

# 3rd I.FAST Annual Meeting

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# Main activities in sustainability management

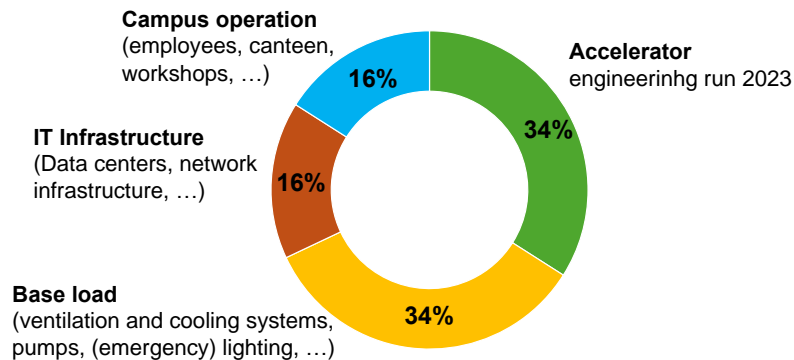
- **Supply Chain Due Diligence Act** (🇩🇪 LkSG)
- **Corporate Sustainability Reporting Directive** (🇪🇺 CSRD)
  - Materiality analysis and sustainability strategy
- **Sustainable procurement** pilot project
- **Energy management**
  - Demand planning in cooperation with operational planning and beamtime coordination
  - Procurement/contract design and billing of energy (electricity and gas)
  - Implementation of measures (examples on slide 4)
  - Development of a measurement network
  - **Energy Efficiency Act** (🇩🇪 EnEfG)
    - Introduction and certification of ISO 50001 until 2026
  - Determining the potential of renewable energies on GSI/FAIR campus
- **Greenhouse gas accounting** (preliminary results available)
- **Climate adaptation measures**

## Sustainability and energy management @GSI

- Introduced in 2021
- three persons, 2.4 FTE
  - one human rights officer (LkSG)
  - one working student
  - one sustainability officer
- Members of the sustainability working group in the Helmholtz Association of German Research Centers (HGF)

- electric energy:

- approx. 40 GWh



- heating oil:

- approx. 0,27 GWh

- for emergency operating only

- natural gas:

- approx. 12 GWh

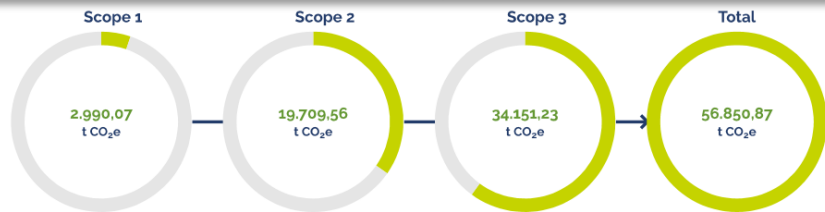
- 95% heating and air conditioning
      - buildings and halls on campus
      - accelerator-related air conditioning
    - 5% hot water supply and dehumidification

- comparison with previous years

Year	Electricity (GWh)	Natural gas (GWh)
2018	47	14
2019	48	14
2020	53	12
2021	62	15
2022	54	13
2023	40	12

# Greenhouse gas accounting (preliminary results)

## 2018 snapshot



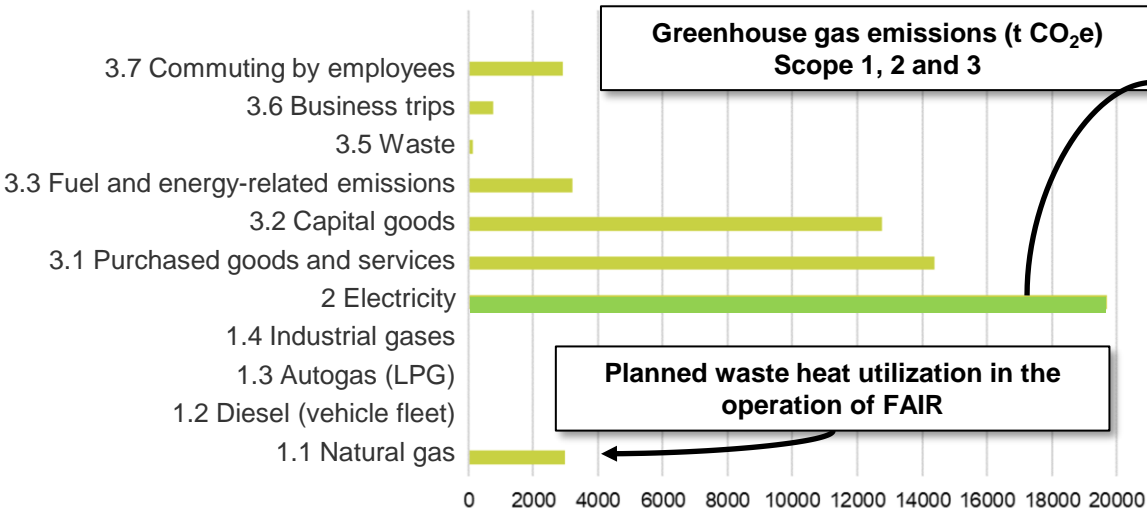
## 2018 snapshot with 2023 green electricity (zero Scope 2 emissions)



### Greenhouse gas emissions (t CO<sub>2</sub>e) Scope 1, 2 and 3

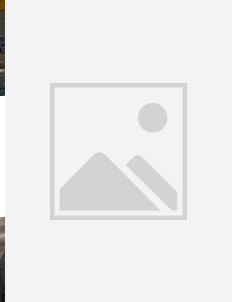
- based on the requirements of the internationally recognized standards of the Greenhouse Gas Protocol (GHG- Protocol)
- reference year is 2018
  - before pandemic and energy crisis
  - data all fully available

### Planned waste heat utilization in the operation of FAIR



# Energy efficiency measures (current examples)

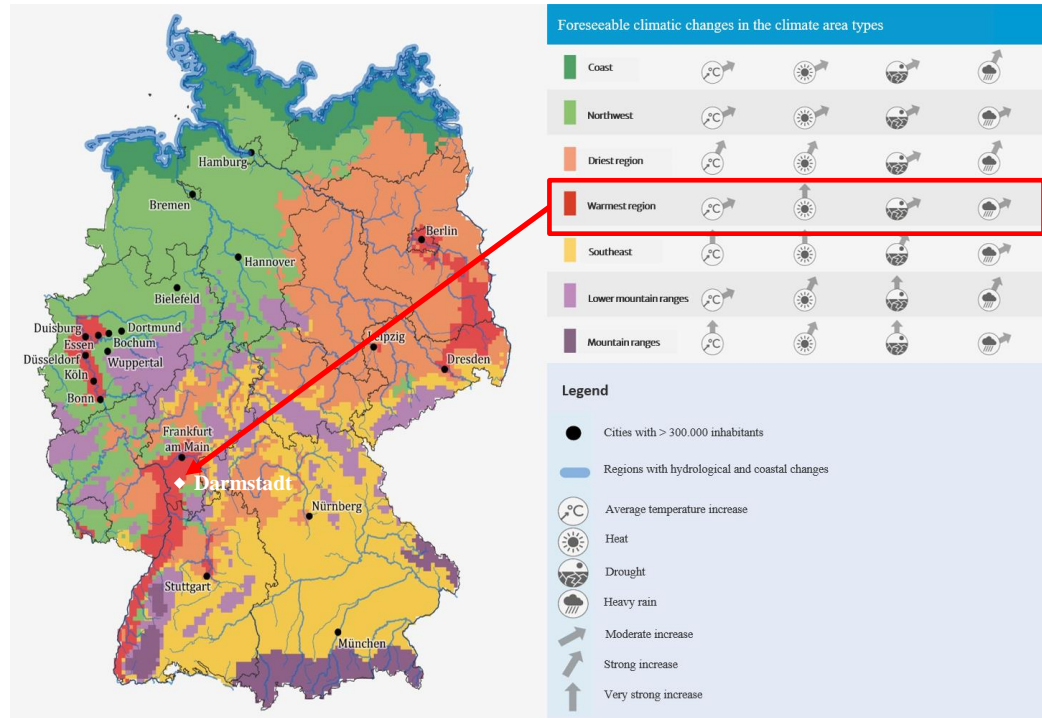
- Replacement of 140 high-pressure mercury vapor lamps and 1150 outdated lights
  - Replacement with suitable LED lights
  - 2023 until 2024 up to 350 MWh energy saved
- Replacement of the 18 years old gas-powered forklift truck, with a modern electrically powered version
  - daily use
  - reduce direct (scope 1) greenhouse gas emissions
- Brush cleaning system in cold water production
  - increase efficiency by 30-40%
  - significantly increase availability
- Further measures being implemented in 2023/24
  - over 50 smaller and larger measures have been started or implemented
  - from refrigerators and incubators to structural measures on buildings and scientific infrastructure such as cryogenic compressors and cold transfer lines



# Outlook: Climate Adaption Concepts

- GSI is located in the warmest region in Germany, the Upper Rhine Plain
- Upcoming Climate Adaptation Act (2024)
- Examples of possible adaptation concepts and measures for climate-related impacts such as heavy rainfall, extreme heat, storms or forest fires:
  - Heat protection measures for buildings
  - Sustainable air conditioning
  - Emergency scenarios to protect employees and facilities

Climate adaptation is defined by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) as **adaptation to the current or expected impacts of climate change**.



Climate area types and average change in selected climate parameters towards the middle of the century  
Map basis: © GeoBasis-DE / BKG (2020), © EuroGeographics, Deutscher Wetterdienst, © European Union, Eurac Research



**Thank you for your attention**