the previous campus meadows were transformed into **colourful flowering meadows** in successful cooperation with the SIB and the university's Department of Civil Engineering and Technology. In addition, flowering shrubs were planted at the Erfenschlag and Wilhelm-Raabe-Strasse sites. Cultivation and irrigation was undertaken by the Department of Civil Engineering and Technology. Over the next few years, a switch from mown grass to more meadows will be discussed in order to contribute to the preservation of biodiversity.
In addition, **potential approaches to climate neutrality** and how to implement them are discussed within the framework of the university-wide sustainability working group.
In ongoing coordination with the City of Chemnitz and the relevant partners, Chemnitz University of Technology is discussing the introduction of icons and motivating slogans on waste bins to raise awareness among university members and staff on the subject of **proper waste disposal and waste separation**.

- Student Initiatives

In addition to the many sustainability-related projects, there are various student-led initiatives that are committed to sustainable development at Chemnitz University of Technology. These include Students for Future Chemnitz, the Department for Ecology and Sustainability of the Student Council (NATUC), Subbotnik e. V. and the Chemnitz food-sharing initiative.
The Faculty of Mechanical Engineering has been supporting the student initiative **Fortis Saxonia e.V.** with materials, technology and advice for several years. This student initiative develops vehicle solutions that achieve the longest possible ranges with minimal energy requirements, thus contributing to the development of sustainable drive systems. Among other things, the initiative successfully participated in the international Shell Eco Marathon competition.
NATUC – the Department of Ecology and Sustainability of the Student Council – began in 2012 by creating a permaculture garden outside the hall of residence at Vetterstrasse 52. **Permaculture** is a **long-term sustainable agriculture and horticulture** concept. It is based on the close observation and imitation of natural ecosystems and cycles. Thus, no annual monocultures are planted, but rather many different perennial plant species, which also results in a higher yield over a longer period of time.

University Library

Since October 2020, the Chemnitz University Library has been located on the premises of the "Alte Aktienspinnerei" on Strasse der Nationen. Across a **total of 12,354 square metres**, **38 kilometres of archive and library materials** invite visitors to research, read, learn and contemplate. There are more than **700 workstations**, at which students, staff and visitors can study and work in silence or in groups, as desired. Reading booths, a reading room and an event room are also available.
Libraries make various contributions to the UN's 2030 Agenda – such as **social participation through free access to information** and **independent engagement** with a variety of information to realise the agenda's goals. The University Library promotes sustainability in the sense of science and research through **increased consultation on open science** and its strategies and procedures: **Open access, open data / research-data management, open source and open educational resources**. The **Open Science Team** was founded in the library to support members and affiliates of Chemnitz University of Technology.
Open access is a component of open science and aims to provide free access to all scientific publications via the Internet. The worldwide Open Access Initiative links research funders, research communities, publishers and scientific institutions in this process. Users of the research results, which are often available in digital form, are then permitted to use the work for any legally permissible purpose. For even greater legal certainty and optimal use, Chemnitz University of Technology recommends the use of the Creative Commons CC BY licence in its Open Access Policy. In addition to long-term availability and increasing research efficiency, open access has other advantages when it comes to publishing. The University Library therefore acts as a **pioneer for open science** at Chemnitz University of Technology. It received the **Open Library Badge** in both 2016 and 2020 for its efforts to implement openness measures in its own environment. The award was granted after a strict examination of various criteria. The proportion of publications published as open access has thus also increased. The number of titles available to a wider audience through this route has expanded from 438 annually (2016) to 529 (2020). E-journal inventories have increased from 50,637 in 2015 to 70,923 in 2019.

The inventory of scientific literature at Chemnitz University of Technology, on the other hand, has remained largely the same over the last few years. The main changes have been in terms of access to digital titles. While 117,096 e-books were accessible in 2015, 100,362 e-books were available in 2018, 110,894 in 2019 and 110,927 in 2020. It should be noted, however, that the procurement of e-books is always dependent on what the publishers offer. In the humanities disciplines in particular, publications are still offered exclusively in print; moreover, many e-books are only offered with end-user and not campus licences, so they cannot be procured by the library.

Sustainability also plays a major role in the operational and strategic area of the library. The University Archive of Chemnitz University of Technology, for example, aims to ensure that **written** material is **handed down to future generations** and to decide, on the basis of certain factual and legal criteria, whether to archive file material from the ongoing operations of Chemnitz University of Technology or from other sources. In the library, care is taken to avoid duplicates and duplicated work through cooperative acquisition/cataloguing and interlibrary loan systems. As part of the library's "**digital first" strategy**, preference is given to e-books – if offered by the publisher as a campus licence –

and journals previously subscribed to in print are cancelled and replaced by e-journals. In general, the University Library strives to provide **direct access to literature** for all CUT members and staff by procuring campus-licensed e-resources (books, journals, databases). In addition, ecological sustainability plays an important role in digitalisation as well as in all bookbinding measures on existing works.

University Computer Centre

As the central IT service provider at Chemnitz University of Technology, the University Computer Centre (URZ) provides a **modern information and communication infrastructure** for research, teaching and administration.
In the planning, implementation and expansion of the services provided, great importance is attached to the issues of energy saving and environmental protection. This begins early on, at the project planning and preparation stage, during which an **energy assessment** is always carried out for equipment and components bearing in mind 24/7 operation. In general, when selecting materials, the focus is on **expandable solution approaches**, such as the use of blade architecture, which can be supplemented with server plug-in units as required. The components in the central PC procurement portal (the basis of existing framework agreements) are also re-evaluated approximately every six months, also on the basis of energy-consumption criteria.
In the data centre, the consistent implementation of the **virtualisation strategy** has significantly reduced the number of physical server systems and thus the energy consumption for operation and air conditioning. The virtualisation rate was already over 90% in 2015. **Powerful machines** are used for the physical systems, so that fewer are needed overall, which also contributes to **lower energy consumption**. The "**virtualisation infrastructure**" used in the data centre regulates the fans based on the power required and activates power-supply units as required. In 2014, as part of a construction project in the data centre, the concept of **cold-aisle containment** was implemented (separate hot- and cold-air ducting), thus significantly improving the energy balance.

In terms of storage, a **centralised SAN storage infrastructure** is used instead of **dedicated RAID storage systems**. This is accompanied by a reduction in peripheral assemblies, such as power supply units and fans.
In order to provide employees and students with **storage resources** that meet their needs as closely as possible, whilst simultaneously raising awareness of the need for**data economy**, a limit has been set for mailboxes and personal storage in the AFS and in the TUCcloud, which can be increased independently up to a certain limit. An incentive for **data economy** is also provided by allocating costs for **storage resources of the structural units** above the basic requirement.
When regularly **backing up data**, deduplication and compression takes place automatically. The data of users whose authorisation to use the service has expired will be automatically deleted in accordance with the provisions of the data protection regulations.

PC pools are also offered by the URZ. These help to provide all members and affiliates of Chemnitz University of Technology with access to necessary (online) resources. In addition to other pool rooms, there are twelve PC rooms at Chemnitz University of Technology that are managed by the URZ. Up to 20 PC workstations and a projector are available to students for practicals or independent work. The equipment uses **low-power desktop CPUs** and **graphics cards without active cooling**. In order to promote climate

protection digitally as well, *ecosia.org* has also been offered as a standard search engine in the PC pools at Chemnitz University of Technology since 2020.
As part of the **GreenIT project**, at the beginning of 2017, the URZ evaluated the shutting down of workstations in the public training pools. This measure has been implemented for some time in all PC pools administered by the URZ. If no user is logged onto the workstation, it will **automatically shut down**. If necessary, the workstations are switched on by the users in situ. The use of **fast and energy-saving SSD storage** enables the workstations to be ready for operation at short notice.
Local printers and scanners were removed from the pool rooms as part of the campus-wide multifunctional device project. They are also being mothballed in URZ offices. **Central multifunctional devices** are now available to students and staff at various locations on campus. Print jobs can be sent to the so-called FindMe queue and printed out and collected from any of these central printers.

Procurement

Procurement activities are central tasks of an organisation to provide it with operating and working materials, services, information, materials and rights, etc. They therefore play a central role in an organisation. This also applies at universities. Today, procurement is part of modern supply- and delivery-chain management, and integrated into complex product and logistics systems. Procurement processes play a pioneering role in the journey towards greater sustainability.

Sustainable procurement focuses on **sustainable criteria** in the procurement processes, or integrates **sustainability criteria** into the tender documents. In this way, a significant contribution is made to SDG 12.7 ("To promote sustainable public procurement practices in accordance with national policies and priorities") and **global and regional responsibility** is assumed. In order to realise the goals of sustainable development in procurement as well, every professorship and department has various options for designing procurement processes to be sustainable.

When awarding the **framework agreement for office supplies**, the following sustainability aspects, among others, were stipulated:
- Minimal, environmentally friendly packaging
- Return of empty toners and inks
- Sustainable certificates required (Blue Angel, etc.)
- Adoption of a wide range of sustainable products (solvent-free products, etc.)

In total, almost 21.5% of the products ordered in 2020 were Blue Angel eco-labelled, around 7% were FSC certified and 3.3% were solvent free.

When **awarding the framework agreement for office furniture**, the following sustainability aspects, among others, were stipulated:
- Blue Angel
- Separation of plastics and other materials by type
- Minimal emissions during gluing, lacquering and coating
- Professional environmental management in accordance with DIN EN ISO 14001
- Minimal, environmentally friendly packaging

The clothing currently offered in the **university shop** is **free of animal ingredients** and labelled with the **PETA-approved vegan logo**. The manufacturing process is monitored from yarn to garment to ensure that production takes place in factories that are either **WRAP certified** (Worldwide Responsible Accredited Production) or **members of the BSCI** (Business Social Compliance Initiative).

Participation, equality and family

Participation is an important part of social sustainability. The participation of different stakeholders in projects for sustainable processes should ensure that they are accepted, disseminated and implemented.

The **Centre for Equal Opportunities in Science and Research** at Chemnitz University of Technology was founded in 2009 and is headed by the Central Equal Opportunities Officer, Ms Karla Kebsch. In addition to many services and projects to promote equality, the advancement of women at Chemnitz University of Technology is firmly anchored in human-resources development. Above all, women on STEM courses are encouraged through many projects, such as the STEM students' get-together, the Interdisciplinary Symposium for Women in STEM, the STEM Women in Science Council and the STEM Pact. In addition, schoolgirls with an interest in natural sciences are mentored through projects such as Girls' Tandem or the BeLL Prix for young female researchers. The "WoMentYou – Success through mentoring" **mentoring programme** aims to promote equality and counteract a declining proportion of women rising through the ranks.
In 2019, Chemnitz University of Technology once again participated in the federal and state programme for female professors. It was the only university in the Free State of Saxony and one of ten universities in Germany to be awarded the **"Equality: Excellent!" title.** Thus, Chemnitz University of Technology can now select four female professors whose permanent contracts will be funded by up to EUR 165,00 each for the first five years.

Based on the **UN Convention on the Rights of Persons with Disabilities 2009**, optimising the participation of physically or mentally impaired students and employees in everyday university life at Chemnitz University of Technology is a continuous process. In January 2016, the first Inclusion Day took place, at which representatives of Saxon universities exchanged their experiences and developed ideas for improving the inclusion of students with disabilities.
Based on the action plan "Chemnitz University of Technology on the Path to being an Inclusive University" drafted in 2017, specific goals and measures were defined to move closer to the goal of becoming a fully accessible university. In 2019, for example, a stair lift was installed in the North Building of the university site at 62 Strasse der Nationen. Currently, various **seminars** and **workshops** as well as **information events** on the topic of **inclusion** are offered on an ongoing basis. Barriers of all kinds are gradually being broken down. Places for rest and retreat are also being created.

Chemnitz University of Technology has been a "**family-friendly university"** since 2006. The certificate, which was again confirmed by the non-profit Hertie Foundation as part of the family-friendly university audit in 2020 and is now permanent, attests to the university's **pronounced family-friendliness** and the assistance it offers in balancing family and career. In addition to a wide range of information and advice services, Chemnitz University

of Technology creates spaces and offers for children of affiliates. In addition, as part of its 2021–2024 target agreement with the Saxon State Ministry of Science, Culture and Tourism (SMWK), Chemnitz University of Technology has committed to participating in the diversity audit "Vielfalt gestalten" ("Shaping Diversity") of the Stifterverband für die Deutsche Wissenschaft e. V. ("Donors' Association for German Science") and is aiming for a corresponding certification.
Chemnitz University of Technology supports parents and relatives in finding suitable childcare. In addition to the approximately 175 childcare facilities available in Chemnitz under municipal and independent sponsorship, three **cooperative daycare centres** are located in the immediate vicinity of the university buildings.
The Waisenstrasse day-care centre and the Krabbelkäfer day-care centre belong to the City of Chemnitz, while the Campulino day-care centre belongs to the Chemnitz-Zwickau Student Union. In addition, parents are supported by hourly short-term care for small children at the "Zwergencampus" ("Gnome Campus") offered by the Chemnitz-Zwickau Student Union. Off-peak childcare outside of regular daycare opening hours, as well as flexible childcare during exam periods, is intended to make it easier to study with a small child. In addition, quiet rooms are available at the Zwergencampus to serve as retreats for parents accompanied by their children.

Within the framework of the initiative "Appreciation in the Public Service of the Free State of Saxony", run by the Saxon state government, the rectorate has decided to set up the "**Appreciation in Public Service**" **working group** in consultation with the staff council, both in the interests of transparency and to enable broad participation on the part of the university public. In addition to representatives of the staff council, all stakeholders who are also represented in the TUCforum, i.e., representatives from all structural units of Chemnitz University of Technology, exchange views on useful and desirable measures in the working group.

University Health Management

Chemnitz University of Technology has a comprehensive University Health Management system (UGM), which was built up over several years by a core team, and has developed numerous health-promoting offers. This also includes the three-year UGM **cooperation agreement** between **Techniker Krankenkasse (TK)** and Chemnitz University of Technology, which was signed by the Rector in July 2018. The contract focuses on "health and leadership" and includes, among other things, an analysis to determine the current situation. This is intended to provide information on problem areas and which services should be created. A final data protection check is currently being carried out for the implementation of the planned staff survey. Independently of this, a variety of offers have already been created for employees of Chemnitz University of Technology together with the cooperation partner Techniker Krankenkasse. **Health Day** has been held annually since 2018. In addition, Chemnitz University of Technology offers a wide range of courses and sporting activities designed to encourage as many students and staff as possible to take part in sporting activities.

Several contact points are available to support members and relatives of Chemnitz University of Technology in stressful situations. The **psychosocial counselling centre**, run by Prof. Dr. Stephan Mühlig, helps those seeking advice and help below the threshold of a mental disorder. The **Psychological Counselling Service provided by the Chemnitz-**

Zwickau Student Union also helps with counselling sessions for crises, identity and orientation problems and anxiety situations.
In the event of an acute mental-health crisis as well as a mental disorder, the team of the **Psychotherapeutic University Outpatient Clinic TU Chemnitz GmbH** can offer support, regardless of any affiliation with Chemnitz University of Technology.

Properties and Operations

The **properties** of Chemnitz University of Technology are largely managed by the **Sächsisches Immobilien- und Baumanagement (SIB) state enterprise**. In addition, service agreements between SIB, the City of Chemnitz, Chemnitz University of Technology and the Chemnitz-Zwickau Student Union determine how individual areas of the entire campus are managed and operated. The properties and premises of Chemnitz University of Technology are distributed across four university sites around the city: the campus in Reichenhainer Strasse is home to several lecture halls, the Chemnitz-Zwickau Student Union, the Student Council, several faculties and the canteen with rooms that invite you to study and relax. The university management, some administrative areas, other faculties, the International University Centre and the University Computer Centre are located on the Strasse der Nationen, near the main railway station. Erfenschlager Strasse accommodates parts of the Faculty of Mechanical Engineering. The Institute of Psychology is located on Wilhelm-Raabe-Strasse.

The **SIB** carried out a **master plan procedure for the urban development of the Reichenhainer Strasse campus** of Chemnitz University of Technology. On 2 April 2019, the winning design was presented to the public and discussed. Further construction measures will be undertaken cooperatively in the short to medium term.

▪ Energy and Water[1]

Due to the framework agreement with SIB, Chemnitz University of Technology covered less than half of its consumption with non-renewable energy sources in 2019, such as coal (28.3%), natural gas (7.8%), nuclear energy (7.1%) and other fossil energy sources (1.0%). 55.9% was covered by renewable energies. This proportion is set to increase further, and in the future the electricity supply is to be completely covered by green electricity – planned from 1 January 2023. Absolute electricity consumption decreased steadily until 2018 and increased slightly again in 2019 (cf. Table 1).

Fresh water consumption has increased over the years; there was an increase of about 33% in this respect, also from 2018 to 2019. The reason for the **increase in electricity and water consumption** is the commissioning of the new deionised water plant in the **MAIN research building** (Centre for Materials, Architectures and Integration of Nanomembranes).

[1] Due to numerous events with external guests held in the buildings of Chemnitz University of Technology, per-capita consumption has deliberately not been shown.

Table 1: Overview of consumption at Chemnitz University of Technology (2014–2019)
Source: Department of Civil Engineering and Technology

Year	2014	2015	2016	2017	2018	2019
Electricity [MWh]	21,567.60	21,548.80	19,704.80	19,557.50	18,948.90	19,548.20
Fresh water [m³]	27,514.60	28,059.00	25,811.70	15,616.00	36,107.60	48,243.00

Various **energy-efficiency measures** are being planned to **reduce consumption**. Thus, in the future, the old, inefficient lighting will be gradually replaced by LED lamps, which have a longer service life and lower energy consumption. In addition, the heating thermostats already in use are to be optimised. By lowering or switching off heating and ventilation systems, heating energy is saved outside regular operating hours. Outside operating hours, energy is also saved by switching off the lights in office and administrative areas, and switching off office equipment such as printers, coffee machines and kettles.

- Heat

The buildings of Chemnitz University of Technology are **connected to the district-heating system of the City of Chemnitz**. More than 97% of the district heating is generated from combined heat and power and is certified with a primary energy factor of 0.70. **Natural gas consumption** has **fallen sharply** in recent years. In 2014, around 45,000 m³ was still being consumed; in 2019 this was only 8.8 m³. This can be explained by the comprehensive connection of the university buildings to the Chemnitz district-heating supply, which was completed in 2017.

District-heating consumption has also generally decreased slightly from 2014 to 2019. There was a small increase of 0.8% from 2018 to 2019.

- Waste Disposal

Rubbish and waste disposal is fundamentally the responsibility of SIB.

Paper consumption at Chemnitz University of Technology has decreased slightly over the last few years. The digitalisation of various processes has become noticeable here (cf. Figure 5).

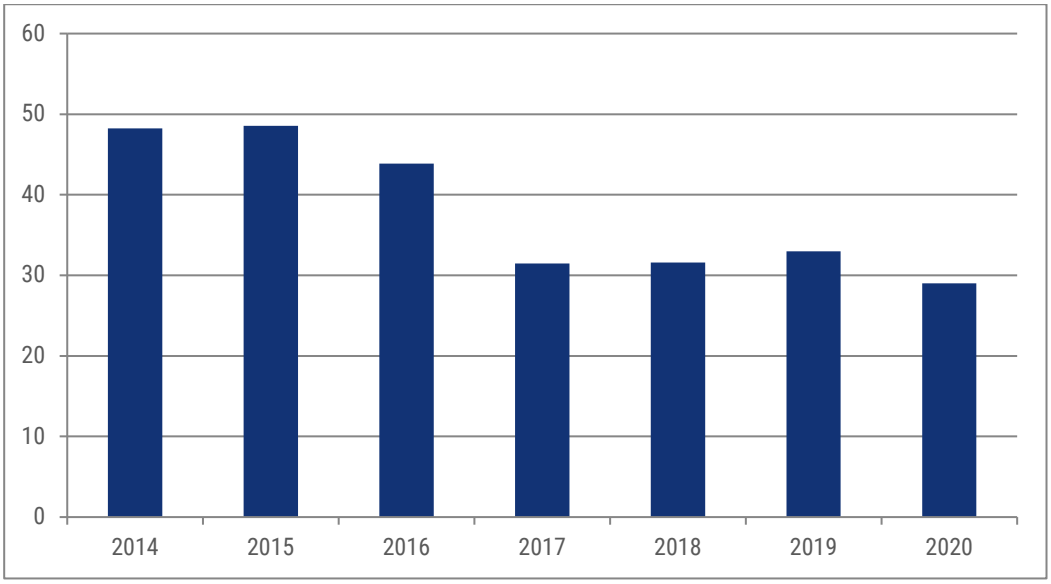

Figure 5: Paper and cardboard waste at Chemnitz University of Technology in tonnes (2014–2020)
Vertical axis: tons; horizontal axis: years.
Source: Department of Building and Technology, own diagram

The amount of mixed municipal waste (residual waste) also decreased slightly (cf. Figure 6).

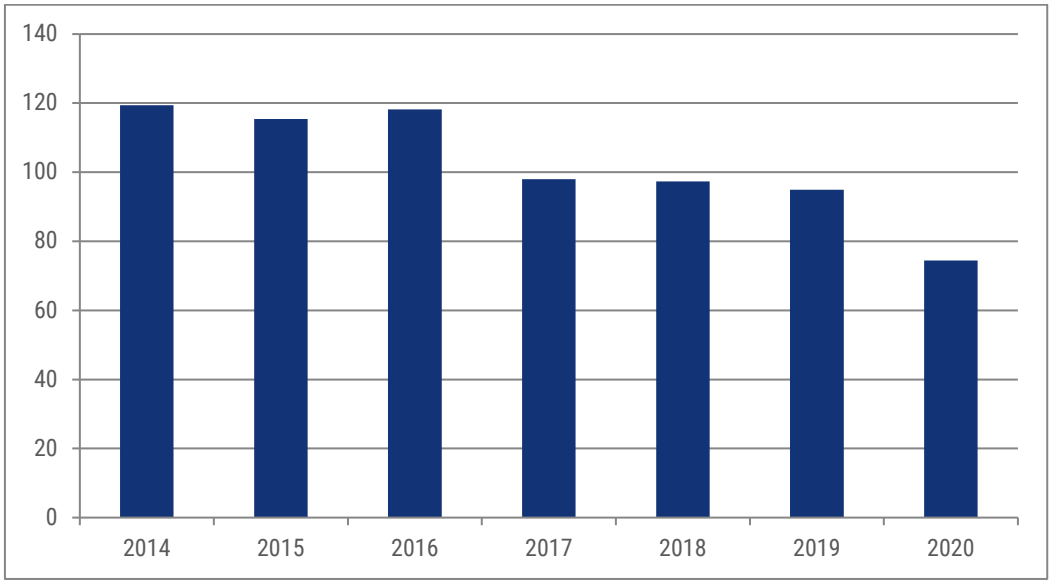

Figure 6: Residual waste at Chemnitz University of Technology in tonnes (2014–2020)
Vertical axis: tons; horizontal axis: years.
Source: Department of Building and Technology, own diagram

In the long term, **waste generation** is to be **minimised** considerably. Better segregation of the categories should permit a **higher recycling rate**. In addition, Chemnitz University of Technology would like to make employees and students more aware of waste avoidance.

To facilitate waste separation, an **extensive waste-segregation system** is in use in Chemnitz University of Technology buildings. The **waste units** used – multi-compartment waste-segregation systems – are well received and actively used by the members and affiliates of Chemnitz University of Technology.

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