

Dresden
University of
Technology

Sustainability Strategy 2023 – 2030

[Sus | tain | a | bil | i | ty]

*principle according to which no more
may be consumed than can grow back,
regenerate, or be made available
again in the future.*

Source: www.duden.de

Introduction

Dear members of our university community, dear readers,

Universities are important incubators for innovation and progress. Numerous research findings shape the way we live together in society, such as in the development of new technologies. Ongoing insights into medicine and nutritional science are strengthening the foundations for a safer and healthier life; transportation, infrastructure, and communication technologies have long been bringing the world ever closer together.

But at the same time, all our actions have consequences. The pursuit of innovation and progress also means using available resources responsibly, facing up to global, human-induced challenges, and developing alternative transformation approaches. The issue is becoming ever more urgent, and at the same time it is not new. The Club of Rome report *The Limits to Growth* – published more than 50 years ago – and the Brundtland Report formed the basis for the first UN Conference on Environment and Development in 1992, which was followed by other such conferences. In 2015, the UN finally developed the Sustainable Development Goals of the 2030 Agenda – a common orientation framework for globally sustainable development.

TUD Dresden University of Technology recognized the importance of these issues early on and set out on a path toward sustainable development. Important steps in this process include the founding of the student-led TU environmental initiative, the creation of the Environment Commission, the establishment of an environmental management system, the ingraining of sustainability as a strategic management task at Executive Board level, and the setting-up of a Green Office. All these milestones have given further impetus to the topic of sustainability at TUD.

Sustainable development is also becoming increasingly relevant as a research topic at TU Dresden, as this brochure will illustrate using selected examples. Projects and alliances focus on issues of economically successful as well as ecologically and socially compatible long-term development, such as by researching into climate-friendly forms of energy supply or models for future mobility from the point of view of transport ecology. The same can be said for sustainability in teaching and teacher training.

Projects for campus design based on the master plan of the same name do justice to the issue of quality of life as well as to the requirement for ecologically sustainable implementation. Flowering meadows, tree planting, shelters for insects and birds, the installation of seating, and the creation of “getTUgether zones” contribute to a livable campus, as do traffic calming projects and the trialing of climate-neutral energy supply in living labs.

Overcoming global challenges requires the conscious and targeted use of resources, a respectful attitude towards the environment, and the promotion of social responsibility. As one of the leading educational institutions, it is our task not only to impart knowledge and skills, but also to take responsibility for these issues. Here, dedicated scientists and administrators are not just looking for answers to the question of how we want to facilitate innovation and progress in the future without exceeding the resources available worldwide – we are also trialing our findings in living labs. We are training today’s students to become the change agents of tomorrow, to drive socio-ecological change responsibly, prudently, and courageously, and to make sustainable decisions for a future worth living. Our path and our goal are to establish a culture of sustainability and to fill it with life: Sustainability as an (achievable) vision for a future worth living, and at the same time as a guiding principle for our actions, in which we think about tomorrow today.

With our Sustainability Strategy at TUD, we are setting an important milestone. Numerous dedicated members of our university have been involved in jointly establishing a roadmap for sustainable development. We have set ourselves ambitious goals and are convinced that – with the active participation of all members of our university community – we can achieve them together. The strategy constitutes a living action plan that will need to be updated as time goes on. We are embarking on a journey of learning and action, and invite you to join us in shaping our university and developing it into a sustainable place. Your expertise and commitment are key to a TUD that is fit for the future, collaborative, inspiring, and aware of its ecological and social responsibilities.

Students, researchers, administrative staff, and teaching staff – we all play a decisive role on the path to a sustainable future. We invite you to develop ideas and projects both large and small: every individual action counts! There are many ways to do this: from saving energy, using recycled paper, using public transport or cycling, cooperating with the Green Office, to overarching research projects or implementing sustainability aspects in your teaching – you can help shape the sustainable development of TUD in many ways.

In closing, I would like to thank everyone involved in formulating and editing this strategy. The publication of the strategy is not the end, but the start of TUD's path toward being a sustainable institution.

I look forward to the coming period of change and to working closely with you.



Prof. Dr. Roswitha Böhm
Vice-Rector University Culture

January 2024



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TU Dresden on the path to sustainable development

Back in the early 1990s, TU Dresden defined itself as an environmentally conscious institution and set out on the path to becoming a sustainable university. Initially, committed students founded the environmental initiative tuuwi, which was – and still is – a key promoter of environmental issues, particularly in teaching and campus design. With the creation of the Environment Commission in 1991, the adoption of environmental guidelines in 2000, and the introduction of corporate environmental management in accordance with the EU's Eco-Management and Audit Scheme (EMAS) three years later, strategic decisions were made to institutionalize environmental protection. These are the responsibility of the Environmental Protection group in the Directorate Facility Management, and they continue to form an important basis for TUD's sustainability efforts. In anchoring sustainability at management level in the department of the Vice-Rectorate University Culture, the topic gained further momentum. In 2020, the Environment Commission was reconstituted and a Green Office was set up, which is anchored in the Directorate University Culture and acts as a central point of contact for all those interested in the topic of (ecological) sustainability.

In view of the variety of initiatives and the research strength of TUD in the field of sustainability, the logical next step was to develop a sustainability strategy for TU Dresden that would apply to the entire university. In September 2021, a broad-based participatory process was launched, led by the Environment Commission and the Vice-Rectorate University Culture. All hierarchical levels of the university and the university committees were invited to participate in developing the goals and measures of this strategy. Coordination took place with stakeholders from the City and State, as well as other partners of TU Dresden. Following its unanimous approval by the Senate of TU Dresden, the strategy was adopted by the Extended University Executive Board in December 2023.

TU Dresden's Sustainability Strategy addresses six key areas of action at the university in 13 goals. The corresponding working plan for the years 2024–2030 comprises 80 measures, of which three priority measures are presented for each field of action in this brochure. The Environment Commission coordinates the implementation and monitoring of all measures alongside the Vice-Rectorate and the Directorate University Culture. Goals and measures are regularly evaluated and adjusted in line with an agile strategy..

Participatory design of the sustainability strategy by the TUD community



Sustainable and excellent in research

Innovative research can support and accompany transformation processes toward a sustainable society, as it makes a significant contribution to solving environmental and climate-related issues.

With its large number of pioneering interdisciplinary research projects, TU Dresden possesses broad, internationally visible research expertise. The spectrum ranges from ground-breaking fundamental research to application-oriented projects with high transferability. The strategic research priority areas represent the strongest fields of research at our university. The research profile of TU Dresden is given its special quality by the close cooperation with non-university research institutions and research-based cultural institutions in Dresden within the framework of the DRESDEN-concept Science and Innovation Campus. This institutionalized and actively used cooperation offers the opportunity to profitably expand and utilize synergies across disciplines in the area of sustainability.

Energy, mobility, and the environment

One focus is on energy, mobility, and environmental research with a high development potential across all areas and faculties. The strong roots of TU Dresden in its region are evident in many projects: Research results are tested and applied directly in Dresden's urban space or in the region. Existing expertise can be seen in a variety of research projects and fields.

The building-related sector is a key lever for municipal climate protection. In the ↗ **NeutralPath** cooperation project with the state capital of Dresden, climate-neutral energy-supply technologies are being tested in two residential districts of the city: This shows how the sustainable refurbishment of existing buildings, resource-conserving new construction, and the conversion of the energy supply can be carried out in a climate-friendly and affordable way.

The city also became an object of research in the ↗ **HeatResilientCity** research project, a joint project between the Leibniz Institute of Ecological Urban and Regional Development (IOER), TU Dresden, HTW Dresden University of Applied Sciences, and the state capital of Dresden. Based on research findings, stakeholders are empowered to implement effective, social, and needs-based measures for adapting to the summer heat. The project was awarded the German Sustainability Award for Research in 2022 as a significant contribution to a heat-resilient city.

The collaborative project ↗ **OLGA** involving the city, state, and other participants, is intended to optimize land use along water bodies and on agricultural land, and to promote regional value creation in the agricultural and food industry in the Dresden region. Various partners of the state capital Dresden, TU Dresden, and the Dresden environmental center Umweltzentrum Dresden are working together to train regional stakeholders in the development of practical solutions for the sustainable use of land and resources, and to build up urban-regional cooperation in the Dresden region.

A beacon of climate-conscious construction at TU Dresden with the potential to become a game changer is the high-tech material carbon concrete. In this, the classic reinforcing steel is replaced by carbon fibers. Thanks to the corrosion resistance and the lower concrete cover required, enormous amounts of energy are saved during production, and CO₂ emissions as well as transportation costs are significantly reduced.

The world's first **Carbon-concrete building CUBE** opened at the end of 2022. This is an impressive demonstration of how this building material can be used directly in practice.

This is where the future project ↗ "**LAB – Living Art of Building**" initiated by TU Dresden comes in. In the future, this research center will provide answers to the pressing questions in the construction industry in order to facilitate the use of carbon-concrete technology and thus make an important contribution to climate neutrality. Employees from science and technology will work closely with industry in the laboratory facilities – the only ones of their kind in the world – to develop ideas and solutions for the development of new materials, technologies, processes, and further digitalization on a large scale.

Energy and material properties are also central topics of sustainability research at TU Dresden. The joint project ↗ **GreenCap** between TUD and other European universities and stakeholders is developing high-performance and sustainable cylindrical supercapacitors based on layered two-dimensional materials (2DMs) and ionic liquids. The project identifies new high-end applications with comprehensive impact assessments of social, environmental, and economic sustainability.

The ↗ **OSens** (Organic Sensors and Solar Cells) project at the Chair of Optoelectronics is researching organic solar cells that are efficient, cost-effective, lightweight, flexible, semi-transparent, and sustainable to produce. They therefore offer a key solution for a large-scale, low-cost, and sustainable energy supply, as the energy payback time for organic solar cells is significantly shorter than that of silicon-based cells.

The ↗ **EffiziEntEE** project (Efficient integration of high shares of renewable energies in technically and economically integrated energy systems) is dedicated to the challenges of fluctuating characteristics in the decentralized supply of renewable energies. The project is a joint venture between TU Dresden and TU Hamburg. The intention, by linking the energy sectors, is to develop options for absorbing, storing, and supplying surplus electrical energy from renewable energy sources.

TUD is also involved in important collaborative projects in water and climate research:

The ↗ **Center for Advanced Water Research** (CAWR) pools the expertise of the Helmholtz Centre for Environmental Research (UFZ) and TU Dresden in order to work together in a targeted, competent, and interdisciplinary manner on key challenges in the water sector and to develop monitoring systems. TU Dresden is also involved in the ↗ **Global Water and Climate Adaption Center** (ABCD Center) joint project. Here, leading scientific institutions on two continents analyze human adaptations to the consequences of climate change with a special focus on the topic of water security and the transfer of findings into practice.

Mobility of the future is a central topic that is addressed in several projects at TU Dresden. The **Lighthouse Professorship and Chair of Transport Modelling and Simulation** is dedicated to the world of transportation, taking into account justice, fairness, environmental impacts, and other ethically relevant effects of transport. At the Chair of Chemical Process Engineering, synthetic fuels are being made more sustainable and efficient. The Chair of Mobility System Planning is researching into indicators of urban sustainable mobility in the EU project „**Sustainable Urban Mobility Indicators**“ (SUMI). The "Friedrich List" Faculty of Transport and Traffic Sciences is the largest academic center of excellence in the field of traffic sciences in Germany.

In order to make sustainability more measurable – especially at universities – TU Dresden continues to coordinate the Germany-wide project **UNISIMS** (University Sustainability Indicator Monitoring System) with 16 pilot universities. The aim of the project is to develop a standardized web-based benchmarking system for assessing sustainability at universities.

Societal change

In order to avoid further, irreversible damage to the ecosystem, we need to operate within the planet's limits and thus bring about societal change toward a more sustainable society. The excellence measure [↗ „Disruption and Societal Change“](#) (TUDiSC) profiles disruption as a fundamental category of research into societal change. Its prerequisites, logics, and effects are recorded and researched here in an interdisciplinary manner, both in terms of basic principles and exemplary objects. The focus is on the political, economic, social, and cultural challenges that societies face in dealing with disruptions.

In Lusatia, TU Dresden is actively contributing to shaping structural change with the establishment of the decentralized [↗ TUD| Lusatia Campus](#). Here, research projects (such as in the previously cited [LAB](#), the [↗ German Center for Astrophysics](#) (DZA), or in the [↗ CircEcon](#) project) are working on solutions to global challenges in order to further develop Lusatia into a central area for knowledge and transfer. Sustainable construction, renewable energy, and the mobility of the future also play a role, as do targeted educational measures and participation in societal debates.

As multipliers, teachers have a key role to play in sustainable development. The [↗ Teacher Academy Project – Teaching Sustainability](#) (TAP-TS) of the Center for Teacher Education and Educational Research (ZLSB) at TU Dresden is one of eleven European projects in the Erasmus+ Teacher Academies funding line dedicated to teachers' initial and continuous education. The project aims to reinforce the skills of teachers and student teachers in teaching sustainability. Participants from various European countries develop, trial, and implement teaching and learning materials on the topic of sustainability.

Based on the goal of measuring and evaluating sustainability in various disciplines, the [↗ PRISMA](#) Centre for Sustainability Assessment and Policy pools the skills of TUD researchers and other partner institutions in order to create synergies. The focus is on questions of economically successful as well as ecologically and socially compatible long-term development, taking into account spatial and temporal conditions with innovative, interdisciplinary evaluation approaches.

The campus as a living lab

The aim of the ↗ **Master Plan Campus Design** research project, in which the Institute of Landscape Architecture, the Institute of Transport Planning and Road Traffic, and the Directorate Facility Management cooperated, was to develop a sustainable overall concept for the development of open spaces on the TU Dresden campus. In a discussion with the university public, the resulting spatial and design scenarios were further developed and brought together in an overall concept, taking into account the open-space, traffic-planning, and ecological networking of the campus with its surroundings. Since 2019, the Master Plan Campus Design has served as the basis for in-depth planning and the implementation of individual measures. The main goals are to increase the quality of life on the campus as well as its ecologically sustainable development.

The Chair of Mobility System Planning's ↗ **Mobility concept for TU Dresden's main campus** builds on the considerations set out in the master plan for the design of the campus. It provides solutions and recommendations for action in order to harmonize the diverse mobility needs with a future-oriented design of the main campus. The concept takes into account analysis findings on the mobility behavior of employees and students from mobility surveys conducted in 2008, 2018, and 2022. The close dovetailing of the mobility concept and campus design master plan opens up greater scope for action to implement the scenarios developed.

In the ↗ **CAMPER-MOVE: CAMPus Energy-consumption Reduction** research project, an interdisciplinary project team is dedicated to the energy efficiency of the TUD campus. Under the leadership of the Chair of Building Energy Systems and Heat Supply, the aim, in cooperation with the central university administration and external project partners, is to accompany and evaluate the practical implementation of energy-efficiency measures (construction, systems engineering, operation) with measurement programs and detailed analyses. Regenerative as well as process and usage-specific energy sources are being explored on the campus, and further concepts for the establishment or expansion of existing energy networks (heating, cooling, electricity) are being developed.

Research-oriented teaching and transfer

Research-oriented teaching is a key component of teaching at TU Dresden. The [↗ postgraduate course in Environmental Management](#) at the Faculty of Environmental Sciences, which is unique in Europe, focuses on sustainability and is offered in cooperation with the Federal Ministry for the Environment, the German Environment Agency, and the United Nations (UNEP, Nairobi and UNESCO, Paris). On this course, specialists and managers from developing and emerging countries receive training in integrated environmental management and relevant specialist topics.

TU Dresden cooperates closely with the [↗ FLORES-Institut der Universität der Vereinten Nationen \(UNU\)](#). The UN facility in Dresden addresses the sustainable and integrated management of water, soil, and waste resources. A joint doctoral program has also been set up on this topic.

As a strategic project within the Universities of Excellence funding line, TU Dresden is repositioning its activities along the innovation chain under the umbrella of the [↗ Excellence Center für Innovation, Transfer und Entrepreneurship TUD|excite](#). TUD|excite develops pathways for accelerating innovation and transfer management and generating enthusiasm for the new. Excite is not only an acronym for a new institutional platform, but also expresses the ambition and motivation with which TUD approaches these topics: Excellence in innovation, transfer and entrepreneurship – inspiring and enabling a future worth living. In particular, the aim is to promote sustainable innovations in line with the Sustainable Development Goals.

The exemplary selection listed here and the large number of actively involved members of TU Dresden encourage us as a university community in our plan to shape societal change together in a sustainable way, while at the same time being a role model for society.



»I am passionate about sustainability – for us and our future. Even everyday office life offers opportunities to act, and I would like to raise my own awareness and that of my colleagues for the economical use of resources and to further increase the focus on ‘Reduce, Reuse, Recycle.’ I see this as an important factor in making the vision of a paper-saving office a reality at TU Dresden.«

Ilka Werblow

Administrative Assistant, Faculty of Architecture,
Institute of Landscape Architecture,
Sustainability ambassador at TU Dresden



»I am researching into sustainability in the KIOptiPack project in order to contribute to a sustainable circular economy with ‘design for and with recycling’ packaging. Specifically, the project is developing AI tools and expertise that can be used to produce fully recyclable post-consumer recycled (PCR) packaging. While doing so, we are looking into the acceptance of this packaging.«

Nikolas Neumann

Research Associate, Faculty of Mechanical
Science and Engineering, Chair of Industrial
Design Engineering



»I see my contribution to sustainability at TU Dresden on the one hand in my voluntary work in the Working Group on Biodiversity, in which we discuss, prepare, and implement many exciting projects to boost biodiversity on campus, and on the other hand I try to address biodiversity and its loss in my courses in order to raise awareness among students.«

Lisa Junge

Research Associate, International Institute (IHI)
Zittau, Chair of Business Administration,
esp. Environmental Management,
Head of the Environment Commission
Working Group on Biodiversity





»In our lecture, we provide accessible information on climate change, the biodiversity crisis, and sustainability. We offer a space in which participants can exchange ideas, ask experts questions, and discuss possible solutions. In addition to imparting knowledge, our aim is also to give participants food for thought for a more sustainable approach to life.«

Marie Zweifel, Lea Bänder, Kara Nowotny, Emely Nicht, Emanuel Lehmann

Students at TU Dresden, Organizers of the teaching format "SustainAbility: Understanding and implementing sustainability"



»In the Working Group DigSus, I am committed to reducing the problematic impacts of digitalization (due to its dependence on energy and hardware) and at the same time using the great potential of digital technologies for efficiency and sufficiency, such as by saving paper or using free software to enable technology to be used for longer.«

Dr. Carsten Knoll
Research Associate at the Chair of Fundamentals of Electrical Engineering,
Member of the Environment Commission
Working Group DisSuS on Digitalization and Sustainability



»It is important to me to ingrain the topic at TU Dresden as a university fit for the future: as a research topic in its own right, in my everyday work, and as a basis for networking with (urban) society, for example in the 'Sustainable Coffee Hour'.«

Marilisa Herchet
Research Associate, Center for Open Digital Innovation and Participation (CODIP)
Regular contributor to and participant at the 'Sustainable Coffee Hour' with employees of the state capital of Dresden

We intend to develop TU Dresden into a globally-oriented and at the same time regionally-anchored, top university for the 21st century, that makes innovative contributions to solving global challenges. TU Dresden attaches high priority to environmental and climate protection as well as ecological sustainability.

It is everyone's duty to assume responsibility for these challenges. However, we are convinced that our efforts to tackle the challenges of climate change can only be achieved through joint activities in all areas and at all levels of society. Being a university, we are a key stakeholder in this.



TU Dresden – Sustainability Strategy

Vision

The greatest global challenges of our time are anthropogenic climate change and the progressive loss of biological diversity. Environmental pollution has a considerable impact on society and causes high costs. These costs manifest themselves, for example, in environmental damage to health and materials, crop failures, or damage to ecosystems. The resulting devastating dangers also threaten the existence of human life and economic activity, and are therefore also a trigger for global migration movements.

Only the responsible use of available resources and the sustainable development of our society can safeguard the livelihoods of present and future generations. The guidelines for this development process are described in the 2030 Agenda and the associated Sustainable Development Goals (SDGs) of the United Nations. TU Dresden is explicitly addressing both the synergies and the conflicting goals in achieving this at institutional, regional, and global levels.

Any ambitious action, including that of TU Dresden, has a positive impact on society by helping to limit climate change and damage to ecosystems and reduce the associated costs. TU Dresden has set itself the goal of making innovative contributions to solving global challenges. In research and teaching, it directly addresses these challenges, such as climate change and the use of natural resources. Environmental and climate protection, as well as ecological sustainability, are therefore of great importance at TU Dresden. The university community assumes social responsibility for a sustainable transformation of mankind's relationship with nature. Locally based and globally oriented, TU Dresden aims to become an excellent role model as an ecologically responsible and sustainable institution.

TU Dresden's Sustainability Strategy provides the framework for action. TU Dresden is guided by a concept of sustainability that has become established in the scientific debate as the concept of "strong sustainability"¹ Ecology forms the basis for the development fields of economy, culture, and social affairs, also in terms of climate justice. The guiding principle here is that natural capital cannot be substituted. The assimilation capacity of emissions is also limited. The use of renewable resources exclusively within the limits of their regenerability, and the use of exhaustible resources only to the extent that equivalent natural renewable resources can be created, determine the objectives of the areas of activity of this Sustainability Strategy.

Operations at TU Dresden are based on the conditions of the limited assimilation capacity of emissions and the regenerability of natural resources. As a research institution, TU Dresden also has great potential for action in its ability to reflect and provide impetus to support the social transformation toward greater sustainability – both within and outside the university. We, as members of TU Dresden, follow the recommendations of the German Rectors' Conference² (HRK) and promote a culture of sustainability at our university, i.e., individual motivation, personal commitment, and a reflective approach to research, as well as sustainability-oriented skills and ways of thinking in teaching in line with education for sustainable development. In doing so, we also seek to provide impetus for a policy of sustainable development in the state capital of Dresden and in the Free State of Saxony, nationally and internationally.

The Sustainability Strategy comprises six areas of activity in which TU Dresden aims to implement its claim of being an ecologically sustainable university:

I. Governance

II. Campus and operations

III. Research

IV. Teaching

V. Digitalization

VI. Dialog and transfer

¹ Konrad Ott/Ralf Döring: Theorie und Praxis starker Nachhaltigkeit [Theory and Practice of Strong Sustainability, Marburg 2008 (2nd ed.); Edeltraud Günther: Ökologieorientiertes Management: Um-(weltorientiert) Denken in der BWL [Ecology-oriented Management: Rethinking with Environmental Awareness in Business Administration], Stuttgart 2008.

² www.hrk.de/positionen/beschluss/detail/fuer-eine-kultur-der-nachhaltigkeit

Areas of activity of the Sustainability Strategy

All areas of activity are guided by the following basic principles in order to develop a lasting, long-term impact in the interaction between humans and nature, and in the resilience of society:

Governance

We will establish the structural and organizational prerequisites for sustainable development at TU Dresden in the long term.

Campus and Operations

We will, as a university, achieve net zero emissions by 2035 and continuously minimize our use of resources.

Research

We will make a significant contribution in research to solving environmental and climate-related issues and provide scientific support for sustainable change in society.

2



4



Education

We will provide our students with all the necessary qualifications for future-proof, responsible, and sustainable action in the spirit of education for sustainable development.

1



5



3



Digitalization

We will make our digital transformation processes ecologically sustainable and fair.

6



Dialog and Transfer

We will play a central role in the public discourse on the sustainable development of Dresden, Saxony, and beyond.



Governance

TU Dresden has established structures, transparent processes, and diverse initiatives in all hierarchical levels at the university, and these are already helping to shape the process of developing toward an environmentally and climate-friendly university and will contribute to the implementation of sustainability goals in the future. This process began at the same time as the restructuring of the university following German reunification in the 1990s. The Environment Commission, founded in 1991, is the central university committee that advises the University Executive Board on the strategic direction of TU Dresden with regard to environmental and climate protection, and steers the implementation of specific measures. In its environmental guidelines first published in 2000, TU Dresden has acknowledged its responsibility to incorporate environmental protection concerns as an important basis for decision-making in all organizational units of the university. With the establishment of the Team for Ecological Sustainability as an information and exchange platform and the creation of a Green Office in 2021, TU Dresden has significantly strengthened the structures that enable networking between the various initiatives and stakeholders both within the university and beyond. The student environmental initiative (tuuwi) reaches students directly and actively involves them with its topics and offers.

This development process has resulted in numerous impulses for ecological sustainability at TU Dresden, which are now to be strategically implemented and ingrained in an institutional culture of sustainability in all organizational units and areas of activity. The promotion of sustainability awareness and individual responsibility is of particular relevance in internal communication processes.

Selected measures

short
term

Stimulating and empowering university members to act sustainably

Establishment of decentralized sustainability sponsors within TUD, and university-wide, cross-hierarchy training courses on sustainability with the aim of becoming active in sustainability issues and initiating and accompanying transformation processes.

short-to-
medium
term

Development of a climate-protection concept and establishment of climate-protection management at TUD

Gradual reduction of greenhouse gas emissions # associated with the operations at TU Dresden, including the definition and monitoring of a reduction pathway with the aim of achieving climate-neutral operations by 2035.

medium
term

Implementation of sustainability as an essential part of TUD's institutional agenda

Integration of sustainability aspects into central strategic concepts, target agreements, the university development plan, and TUD's mission statement with the aim of systematically considering and embedding sustainability as a cross-sectional task at all strategic levels.



Our goals 2030

With its Sustainability Strategy, TU Dresden is committing to the following goals:

TU Dresden ingrains an institutional culture of sustainability in all organizational structures and areas of activity at TU Dresden.

TU Dresden reinforces individual sustainability awareness and the assumption of responsibility by all university members.



Campus and Operations

Since 2003, TU Dresden has been using a validated environmental management system in accordance with the EU Eco-Management and Audit Scheme (EMAS) for the responsible use of available resources and the continuous improvement of environmental performance in operational processes, which will be linked to the SDGs from now on. In addition to recording the current key indicators on resource consumption, it also provides targeted impetus to review and adapt environmental protection continually at TU Dresden within the context of internal audits (environmental operations audits). Information and activities on environmentally relevant developments at TU Dresden are published in the annual Environmental Report. An integral part of the reporting is the environmental program, which assigns specific measures to the areas of activity and individual goals. The greatest challenge here is to improve energy efficiency and establish a sufficiency mindset regarding the equipment of facilities and land use alongside partners at municipal and state level. In 2018, TU Dresden drew up the Master Plan Campus Design for the continuous development of its campus taking into account environmental aspects such as biodiversity, climate resilience, and rainwater management. This concept sets a design framework and defines important standards for the development of outdoor spaces, which are incorporated into planning processes and implemented. To ensure that the campus is sustainable, coherently designed, and easily accessible, a mobility concept for the main campus was developed to complement the Master Plan Campus Design.

The aim is to make TU Dresden's operations climate-neutral by 2035¹ to improve the quality of life on campus through sustainable mobility development and the design of outdoor spaces, and to significantly reduce TU Dresden's consumption of resources.

¹ The focus of climate-neutral operations at TU Dresden is on reducing greenhouse gas emissions. Only unavoidable residual emissions are included in the balance through compensation..

Selected measures

short-to-medium term

Comprehensive consideration of sustainability criteria in the planning and implementation of technical infrastructure-development projects at TUD sites

Development and implementation of a system for monitoring resource consumption in the organizational units. Implementation of measures derived from this to reduce consumption with regard to the use of resources and consequential costs with the aim of improving resource efficiency in all organizational units.

medium term

Increasing low-emission on-campus mobility

Promotion of environmentally friendly forms of mobility and creation of attractive conditions for “active mobility”, such as cycling or walking on campus, with the aim of reducing mobility-related

medium term

Definition of sustainability criteria for procurement processes and integration into the tendering process

Examination of central and decentralized procurement processes and identification of suitable sustainability criteria for integration into these processes, with the aim of making procurement processes at TU Dresden more resource efficient and sustainable.

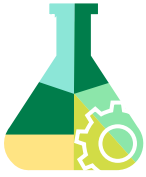
Our goals 2030

With its Sustainability Strategy, TU Dresden is committing to the following goals:

TU Dresden will reach net zero emissions by 2035.

The TU Dresden campus has a high quality

of life and is designed innovatively and sustainably as an excellent place to learn and work. TU Dresden is significantly reducing its resource consumption.



Research

The topic of sustainability is particularly relevant to the University's core tasks of research and teaching. Thematic priorities in research are already contributing to solving issues relevant to the climate and environment, and to achieving sustainability goals. TU Dresden has a great potential for innovation in technology, medicine, and natural sciences, but also in the humanities and social sciences. In research priority areas and emerging fields, topics of ecological sustainability are focused on separately – for example, in materials science, in the research priority area Energy, Mobility and Environment, or in the emerging field of water research – but also far beyond this. Innovative scientific findings in sustainability research – for example, in lightweight construction, the circular economy, or sustainability reporting – make a lasting contribution to how society deals with the challenges of the 21st century. The development of an energy research strategy will create a binding, cross-disciplinary framework for energy research. TUD also supports its researchers with an effective research and transfer service. International cooperation is crucial to tackling complex global challenges and driving sustainable development forward. By fostering research partnerships with institutions worldwide, TU Dresden can leverage collective expertise and resources to address, through technological advancement, pressing issues, such as climate change, biodiversity loss, and social inequality.

On this basis, the sustainability-related content of research and the sustainable structuring of research activities at TU Dresden are to be strategically reinforced and expanded in international cooperation. In particular, the aim is to structurally promote socially relevant sustainability research in order to be able to make even more visible and application-oriented fundamental contributions to social challenges as a university. By participating in international networks and alliances, TU Dresden can influence policy-makers to commit themselves to sustainability. Research activities are also to be designed in a sustainable and responsible manner.

Selected measures

short
term

Structural promotion of sustainability research at TU Dresden

Advice, networking, and information services for researchers, with the aim of strengthening research on ecological sustainability at TU Dresden.

medium
term

Visualization of sustainability information in the Research Information System (FIS)

Expansion of the FIS to include information on sustainability in research projects and publications with the aim of making the diversity of research projects related to the Sustainable Development Goals visible.

medium
term

Incentives for the sustainable and resource-conserving design of research activities

Analysis of potentials, development of an incentive system, and application of recommendations for resource-conserving research, with the aim of making research at TU Dresden as resource efficient as possible.

Our goals 2030

With its Sustainability Strategy, TU Dresden is committing to the following goals:

Research at TU Dresden makes central contributions to sustainable development with an international perspective.

TU Dresden organizes its research activities sustainably and uses the available resources responsibly.



Education

In TU Dresden's teaching mission statement and university development plan, sustainability in teaching is established as a holistic approach at TU Dresden and is to be structurally anchored and promoted as part of the teaching strategy currently being developed. In line with the United Nations' Global Action Programme on Education for Sustainable Development (ESD), the aspect of sustainability in teaching is understood to be a cross-sectional task that is dealt with in subject-specific modules and in interdisciplinary approaches to teaching and learning. The environmental relevance of new courses of study is already being outlined when they are being set up. The Studium Oecologicum certificate program affords students the option of acquiring skills that complement their normal course of study. The Public Climate School, which takes place every semester, and the teaching awards from the Association of Friends and Sponsors of TU Dresden (Gesellschaft von Freunden und Förderern der TU Dresden, GFF) provide incentives for implementing ESD in teaching. The teacher-training courses at TU Dresden in particular include mandatory ESD modules. In addition, interdisciplinary courses in environmental education and ESD, as well as service-learning opportunities in the context of sustainability, are offered. The teaching opportunities are open to society at large in cooperation with the climate schools, the Citizens' University, and the Seniors' Academy. Internationally, for example, joint teaching programs are being developed in the combined M.Sc. program on Water Security and Global Change at the ABCD-Centre.

The courses and modules of Education for Sustainable Development currently implemented at TU Dresden and their monitoring represent good practices for strategically anchoring, internationally expanding, and structurally promoting sustainability in teaching in the future, accompanied by appropriate quality management. The aim is to ensure a high quality of ESD in the courses offered at TU Dresden by having appropriately trained teaching staff in order to empower students to think critically and reflectively and to act responsibly with regard to ecological sustainability.

Selected measures

short-to-medium term

(Further) development of an interdisciplinary and research-oriented range of courses on sustainability
Creation of framework conditions and advanced-training opportunities for stakeholders involved in teaching, with the aim of establishing a portfolio for the interdisciplinary promotion of sustainability skills among students.

medium term

Incentives for integrating education for sustainable development into subject-related teaching
Development and implementation of suitable incentive

Development and implementation of suitable incentive measures for the design of sustainability-oriented, subject-related teaching, with the aim of promoting sustainability skills in subject teaching.

The measures will be continuously developed in coordination with the Vice-Rectorate Academic Affairs Across the Life Course and the sTUDies 3.0 teaching strategy.

Our goals 2030

With its Sustainability Strategy, TU Dresden is committing to the following goals:

The range of courses related to sustainability and aimed at education for sustainable development enables students at TU Dresden to think critically and reflectively about sustainability and to act responsibly in line with the SDGs.

At TU Dresden, structural framework conditions exist for the (further) development of tools and offers in order to enable teachers to design their teaching in the respective subject disciplines in line with education for sustainable development (ESD).





Digitalization

With its all-encompassing transformative power, digitalization can have both positive and negative effects on sustainable development. It is therefore particularly important to ensure that the positive impact of digitalization on cross-sectoral sustainable development is not offset by its negative effects. As a cross-sectional issue, digitalization must be evaluated in all contexts of sustainability. Digital infrastructure has a significant impact on resource and energy consumption. This is associated with negative climate impacts and loss of biodiversity. Due to rebound effects, gains in efficiency are not enough to minimize the negative impact. In descending order of priority, hardware, software, usage, and economic sufficiency must be set against this problem.

Sustainable development at TU Dresden is already being promoted in the processes of digitalization. With the extension of the University Executive Board to include the Chief Officer for Digitalization and Information Management, the IT Coordination Team, the Data Protection Officer, and the Center for Interdisciplinary Digital Sciences (CIDS), TU Dresden is broadly positioned strategically, operationally, and innovatively in the area of digitalization. Both centralized and decentralized information technologies play an important role when considering digitalization and sustainability. Using the central infrastructure provided by the Center for Information Services and High Performance Computing (ZIH), computing processes can be carried out in a particularly energy-efficient manner and reliability can be guaranteed. The waste heat from servers is fed into the district-heating network of the City of Dresden. At the same time, TU Dresden therefore faces the challenges of rebound effects, which make sufficiency considerations necessary. Decentralized information technologies are regulated by the procurement guidelines and IT regulations. In order to quantify and control sustainability criteria, statistics on decentralized IT procurement and use are just as necessary as determining the sustainable implementation of IT application scenarios.

TU Dresden has set itself the goal of carrying out the digital transformation responsibly and taking the SDGs into account. At the same time, it is using digitalization to promote its own sustainable development.

Selected measures

short
term

Promotion of paper-saving administrative processes
Identification and removal of existing obstacles to the paper-saving handling of administrative processes with the aim of conserving resources.

short
term

Centralization of the TU Dresden server infrastructure
Identification of decentralized server rooms and investigation of centralization with the aim of increasing energy efficiency.

medium
term

Promotion of open-source development and use
Review, comparison, and evaluation of open-source software for proprietary software products in use, including the creation of guides and instructions for installation and use, as well as incentives for use.

Our goals 2030

With its Sustainability Strategy, TU Dresden is committing to the following goals:

The digital transformation of TU Dresden is taking place responsibly and with SDGs taken into consideration.

TU Dresden uses digitalization to promote its sustainable development.



Dialog and Transfer

Communicative accompaniment of sustainability activities into and from the university is playing an increasingly important role, especially in view of the social responsibility that TU Dresden is assuming in this area. To this end, a communication strategy is being developed that focuses on the issue of sustainability as part of the brand discussion. Sustainability communication takes place within the university via thematic mailing lists, newsletters, and university-wide campaigns. A large number of events and networking opportunities, some of which take place regularly, enable all hierarchical levels at TU Dresden to exchange ideas with each other and beyond the university. They serve as an information platform and starting point for joint sustainability projects across faculties, committees, and institutions, through to a nationwide exchange on sustainability activities and their strategic joint consolidation and political promotion by the State Rectors' Conference (LRK). International partnerships are currently being established, particularly with universities in regions that are particularly affected by climate change. In addition, TU Dresden's transfer strategy regulates the research and technology transfer of innovations developed at the university, including in the area of environmental sustainability, and promotes sustainable innovations in line with the SDGs. The technologies developed at TU Dresden are to be used to counter climate change and promote resilience. Public ESD and Citizen Science projects also facilitate the transfer of knowledge from TU Dresden to schools, as well as the exchange of skills and knowledge between society and science

This communicative task in social responsibility is to be expanded in various approaches to knowledge and technology transfer such that the TU takes on a central role in the public discourse on sustainable development in society – locally, regionally, and internationally.

Selected measures

short
term

Transfer and trialing of scientific findings in living labs
Direct trialing of scientific findings, in cooperation with the City, State and economic stakeholders, with the aim of making them immediately usable in the field of sustainability in society and the economy.

short
term

Development and implementation of a communication strategy on sustainability issues
Development and introduction of a central TUD communication strategy on sustainability issues, which clarifies the scientific positions in the social debate, with the aim of increasing the social visibility of TU Dresden in the field of sustainability.

short
term

Expansion of TU Dresden's sustainability network at local, state, and international level
Establishment of a regular exchange platform and opportunities for exchange between TUD and various stakeholders in the City, State, economy and politics, with the aim of accompanying societal change in a networked manner.

Our goals 2030

With its Sustainability Strategy, TU Dresden is committing to the following goals:

TU Dresden intensively promotes the transfer of sustainability-related topics – locally, regionally, nationally, and internationally – and the interlinking of science and practice.

As a social stakeholder, TU Dresden plays a central role in the public discourse on sustainable development in society.

The United Nations 2030 Agenda with its 17 Sustainable Development Goals (SDGs) provides the program framework for global development towards a sustainable society – on an ecological, social and economic level. This roadmap for the future is intended to enable a humane life worldwide and at the same time preserve the natural foundations of life in the long term.

Numerous members of TU Dresden are already working for these SDGs. There are sponsors for all 17 goals, who are committed to their implementation here on site.

Towards a shared
culture of
sustainability



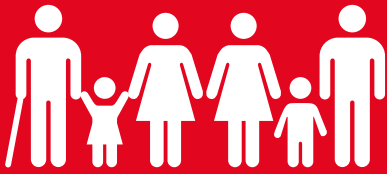
We share
and care about
the SDGs.

SUSTAINABLE
DEVELOPMENT
GOALS



➤ tud.de/SDGs

1 NO POVERTY



»Engineers without Borders (Ingenieure ohne Grenzen) is committed to fighting poverty. Well-trained people will not only find work themselves more quickly, but will also create new earning opportunities in the region.«

Mirko Köhler
Member of Engineers without Borders
Sponsor for SDG 1



2 ZERO HUNGER



»We humans must produce our food in an ecologically sustainable way so as not to destroy our planet, our basis of life, and we must distribute the food produced in this way fairly – we need a global perspective here.«

Jun.-Prof. Dr. Jana Markert
Chair of the Junior Professorship in Nutrition and Home Economics
Sponsor for SDG 2



3 GOOD HEALTH AND WELL-BEING



»We see ourselves as supporters of change, for example in the areas of consumer behavior and addiction. In particular, we want to promote prevention and self-reflection in these areas.«

Dipl.-Psych. Jochen Richter
Psychologist at TU Dresden's Occupational Health Services
Sponsor for SDG 3



© Eva Rippel

»At the ZLSB, inclusive, high-quality, and equitable education is central to our work.«

Dr. Rachel Bowden

Research Associate at the Center for Teacher Education and Educational Research
Sponsor for SDG 4

Futher sponsors: Alexandra Seifert
Green Office; **Dr. André Lindner**
Executive Manager of the School of Civil and Environmental Engineering;
Klara-Johanna Fabisch Environmental lecture series team TU Environmental Initiative



»We support the prevention and elimination of all forms of discrimination against women and girls through educational work, and promote women's effective participation in decision-making and equal opportunities to take on leadership roles.«

Jule Schneider und Renée-Sophie Broy
Members of the Women in Environmental Sciences Network (FrauenUmweltNetzwerk "FUN")
Sponsors for SDG 5

6 CLEAN WATER AND SANITATION



»We want to help increase the resilience of our water systems and reduce the negative effects of extremes on water quality and quantity as much as possible.«

Dr. Mareike Braeckevelt
Coordination of the Emerging Field of Water Research
Sponsor for SDG 6

7 AFFORDABLE AND CLEAN ENERGY



»We are researching technologies and investigating sustainable heat-supply concepts for applications across the entire spectrum, from single-family homes to large municipal district-heating systems.«

Prof. Dr.-Ing. Clemens Felsmann
Chair of Building Energy Systems and Heat Supply
Sponsor for SDG 7



8 DECENT WORK AND ECONOMIC GROW



»As a group, we deal with the issue of supply-chain law, which requires companies to ensure that their products are manufactured without child or slave labor.«

Lotta Borkhardt
Member of the Amnesty International Dresden University Group
Sponsor for SDG 8



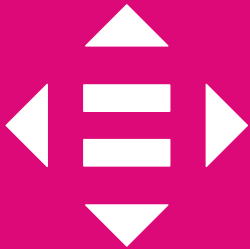
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



»I see improving the quality infrastructure as a prerequisite for sustainable industrialization. Standardization and accreditation help to integrate countries of the global South into international markets and thus develop the local industry in a sustainable way.«

Prof. Dr. Christian Leßmann
Professor of Economics, esp. International Economics
Sponsor for SDG 9

10 REDUCED INEQUALITIES



»Appreciating the diversity of people, utilizing all potential – we want to ingrain this understanding of diversity in all organizational units in order to promote inclusion.«

Katrin Saure
Diversity Management Officert
Sponsor for SDG 10



»The success of the energy transition with climate-neutral buildings and cities is a major challenge that we all have to face. The state capital Dresden and the Institute of Building Climatology are working with other partners in the Neutral Path project to find solutions.«

Regine Kramer State Capital Dresden
Dr. Peggy Freudenberg
Institute of Building Climatology at TU Dresden
Sponsors for SDG 11



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



»When producing the exhibition, we made sure to act sustainably on various levels and thus function as a role model for the sustainable production of exhibitions in the (publicly funded) cultural sector.«

Holger Seifert

Project manager of the "Wolke 8" ("Cloud 8") exhibition at the Technische Sammlungen Dresden

Sponsor for SDG 12



»We students ingrain adaptation to climate change and ecological course-setting in strategies and planning. We also mobilize stakeholders to get involved and take action for climate protection.«

Moritz Schulz

Member of the Change_TUD group and the TU Environmental Initiative (TU-Umweltinitiative, TUUWI)

Sponsor for SDG 13

13 CLIMATE ACTION



»A very important part of our work is proactive environmental protection. We assess the environmental impact of chemicals that could be used in the future for energy storage, crop protection, or in medicine, for example, and want to make water protection one of the criteria in the development of new technologies.«

Dr.-Ing. Marta Markiewicz

Head of the Contaminant Science Group at the Institute of Water Chemistry at TU Dresden

Sponsor for SDG 14





»The OLGA project develops sustainable forms of landmanagement and promotes the added value of regional food. It thus contributes to the transformation of the agricultural and food industry in the Dresden region.«

Anke Hahn State Capital Dresden
Marilisa Herchet CODIP TU Dresden,
 Staff members of the Federal Ministry of
 Education and Research (BMBF) joint project
 OLGA
Sponsors for SDG 15



»We are a non-partisan student initiative at TU Dresden and offer free advice on asylum and residence law. Refugees must know their rights and be able to assert them.«

Tara Kusche, Charlotte Staron, Mette Steffen
 Refugee Law Clinic
Sponsors for SDG 16



»The program also aims to strengthen Germany's bilateral environmental relations with developing and emerging countries in the long term, as all sides benefit from the exchange of information and experience.«

Dr. Anna Görner
 Course Director of the Centre for International
 Postgraduate Studies of Environmental
 Management (CIPSEM) at TU Dresden)
Sponsor for SDG 17



The Sustainability Strategy of TU Dresden and its working plan with concrete goals and measures provide a binding framework for the path already taken toward an ecologically sustainable university. The implementation status of the centrally and decentrally managed measures and the degree of target achievement are continuously reviewed, documented, and communicated. The sustainability strategy will be continuously adapted and comprehensively evaluated before its expiry.



Discover more about sustainability
at TU Dresden:

 **Youtube playlist**

Sharing responsibility

Green Office

The Green Office informs, supports and networks university members in the field of ecological sustainability. It is the central point of contact for concerns, suggestions and questions about ecological sustainability at TU Dresden and organizes projects in the field of ESD/ environmental education and transfer.

Directorate 9, Unit 9.1 Campus Life

📍 VG3, Nöthnitzer Straße 43
☎ 0351 463-33037
✉ greenoffice@tu-dresden.de
🔗 tu-dresden.de/greenoffice

Environmental Protection Group

The Environmental Protection Group plans and coordinates environmental management measures, carries out environmental audits and is responsible for reporting. It also organizes operational environmental protection (waste management, immission control, water protection, hazardous goods management) and implements measures for sustainable campus design.

Directorate 4, Unit 4.4 Infrastructural Facility Management | Environmental Protection Group

📍 B69, Bergstraße 69
☎ 0351 463-39493
✉ umweltschutz@tu-dresden.de
🔗 tu-dresden.de/tu-dresden/arbeitschutz-umwelt/umweltschutz

Environment Commission

The Environment Commission advises the University Executive Board on environmental issues and strategically promotes the implementation of environmental protection. Through targeted public relations activities, the Commission ensures that TU Dresden's environmental policy is effectively represented at local, regional and national level.

📍 VG3, Nöthnitzer Straße 43
☎ 0351 463-33095
✉ kommision-umwelt@tu-dresden.de
🔗 tu-dresden.de/ku

tuuwi

In the TUD environmental initiative (tuuwi), students from all disciplines are committed to environmental protection, societal transformation and the responsible use of resources – at TU Dresden and beyond. The tuuwi organizes the environmental lecture series at TU Dresden and environmental film evenings, and campaigns for more climate-friendly food in the canteens.

📍 M05, Mommsenstraße 5
☎ 0351 463-34690
✉ tuuwi@tu-dresden.de
🔗 <https://tuuwi.de/>

Do your part!



TU Dresden

Vice-Rector University Culture

Environment Commission

01062 Dresden

✉ kommission-umwelt@tu-dresden.de

↗ tu-dresden.de/sustainability

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