Technische Universität Dresden

Prof. Dr. Roswitha Böhm, Vice-Rector University Culture and Internationalization

Towards climate neutrality – TU Dresden's commitment to sustainability

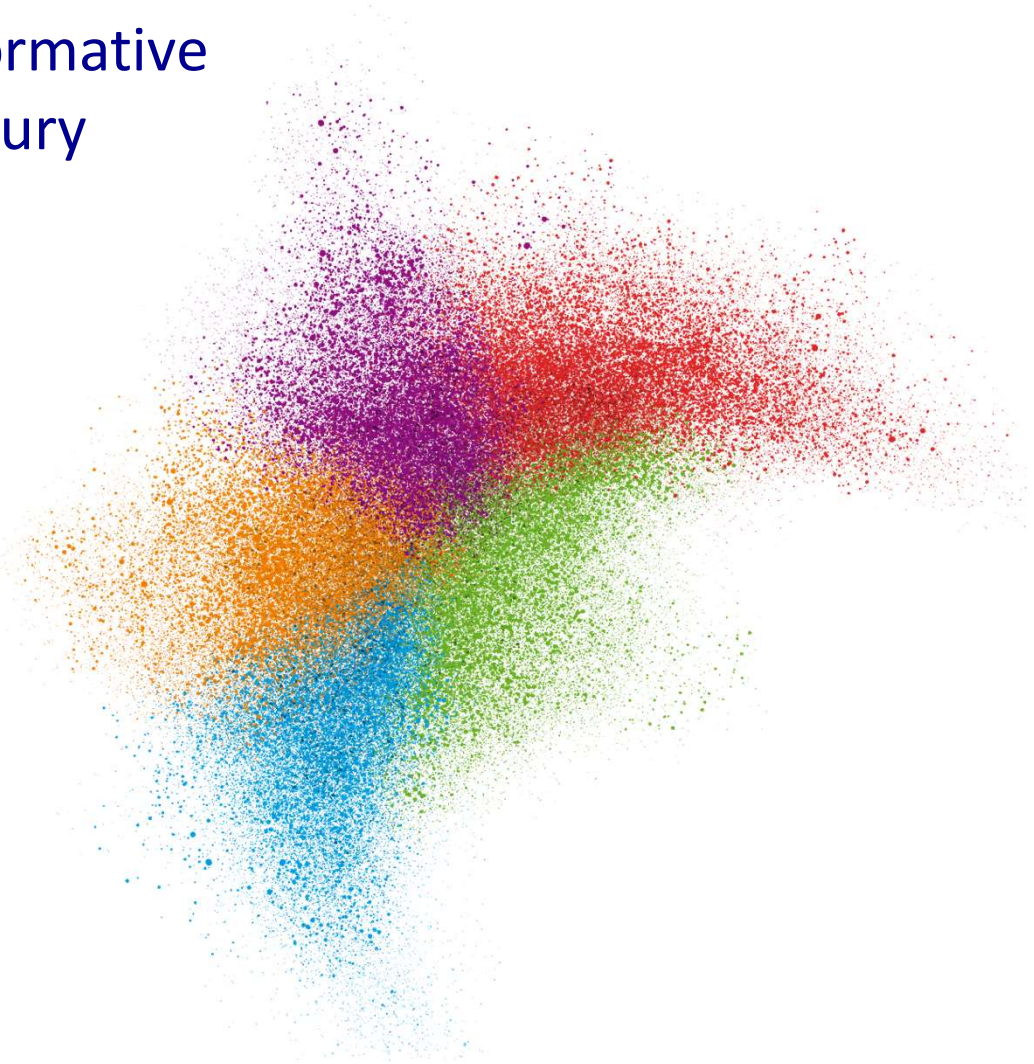
43rd Conference of Rectors and Presidents of European Universities of Technology
Wrocław University of Science and Technology, September 19th and 20th, 2025

TUD: Our Vision

Globally Impactful and Regionally Transformative University of Excellence **for** the 21st Century

that **contributes innovative solutions to global challenges**

(i.e., climate crisis, natural resource scarcity, demographic change, jeopardized democracy, digitalization)



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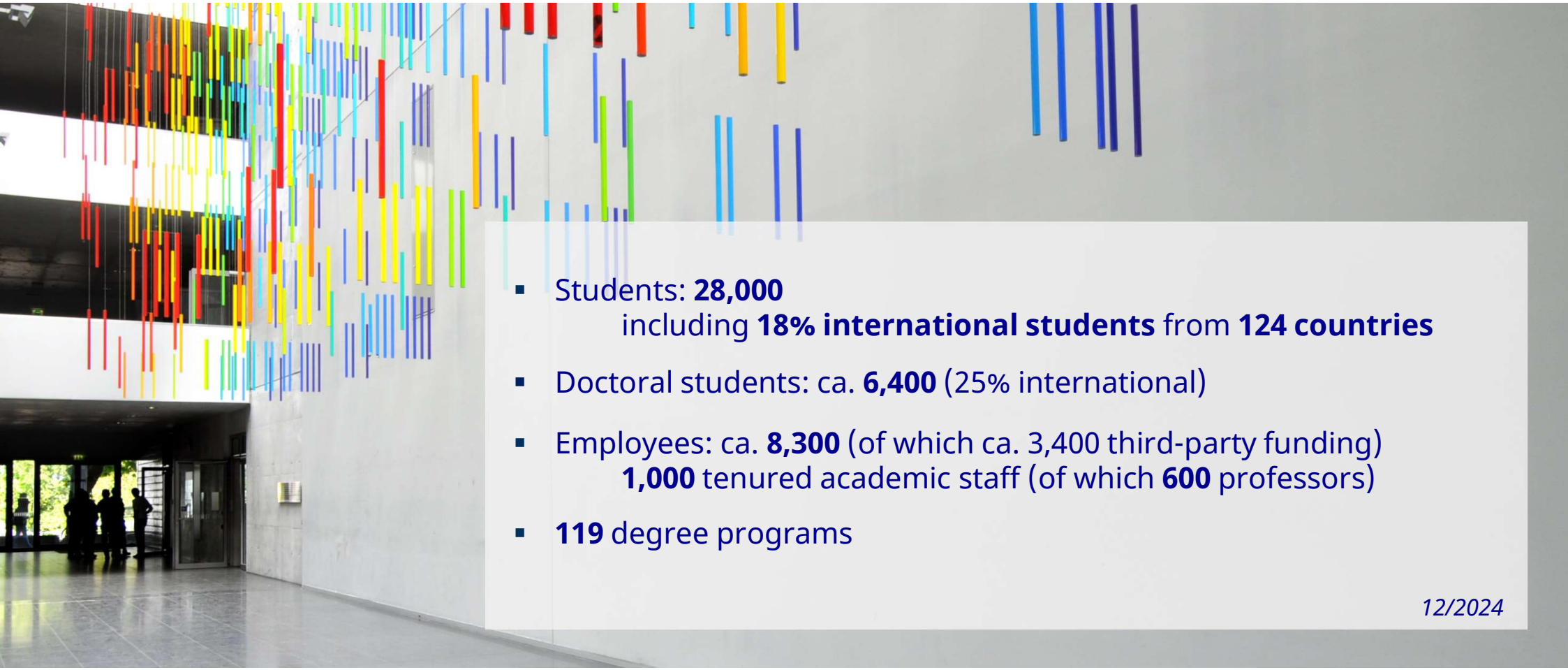
TUD Now | Basic Figures



- Students: **28,000**
  including **18% international students** from **124 countries**
- Doctoral students: ca. **6,400** (25% international)
- Employees: ca. **8,300** (of which ca. 3,400 third-party funding)
  1,000 tenured academic staff (of which **600** professors)
- **119** degree programs

12/2024

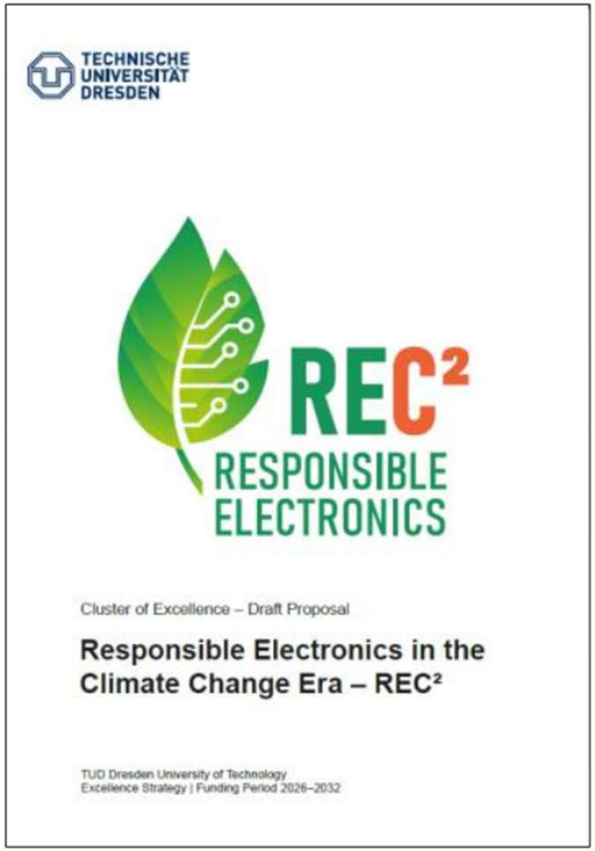
TUD Clusters of Excellence contributing to sustainability

Five Clusters of Excellence awarded in 2025.

Two address sustainability directly:

CARE – Climate-Neutral and Resource-Efficient Construction

REC² – Responsible Electronics in the Climate Change Era



TUD: Our Path to a Sustainable University

Since 2025
Sustainability Management and Climate Protection Management

From 2024
Implementation of measures for the Sustainability Strategy

Since 12/2023
Sustainability Strategy

Since 07/2021
Green Office

2017 – 2021
Project **Sustainable Campus**

Since 08/2020
Vice-Rectorate University Culture

Since 01/2003
Environmental management system according to EMAS

Since 09/2000
Environmental Guidelines

Since 1991
Environmental Commission

Since 1990 Student environmental initiative **tuuwi**

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TUD Sustainability Strategy

- **Developed through a broad participatory process** involving the student initiative tuuwi, the Environmental Commission, the Vice-Rectorate for University Culture, the Green Office, and the Environmental Management team.
- **Inclusion of the university-wide public** in the process.
- **Unanimously approved** by the Environmental Commission.
- **Officially adopted** by the Extended Rectorate in 2023.

TUD Sustainability Strategy:
6 fields of activity,
13 goals,
80 measures

Teaching

education for sustainable development

Goverance

structural and organizational prerequisites

Campus and Operations

climate neutrality in operations by 2035

Digitalization

sustainable and fair digital transformation processes

Research

contributions to solving environmental and climate-related issues

Dialog and Transfer

public discourse on the sustainable development

Fields of activity from a climate protection perspective

TUD-Strategy for Climate Neutrality Path

Most relevant parts of the Climate Protection Action Plan

Goverance

structural and organizational prerequisites

Campus and Operations

climate neutrality in operations by 2035

Research

contribution to solving environmental and climate-related issues

Teaching

education for sustainable development

Digitalization

sustainable and fair digital transformation processes

Dialog and Transfer

public discourse on the sustainable development

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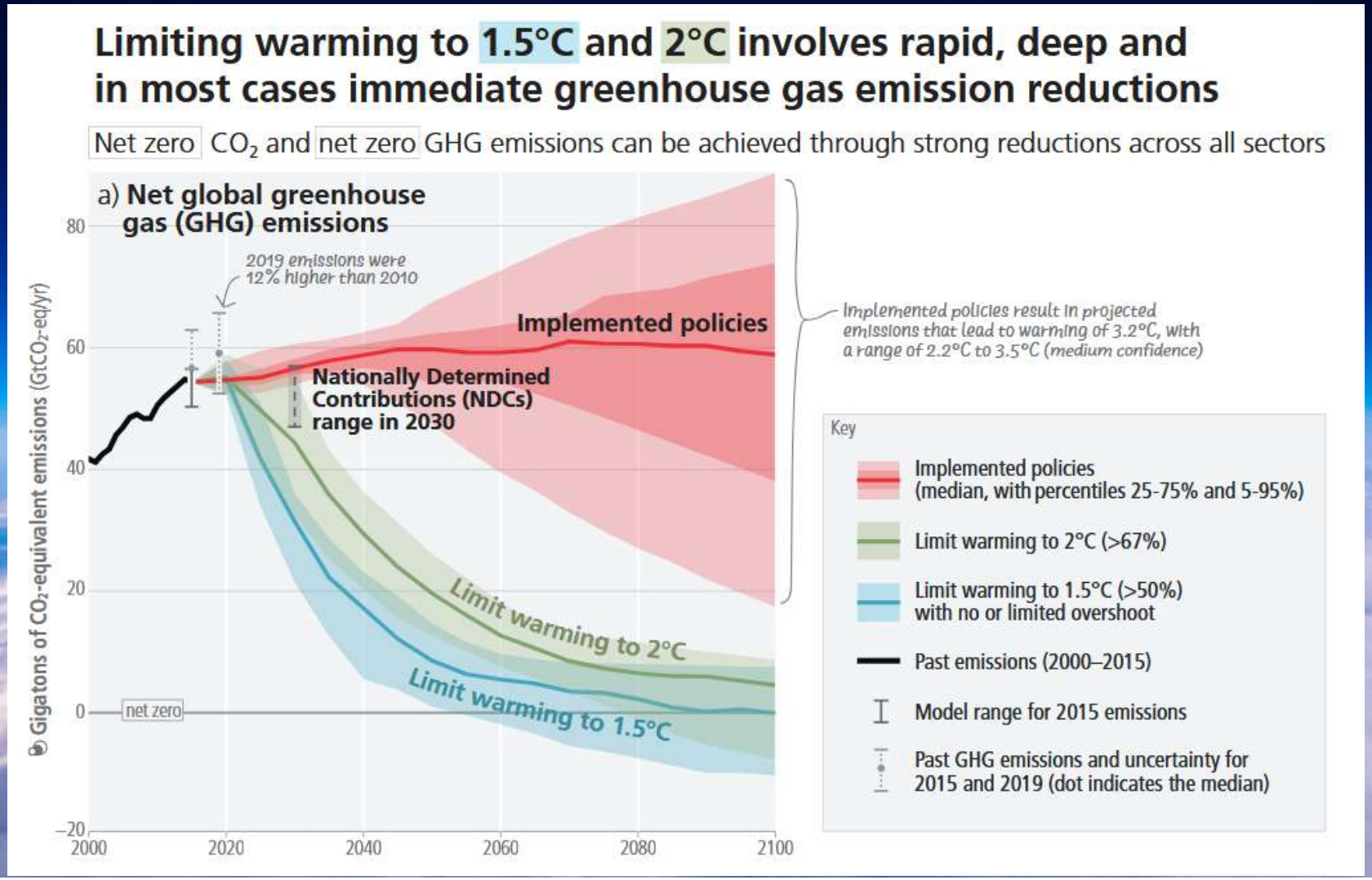
Global view



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Carbon clock

1.5°C scenario

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PIK

Development of an integrated climate protection concept

- Funded by the National Climate Protection Initiative of the Federal Environment Ministry and TUD Environment Commission
- Duration: 2024 to 2026
- Components of the concept
  - → Greenhouse gas balance for TUD
  - → Potential analysis and scenario development
  - → Participation
  - → Action Plan

Gefördert durch:
Bundesministerium für Wirtschaft und Klimaschutz
NATIONALE KLIMASCHUTZ INITIATIVE
aufgrund eines Beschlusses des Deutschen Bundestages

Data Sources of Emissions

- EMAS Certification and environmental program → Data situation very good
- Analysis and systematisation
- Collection of additional data (in particular scope 3 emissions)

Scenarios for mitigation pathways in the climate protection concept

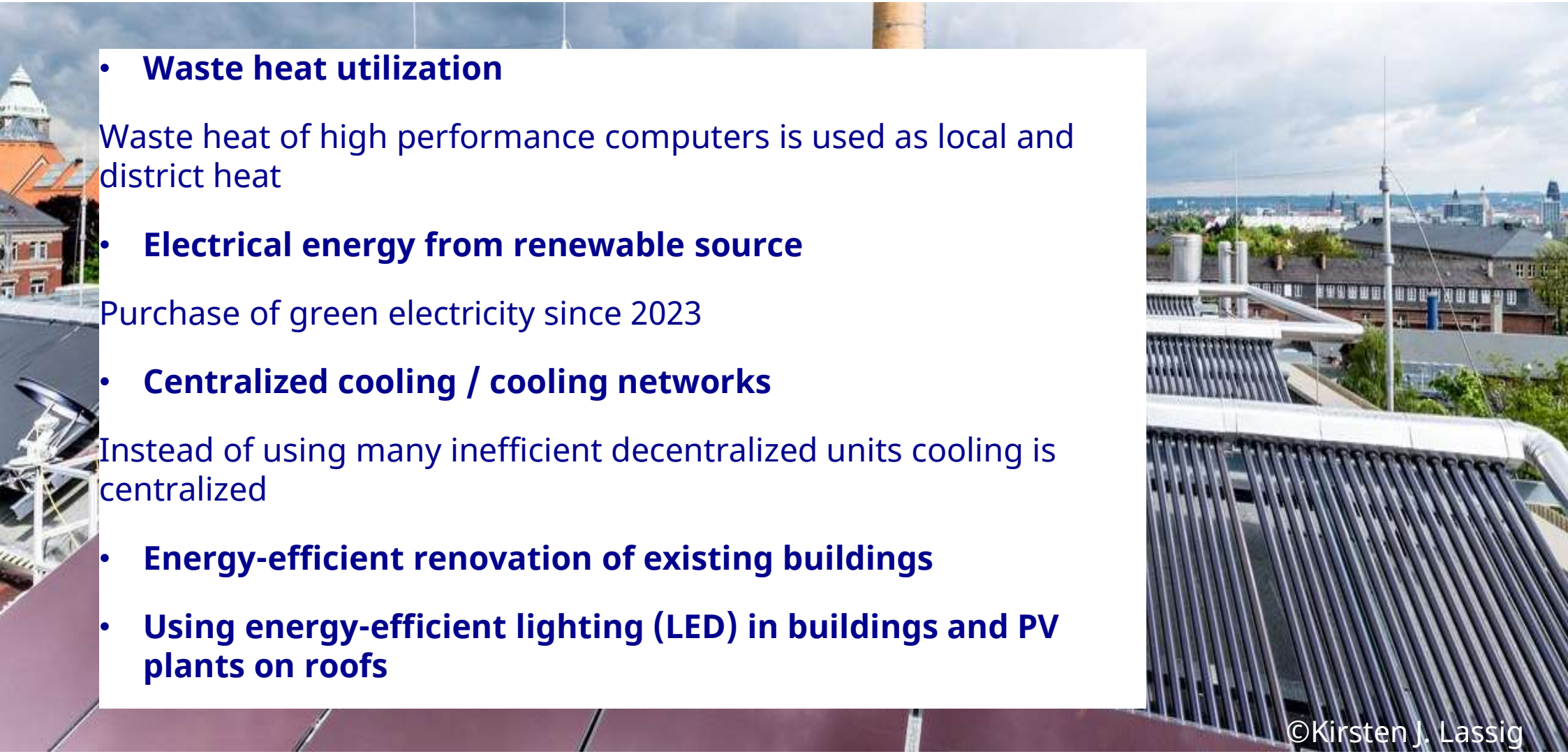
reference scenario	Federal climate protection scenario	climate protection target scenario
Trend development without additional effort	GHG reduction in line with the German government's current climate protection targets, with the current goal of climate neutrality by 2045	GHG reduction guided by the agreed target climate neutral in operations at TU Dresden by 2035

Areas of the action plan

Space Management	Procurement	Renewable Energy	Mobility	Wastewater and Waste
University-owned Property	Adaptation to Climate Change	Heating and Cooling Systems	IT-Infrastructure	Research and Teaching




Measures already in progress



- **Waste heat utilization**

Waste heat of high performance computers is used as local and district heat

- **Electrical energy from renewable source**

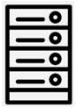
Purchase of green electricity since 2023

- **Centralized cooling / cooling networks**

Instead of using many inefficient decentralized units cooling is centralized

- **Energy-efficient renovation of existing buildings**
- **Using energy-efficient lighting (LED) in buildings and PV plants on roofs**

Key challenges on the road to climate neutrality



Resource-intensive infrastructure
Labs and data centres require significant energy and resources.

Balancing
Ensuring academic freedom while limiting resource consumption.

Dependency on external systems
E.g. mobility and district heating systems.

Calculation of GHG
Setting system boundaries; Reliability of emission factors (e.g. grey emissions/construction projects are hard to quantify)

Credible compensation system
Need for transparent and reliable emissions offsetting.

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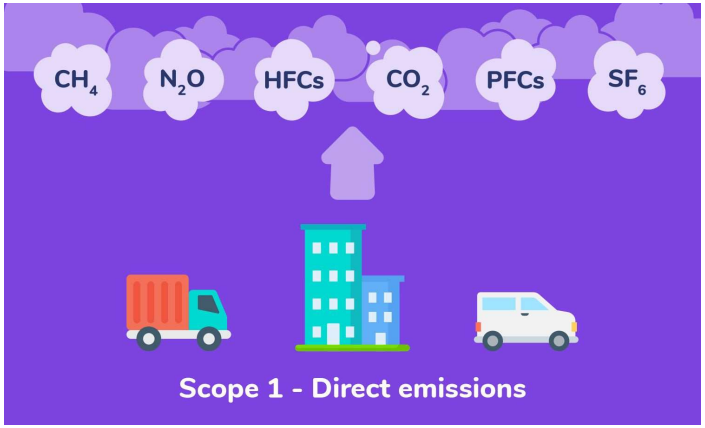
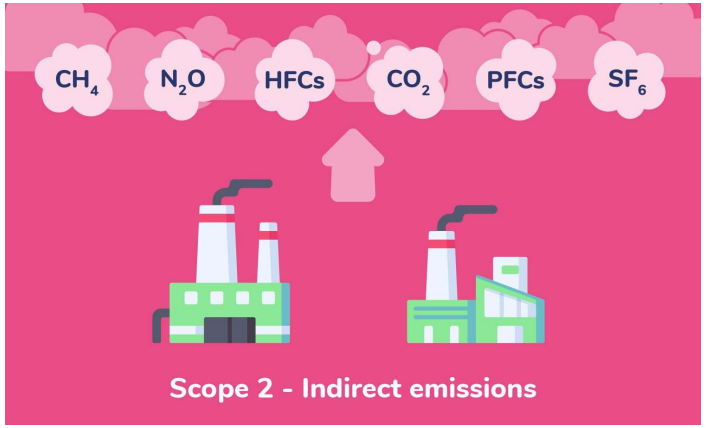
Thank you!

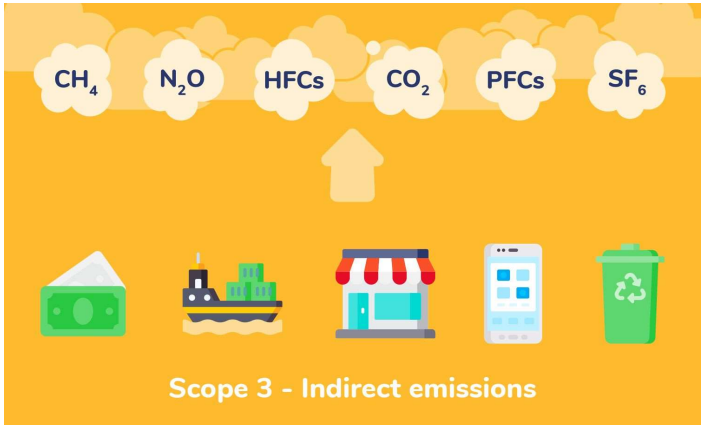
Emission Sources (Scope 1-3)



- Stationary combustion (e.g. boilers, furnaces)
- Mobile combustion (e.g. company vehicles, trucks)
- Process emissions (e.g. chemical reactions in cement production)
- Volatile emissions (e.g. refrigerant leaks)



- from the generation of purchased energy, from a utility provider



- occur in the value chain, including both upstream and downstream emissions
- Business travel
- Employee commuting
- Waste disposal and treatment
- Procurement
- …

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