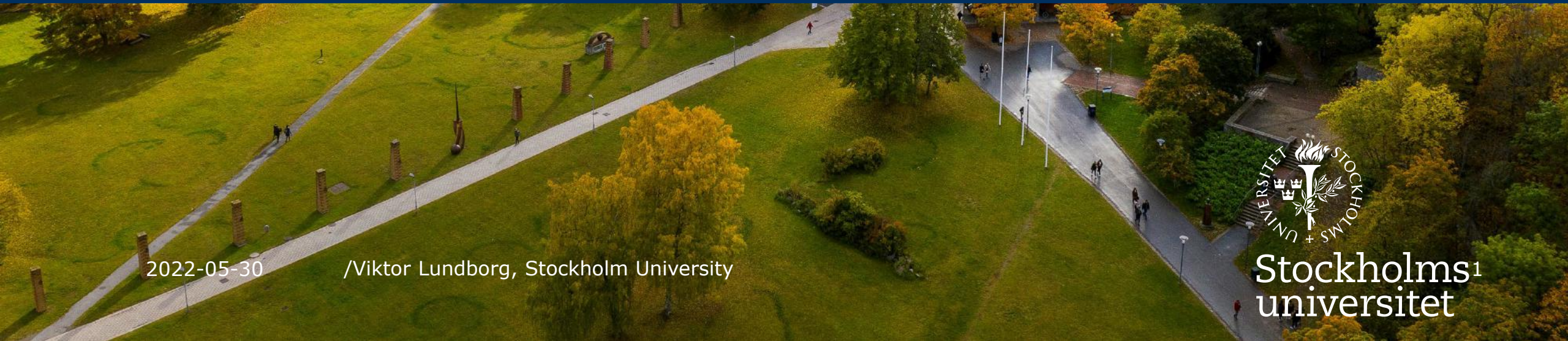
Climate calculations and monitoring emissions

Viktor Lundborg, miljöcontroller



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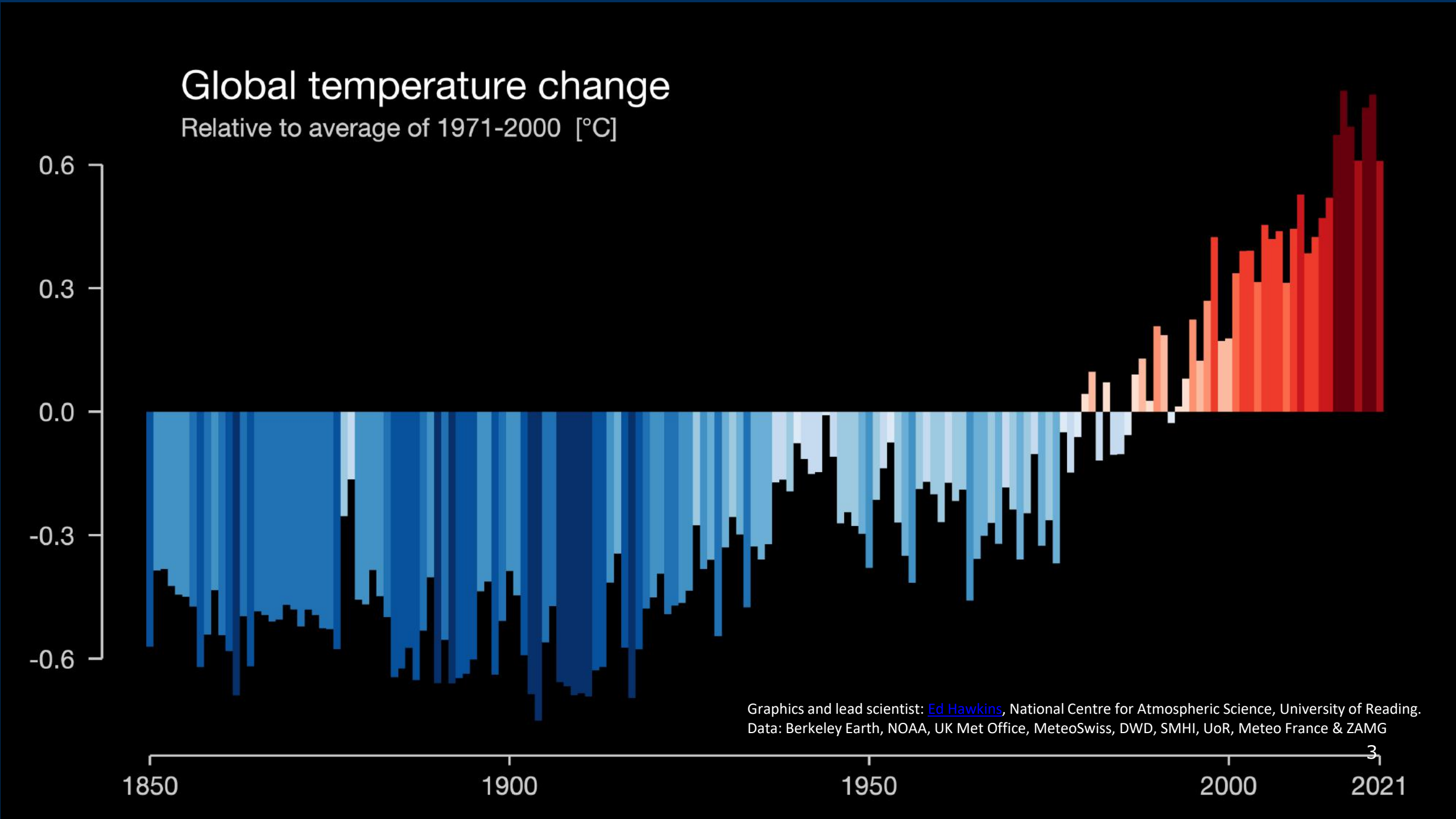
Why?


Global temperature change
Relative to average of 1971-2000 [°C]
0.6
0.3
0.0
-0.3
-0.6
1850
1900
1950
2000
2021
Graphics and lead scientist: Ed Hawkins, National Centre for Atmospheric Science, University of Reading.
Data: Berkeley Earth, NOAA, UK Met Office, MeteoSwiss, DWD, SMHI, UoR, Meteo France & ZAMG

NASA's Scientific Visualization Studio. Data provided by Robert B. Schmunk (NASA/GSFC GISS).

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Video removed cause of size.

Still… why should Stockholm university?

- Vice chancellor signed a climate emergency letter – carbon neutral by 2040 at the latest
- Until 2019 we only monitored energy and travelling in the unit CO2
- We need the full picture!
- Transparency and credibility for students and the public

To measure is to know...

But how to measure?

Do we get the full picture?

How accurate are the results?

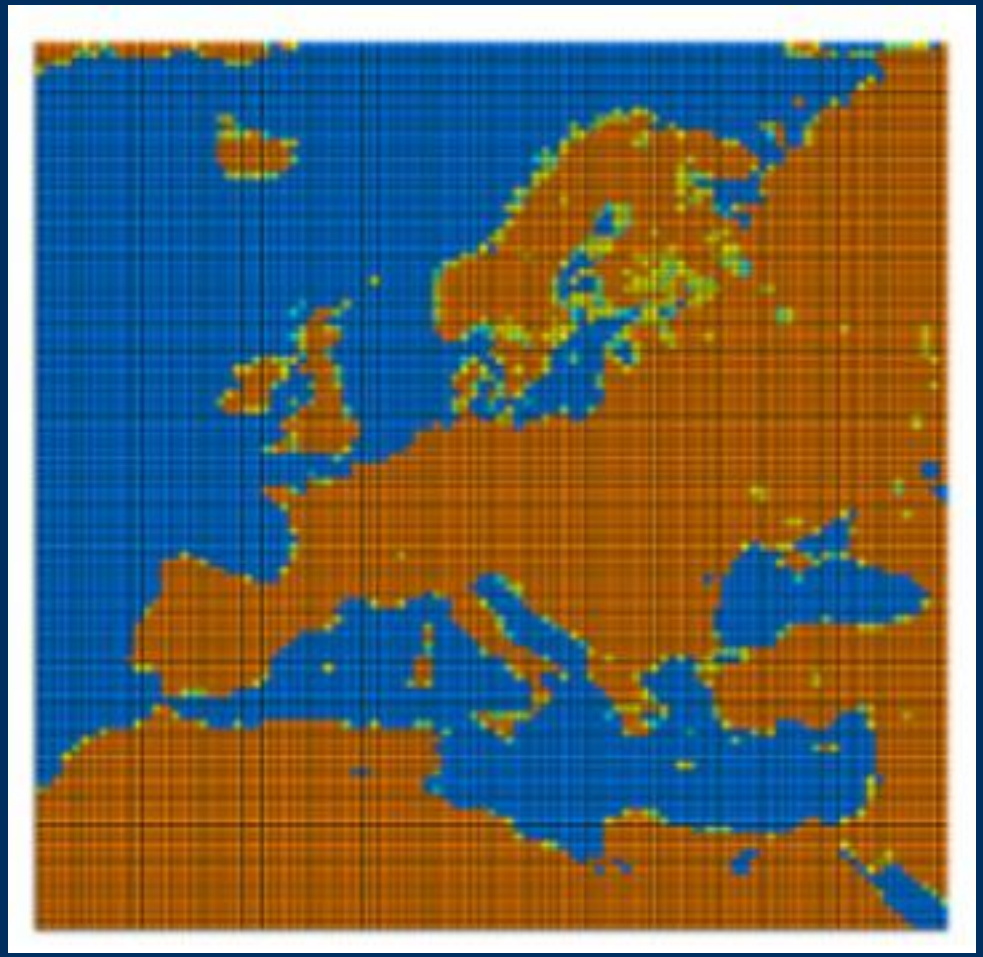
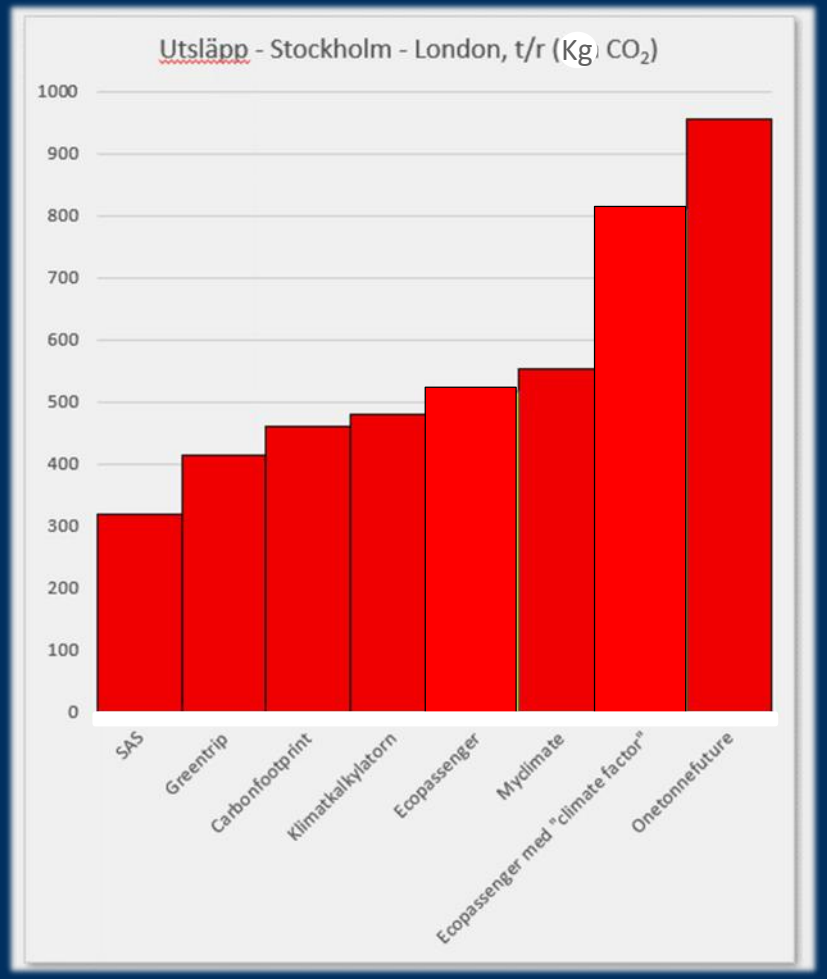


Bild 1,2: SMHI (2021), Hur fungerar en klimatmodell? https://www.smhi.se/kunskapsbanken/klimat/klimatmodeller-och-scenarier/hur-fungerar-en-klimatmodell-1.470 [2022-03-17]

Challenges

- Big difference within different calculation tools
- Different emission templates within different consultant firms
- Time and resource consuming
- Bad data
- LCA, EPD/IOA, Spend



Modified figure Skelton, A., (2019). Klimatarenans workshop, december 2019

Our view on the challenges

- We need to act now, we can discuss how to calculate forever
- Results still shows the big picture
- Potential system changes can be seen in the overall results
- Actions can be implemented while the calculations are improved
- We need to spark a discussion between departments

How do (we) calculate?

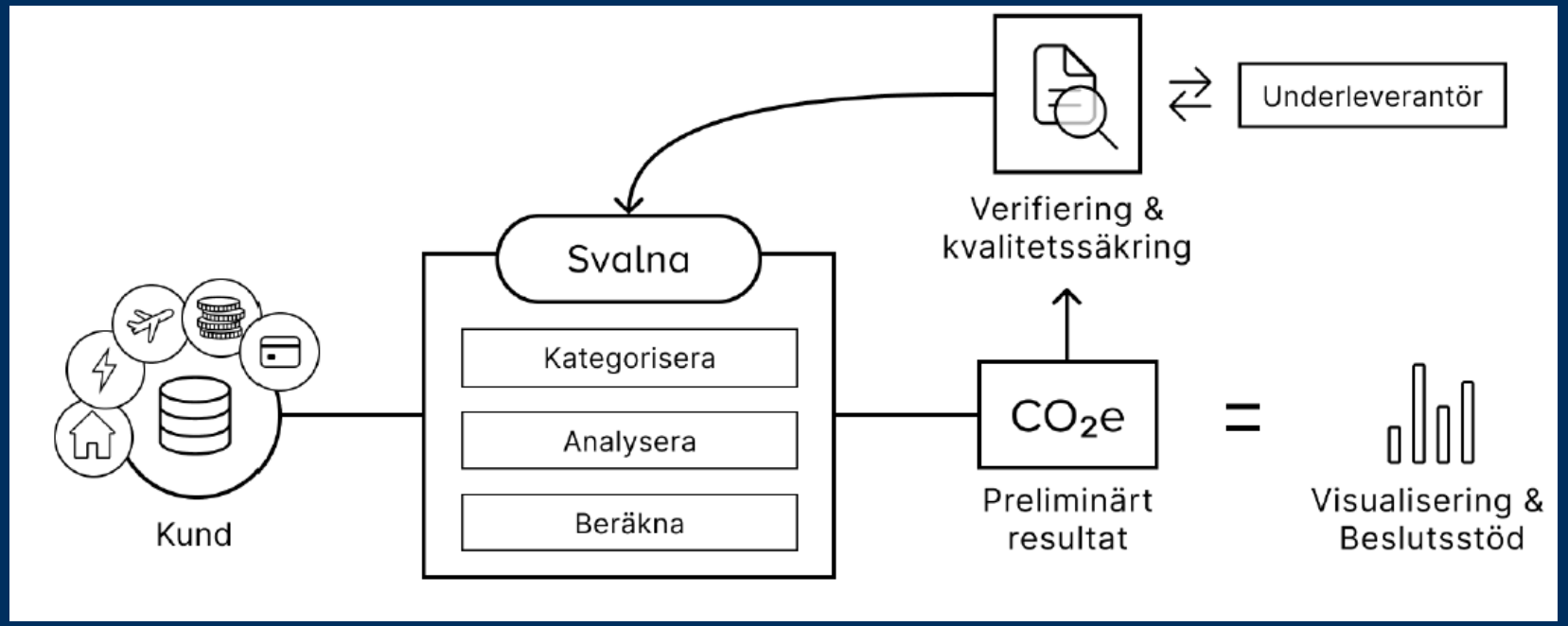
Method and data

What we have to work with

- Broad scope of activities at Stockholm University
  - Very different consumption patterns for each department
- Bad data (again) but also some good data
- Decentralized organization
- Limited resources
- Large range of experts
- Motivated employees

Method – Climate calculations

- Multiregional environmental input-output analysis enhanced by Life Cycle Analysis (LCA)
- Primary data
  - Travelling
  - Energy
- Secondary data
  - Financial data



Andersson, D. et al., (2021), Svalna - Stockholms universitets klimatavtryck år 2016–2020

Method – environmental data

- IOA-environmental data from EXIO and national databases on environmental accounts

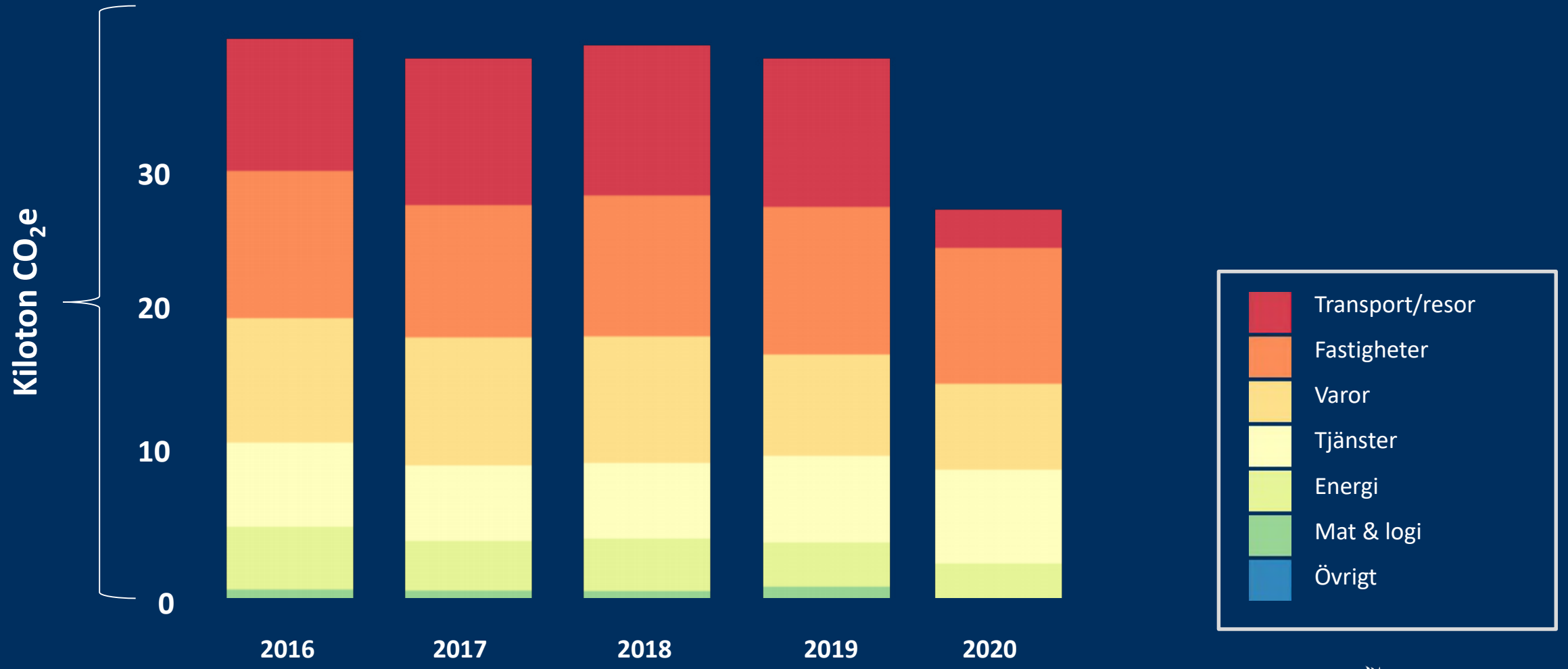
Andersson, D. et al., (2021), Svalna - Stockholms universitets klimatavtryck år 2016–2020

Results

What do they show?

How can we use it?

Utsläpp av växthusgaser



Modified figure: Andersson, D. et al., (2021), Svalna - Stockholms universitets klimatavtryck år 2016–2020

Results

- Emissions categories e.g. wares, goods and services larger than expected
- Some categories needs better data e.g. facilities
- Some categories are harder to change on a individual level and needs system changes

Further actions

- Define delimitations and demand better data from landlord
- Implement recycling system for furniture or/and science equipment
- Study individual actions VS central actions, which is most efficient? And what can we do?
- Investigate the possibility of longer write-off periods on goods
- Ideas on forecasting emissions within budget planning
- More frequent updating on the emissions data, from once a year to every tertial
- New economy system – better data and better internal invoicing means more accurate results
- More subcategories from SCB for more detailed data

Sumary

Top 3 wins

- We have an overall picture
- We can focus on the largest emission categories
- We can continue improve our calculations

Top 3 challenges

- System perspective on some categories
- Bad data from our own systems
- Individual perspective VS central perspective on actions

Tack!

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Svalnas Carbon intelleigence system

https://carbonintelligence.svalna.se/dashboard