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Towards climate sustainability in the academic system in Europe and beyond
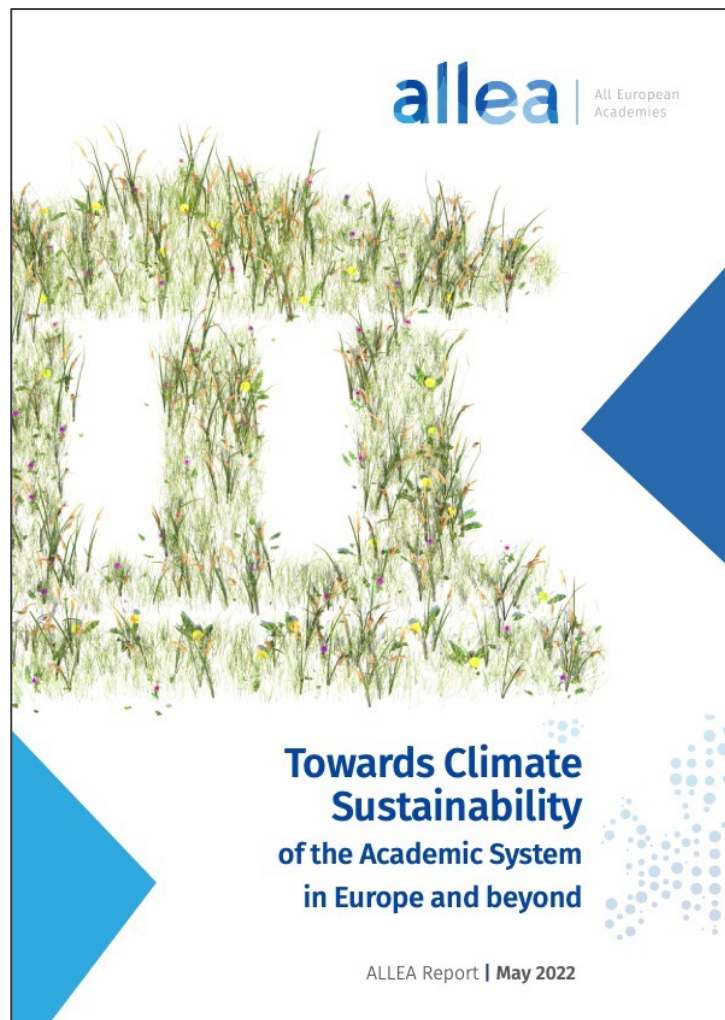
MAY 25, 2022

ASTRID EICHHORN

(DIE JUNGE AKADEMIE & UNIV. OF SOUTHERN DENMARK)

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ALLEA working group on climate sustainability in the academic system

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Towards Climate Sustainability of the Academic System in Europe and beyond

ALLEA Report | May 2022

- ALLEA: European Federation of Academies; member academies from about 40 countries; working groups on topics in evidence-based policy advice and in science policy

- Report published May 5, 2022

- Available at:

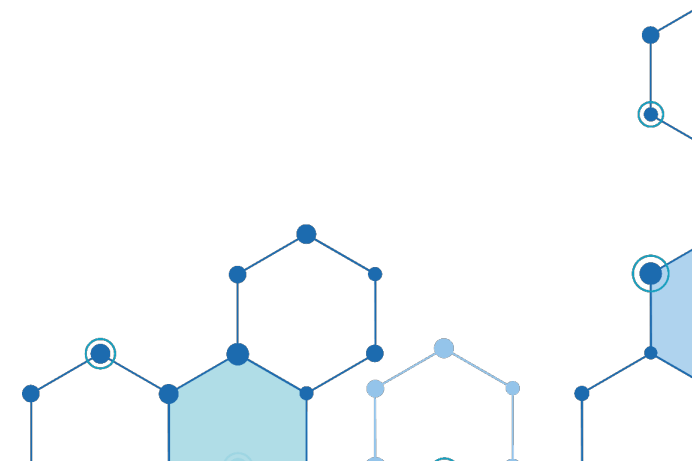 DOI: 10.26356/climate-sust-acad
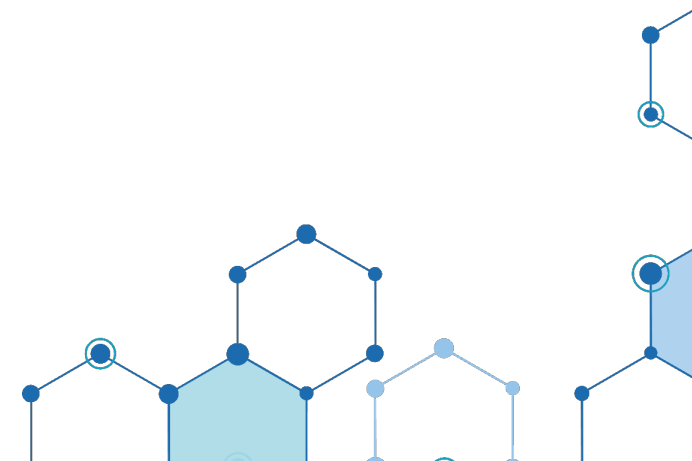
or at www.allea.org
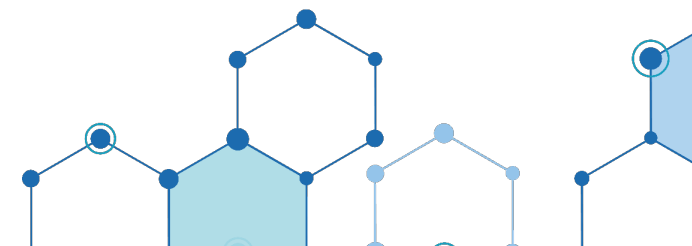
Four key messages:
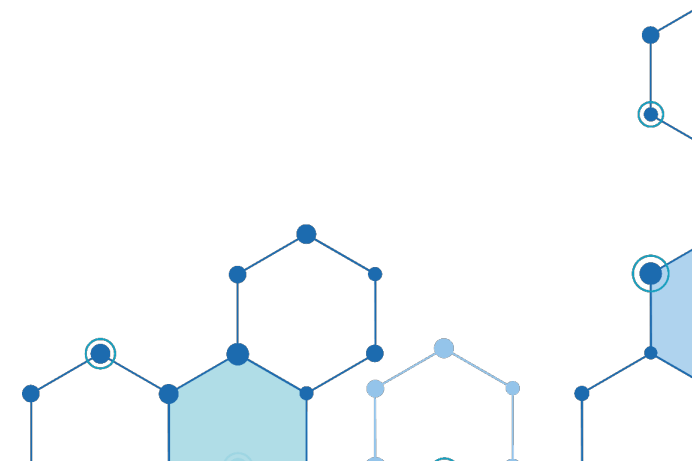
Four key messages:

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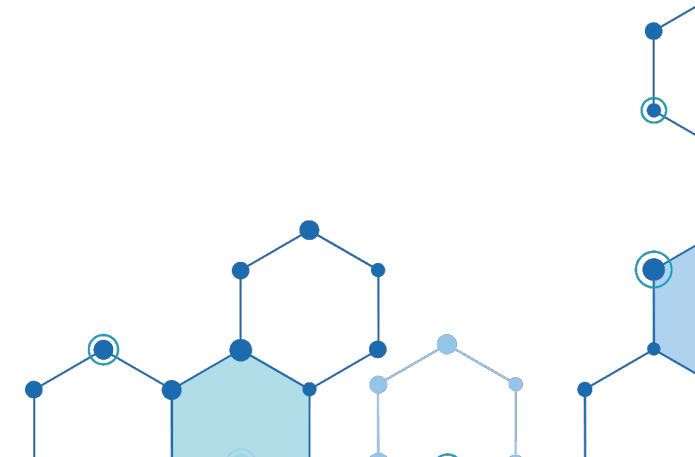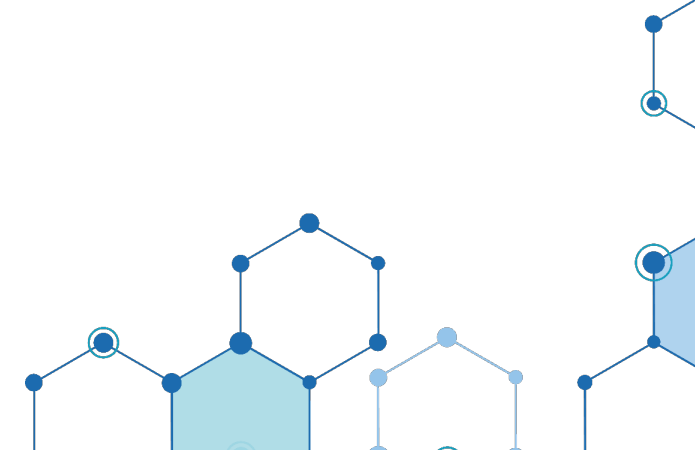
Four key messages:

- The academic system is currently not climate sustainable.

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- There are many options of action available right now for all stakeholders to become more climate sustainable.

- There are positive side-effects and co-benefits in several actions.

The academic system in the context of the climate crisis

- Academia is part of the solution
    through research, education, evidence-based policy advice

- Academia is part of the problem
    through emissions from own operations

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    ⟶   Data and examples

The academic system in the context of the climate crisis

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  $\longrightarrow$ Data and examples

IPCC (2022):
300 Gigatons CO_2 emissions ``remaining'' for 83 % chance to limit
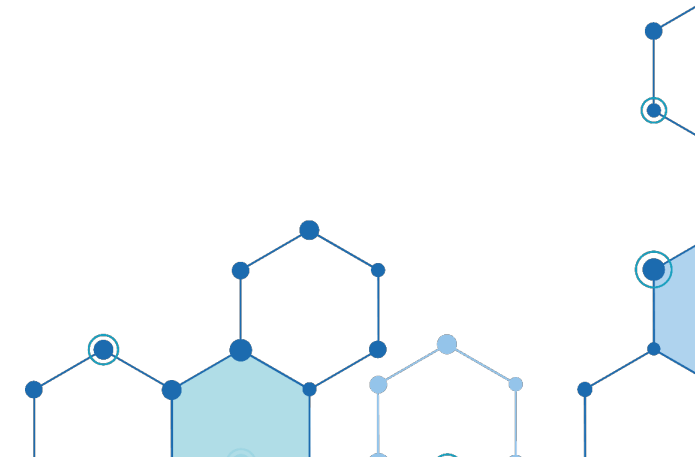global warming below 1.5 degrees $\longrightarrow$ 1 t per capita per year until 2050

Data on climate impact

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global warming below 1.5 degrees $\rightarrow$ 1 t per capita per year until 2050

Stakeholders:

- Universities

- Research institutes

- Students

- Individual academics

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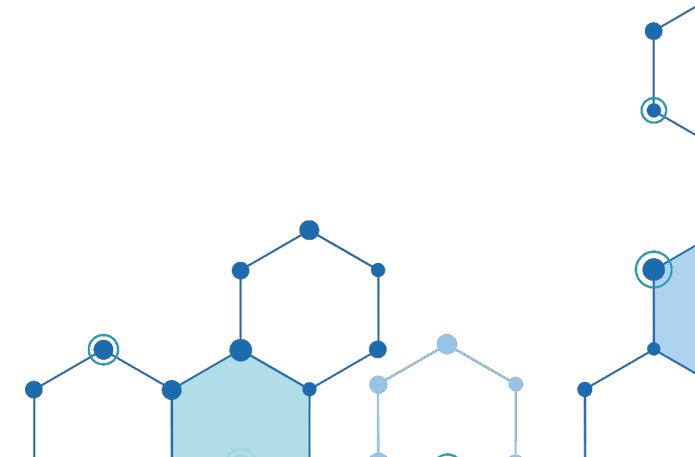
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IPCC (2022):
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Sample of 25 European universities

GHG emissions per employee in t CO2-eq per year

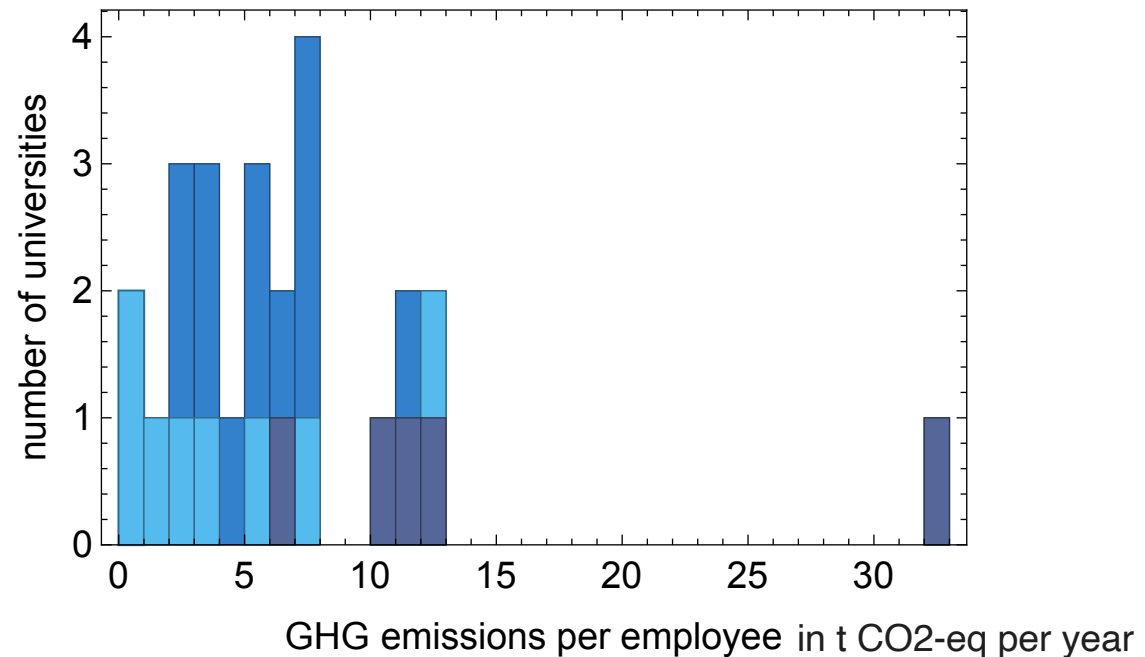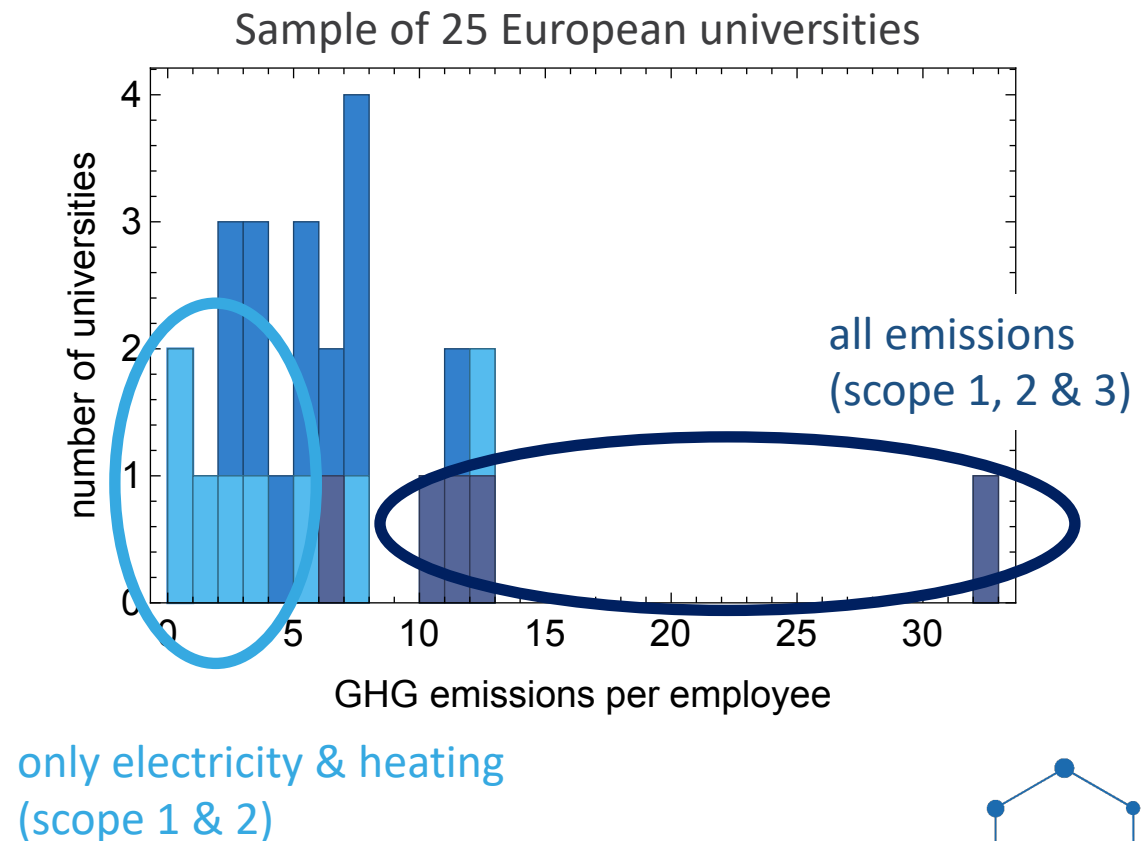# Data on climate impact

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Sample of 25 European universities

all emissions
(scope 1, 2 & 3)

GHG emissions per employee

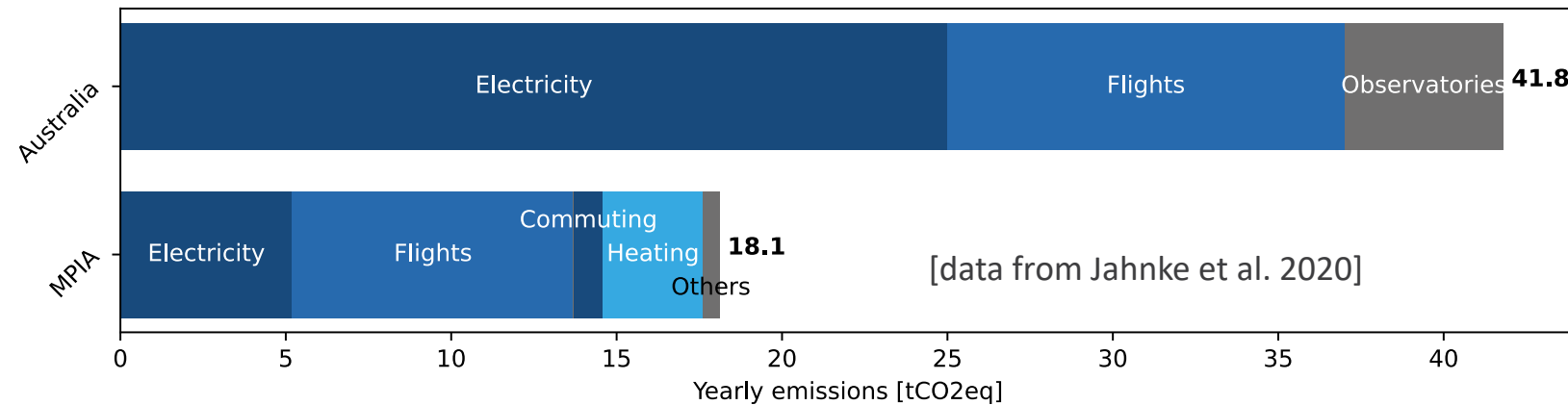number of universities

only electricity & heating
(scope 1 & 2)

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Australia: Electricity, Flights, Observatories — 41.8

MPIA: Electricity, Flights, Commuting, Heating, Others — 18.1

[data from Jahnke et al. 2020]

Yearly emissions [tCO2eq]

Data on climate impact

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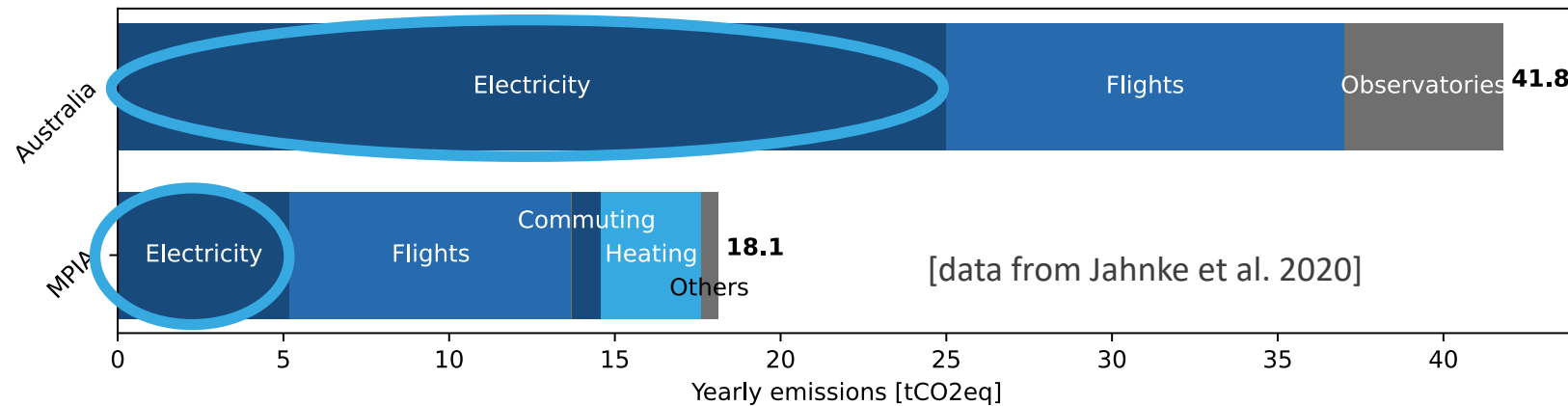- Academies, learned societies
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Majority from scientific computing
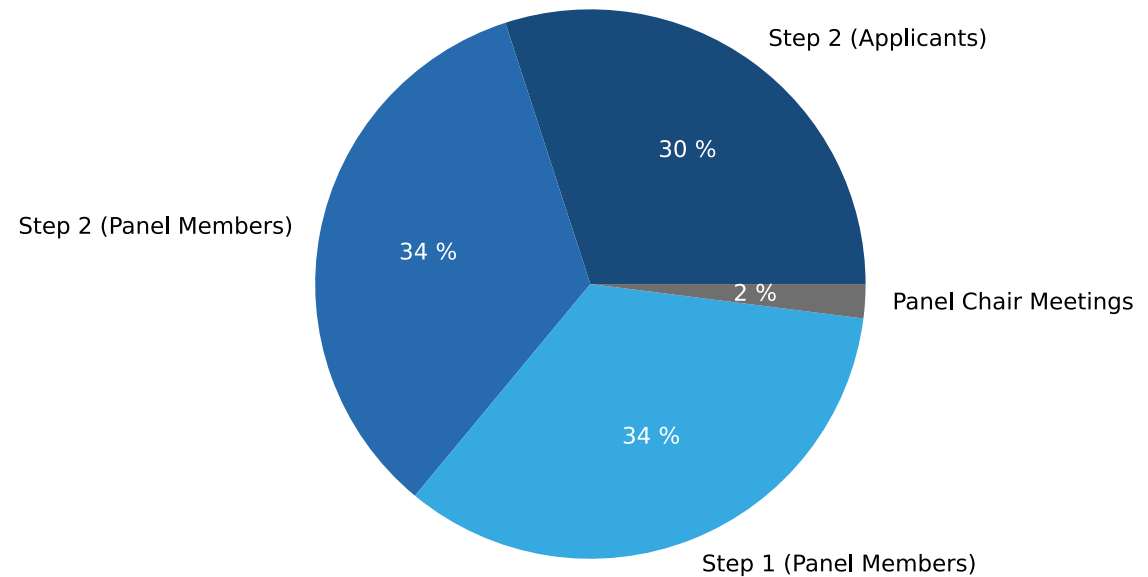
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ERC interviews: ~ 1 t per interview

- Step 2 (Applicants) — 30 %
- Panel Chair Meetings — 2 %
- Step 2 (Panel Members) — 34 %
- Step 1 (Panel Members) — 34 %

Data gap: no funding organization reports emissions from funded research
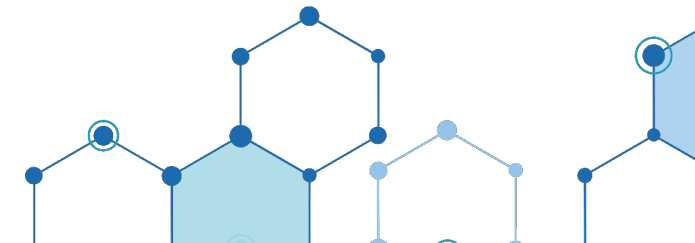
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On average ~ 1 t per participant per international conference

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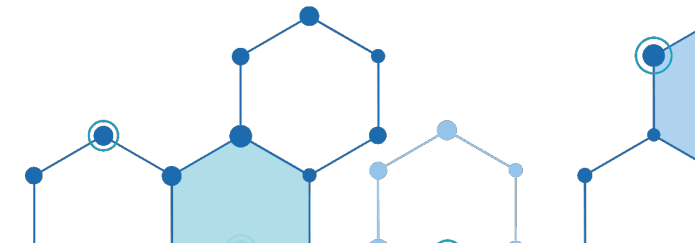- Academies, learned societies

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Virtual format: estimates of reductions: 94 % to > 99 %

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Virtual format: estimates of reductions: 94 % to > 99 %

Optimized location for in-person meetings: examples with 20-50 % savings

Climate sustainability of the academic system

Stakeholders:

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Key message 1:
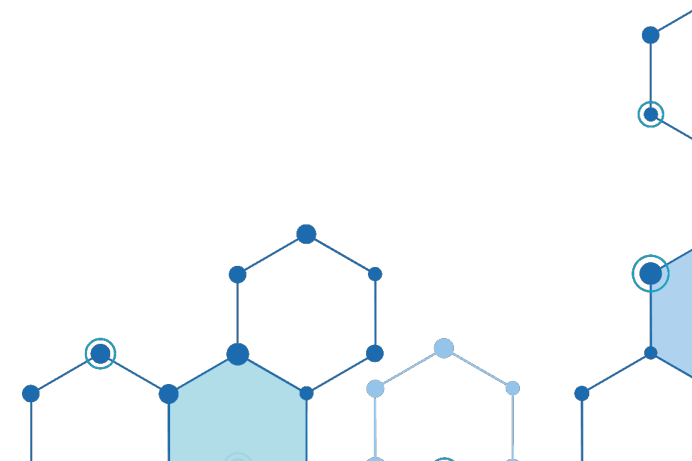The academic system is currently not climate sustainable.
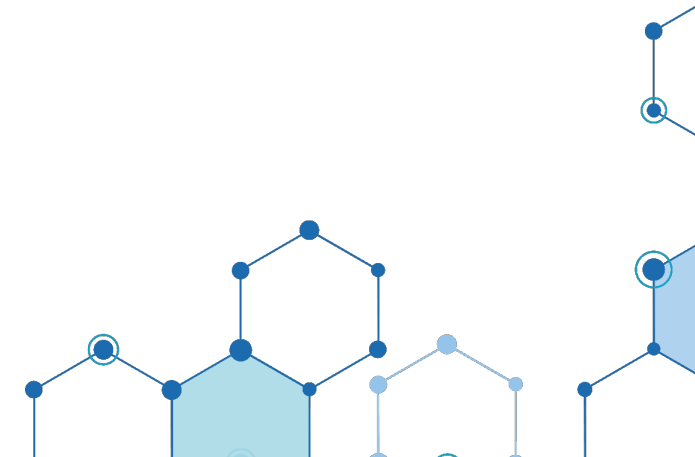
What does it take for climate sustainability?

Cultural change requires change in individual behaviors
and changes in framework conditions, norms and incentives

Key message 2:
Individual stakeholders are taking first steps towards climate sustainability.
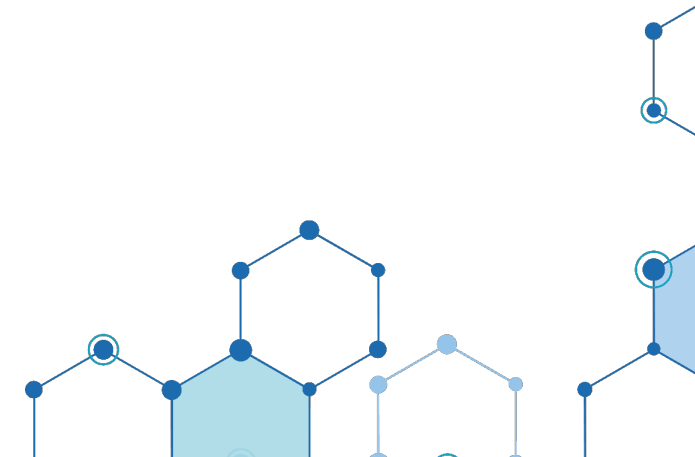
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Examples for current practises

1) Change without change of behavior (top-down strategy successful): Green energy on campus
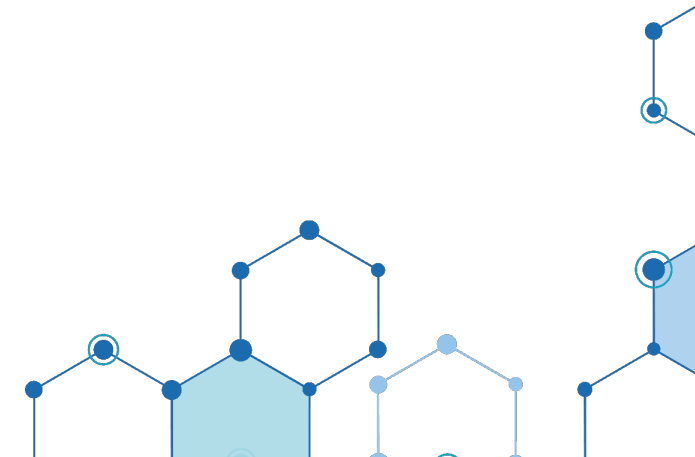
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Examples for current practises

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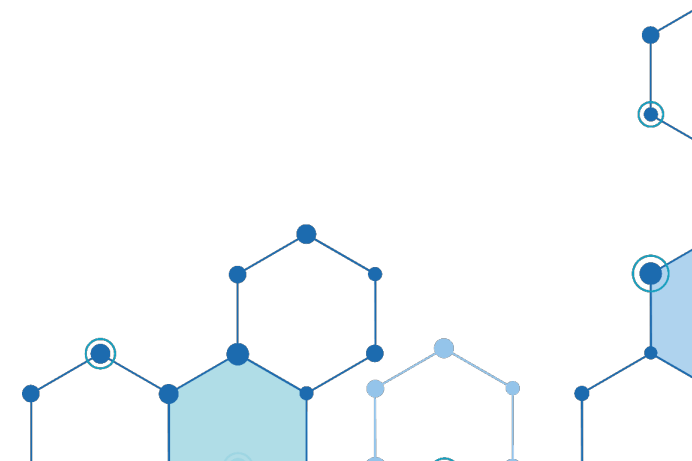3) Change based on experience during pandemic: virtual instead of physical mobility
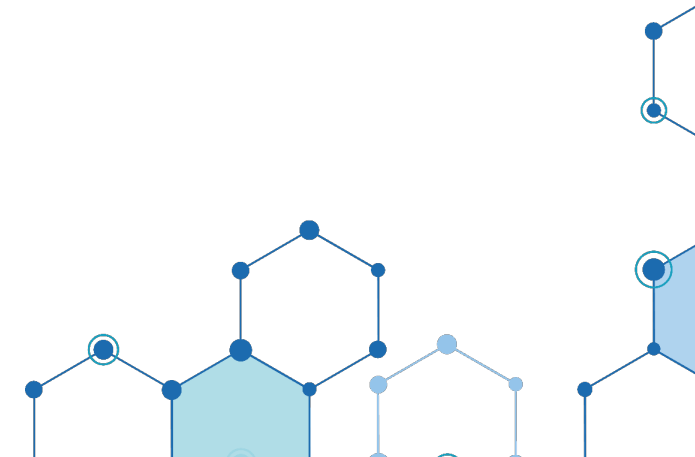
What is next?

Key message 3:
There are many options of action available right now for all stakeholders to become more climate sustainable.

Recommendations

- Goal: Specific, actionable steps, not just overarching principles and general guidelines
- Many recommendations may be obvious

What is next?

> **Key message 3:**
> There are many options of action available right now for all stakeholders to become more climate sustainable.

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For all stakeholders:

- Mix & match approach to meetings (in-person, hybrid, online)
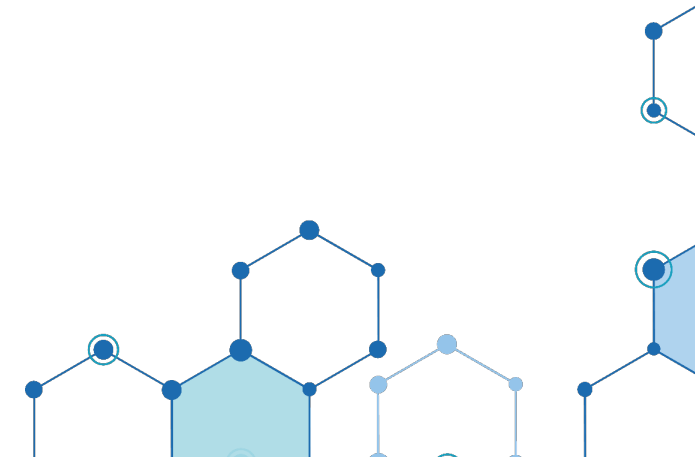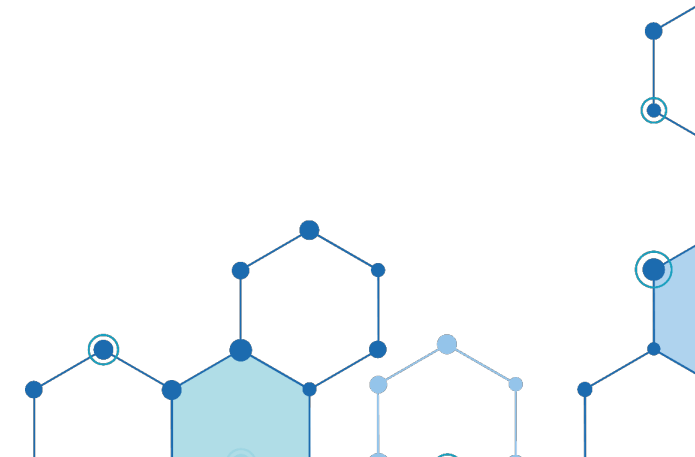
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For all stakeholders:

- Mix & match approach to meetings (in-person, hybrid, online)

- Improve virtual communication (technology, skills and formats)

What is next?

Recommendations

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- Many recommendations may be obvious

For all stakeholders:

- Mix & match approach to meetings (in-person, hybrid, online)

- Improve virtual communication (technology, skills and formats)

- Base your actions on a solid evidence base - but don't stop at publishing a climate report
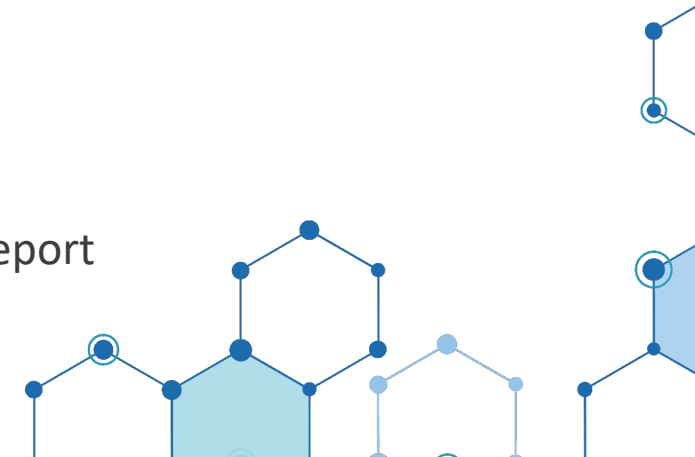
Recommendations: selected examples

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Students:

Research institutes:

Academies, learned societies:
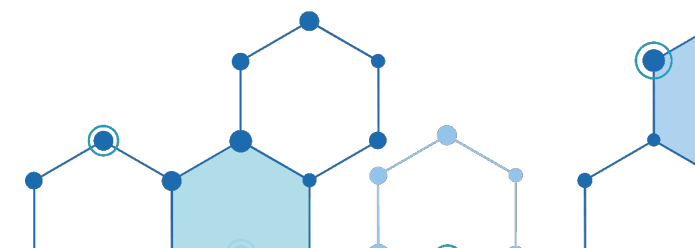
Ranking agencies:

Funding organizations:

Policy makers:

Conference organizers:

Recommendations: selected examples

Universities:
1) Use green energy on campus
2) Incentivize low-carbon forms of travel
3) Join sustainability network to exchange best-practise ideas

Research institutes:
1) Reduce emissions from computing through efficiency gains & computing center location/cloud use
2) Make climate sustainability key part of institutional strategy

Funding organizations:
1) Ask that applicants discuss the climate impact in their applications
2) Virtualise committee work and interviews
3) Fund research on climate sustainability of research

Conference organizers:
1) Lower travel-related emissions by choice of conference location
2) Include online-formats (hybrid; in-person only every second year; always online)
3) Monitor, report and reduce emissions

Students:
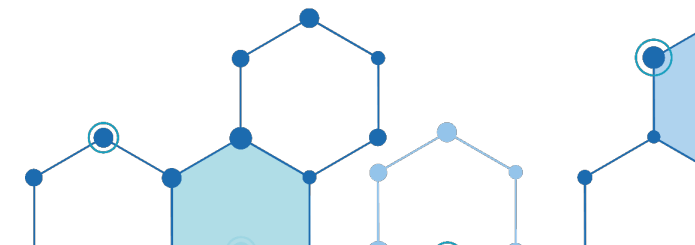Hold university management accountable

Academies, learned societies:
Become platforms to exchange knowledge and coordinate climate sustainability efforts across individual institutions and across disciplines

Ranking agencies:
Abandon a competitive ranking model for a collaborative threshold model

Policy makers:
Adapt procurement rules for public universities to enable climate sustainable choices

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Individual academics:

Consider all your opportunities for leverage

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Co-benefits: selected examples

Key message 4:
There are positive side-effects and co-benefits in several actions.

Co-benefits: selected examples

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- Online-/hybrid-meetings: increased inclusivity (globally, but also researchers with care responsibilities, personal reasons against traveling)

Co-benefits: selected examples

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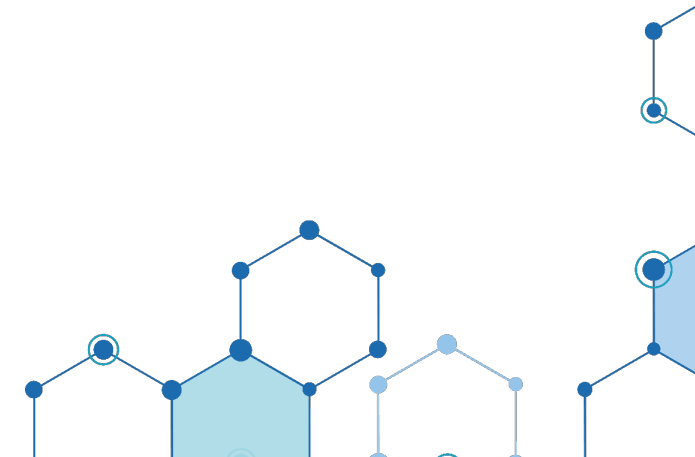> There are positive side-effects and co-benefits in several actions.

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- Cutting climate costs can cut economic costs (e.g., reduced scientific computing through efficiency gains; running laboratory freezers at -70 ℃ instead of -80 ℃)

Co-benefits: selected examples

> **Key message 4:**
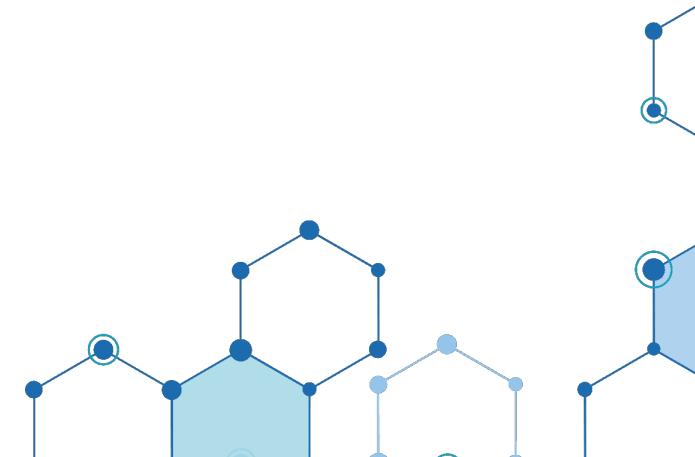> There are positive side-effects and co-benefits in several actions.

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- Substituting physical with virtual

  mobility can mean time gains

  (e.g., for research)

Co-benefits: selected examples

Key message 4:
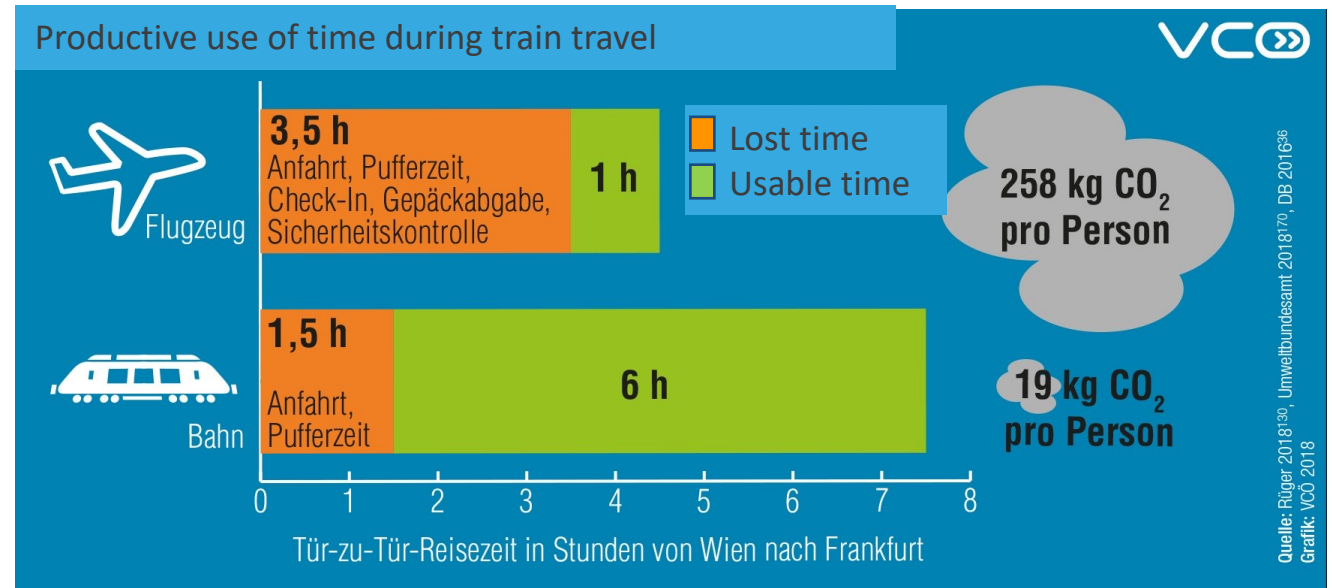There are positive side-effects and co-benefits in several actions.

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- Substituting physical with virtual mobility can mean time gains (e.g., for research)

- Switching mode of transport can mean gain in working time

Productive use of time during train travel

3,5 h
Anfahrt, Pufferzeit, Check-In, Gepäckabgabe, Sicherheitskontrolle
1 h
Flugzeug

Lost time
Usable time

258 kg CO₂ pro Person

1,5 h
Anfahrt, Pufferzeit
6 h
Bahn

19 kg CO₂ pro Person

Tür-zu-Tür-Reisezeit in Stunden von Wien nach Frankfurt

Quelle: Rüger 2018[30], Umweltbundesamt 2018[70], DB 2016[36]
Grafik: VCÖ 2018

Example by https://www.vcoe.at/

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