Inequality, energy
and why I am presenting this to biologists

Yannick Oswald, University of Leeds (UK)
12.06.2020 at University of Graz (online)
Zoology colloquium

Who is interested and for references pls check out:

nature energy

ARTICLES

https://doi.org/10.1038/s41560-020-0579-8

Check for updates

Large inequality in international and intranational energy footprints between income groups and across consumption categories

Yannick Oswald ✉, Anne Owen and Julia K. Steinberger

Agenda

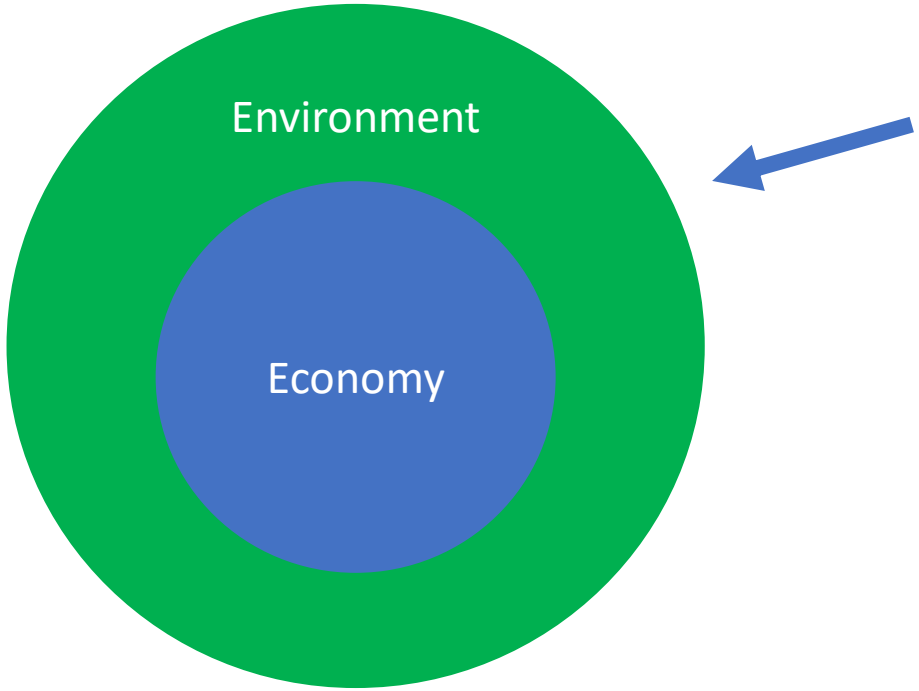
- General introduction of LiLi project
- My PhD project
- Selected results
- Ecological Economics (why I am presenting this to biologists)

General introduction of “Living well within Limits” LiLi project

The “Living well within Limits (LiLi)” project

Prof. Julia Steinberger
Project leader
University of Leeds

What is the amount of biophysical resources required to achieve human well-being?

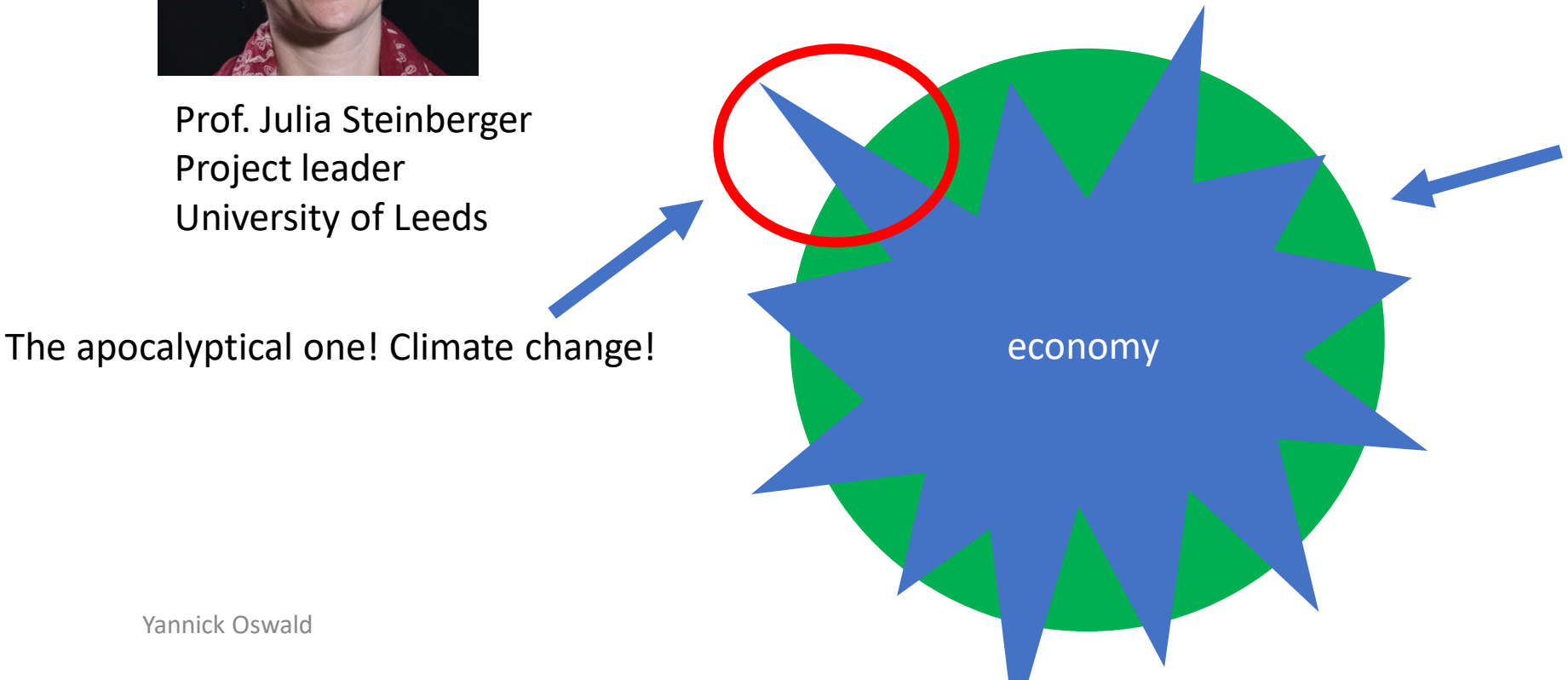


What would be good.

The “Living well within Limits (LiLi)” project

Prof. Julia Steinberger
Project leader
University of Leeds

What is the amount of biophysical resources required to achieve human well-being?



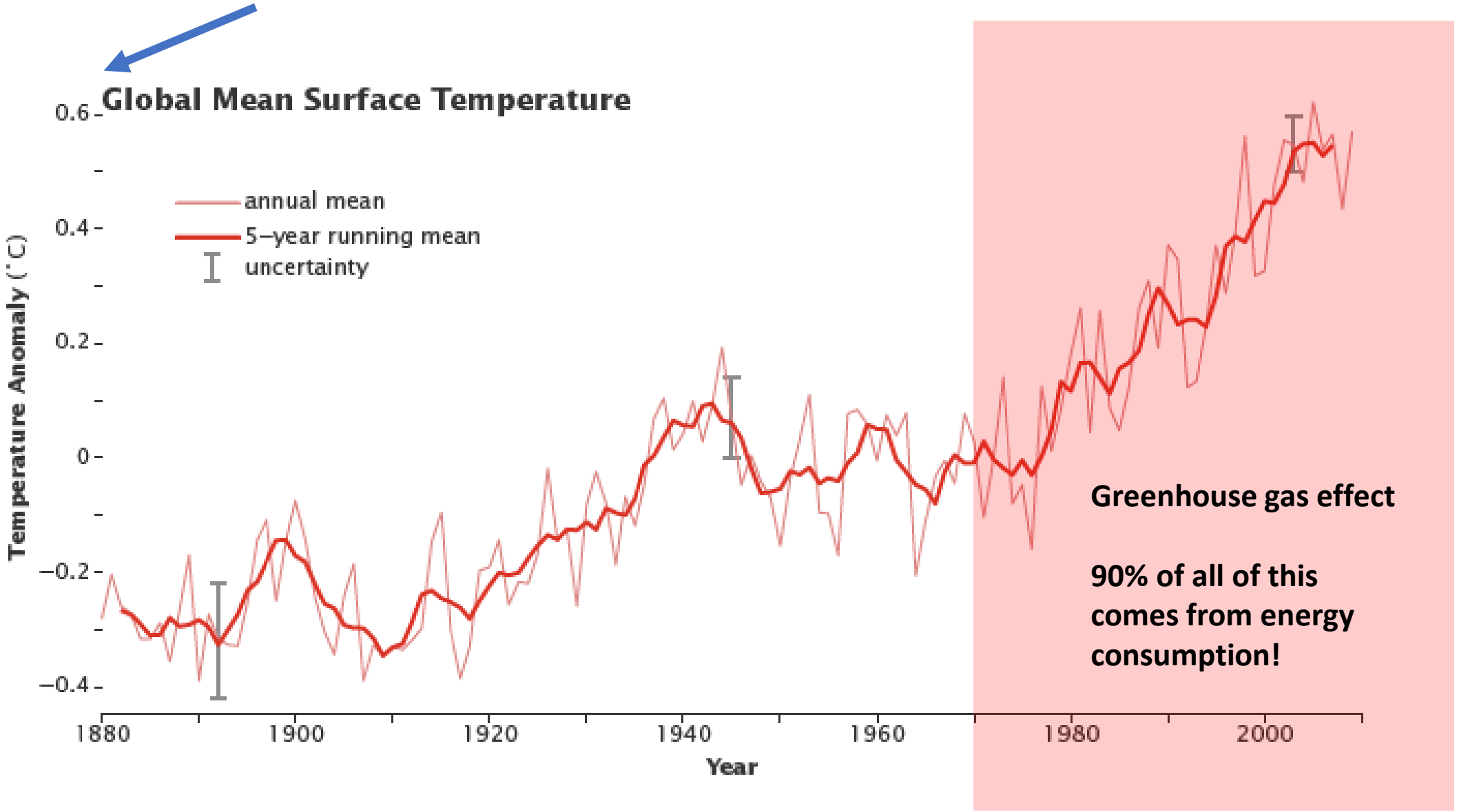
What is actually happening.

The apocalyptical one! Climate change!

The economy is transgressing *planetary boundaries*

The earth’s *carrying capacity*.

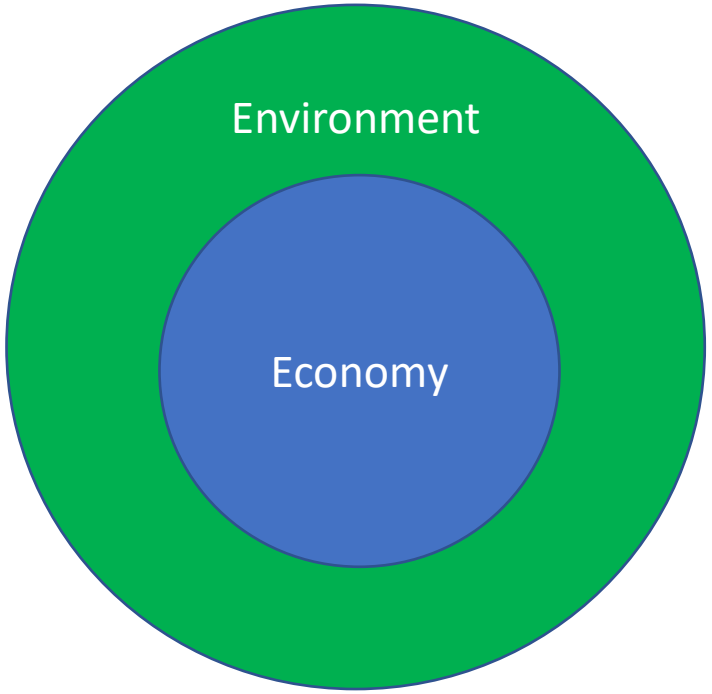
The higher the more likely are catastrophic tipping point cascades



https://earthobservatory.nasa.gov/features/GlobalWarming/page2.php, Steffen et al. 2018 **Trajectories of the Earth System in the Anthropocene, PNAS** https://doi.org/10.1073/pnas.1810141115

The “Living well within Limits (LiLi)” project

What is the amount of energy required to achieve human well-being?



My PhD project

My PhD project

What is the amount of energy actually used around the world, across income groups and for what purposes?

Selected results

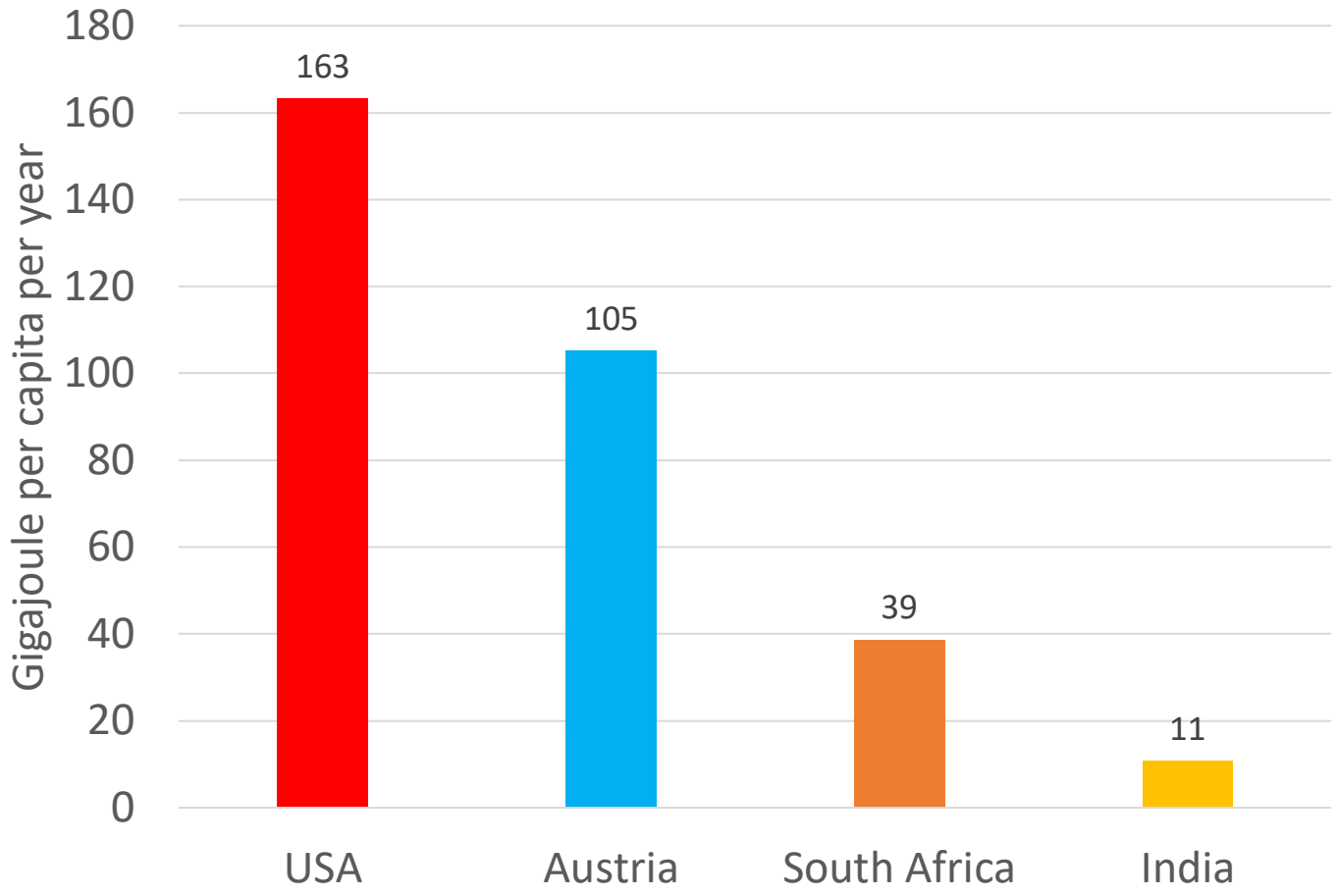
All results are based on data for the year 2011, please see slide #2 for references.
The results presented here are selected to be introductory for a general audience.

Energy inequality between countries

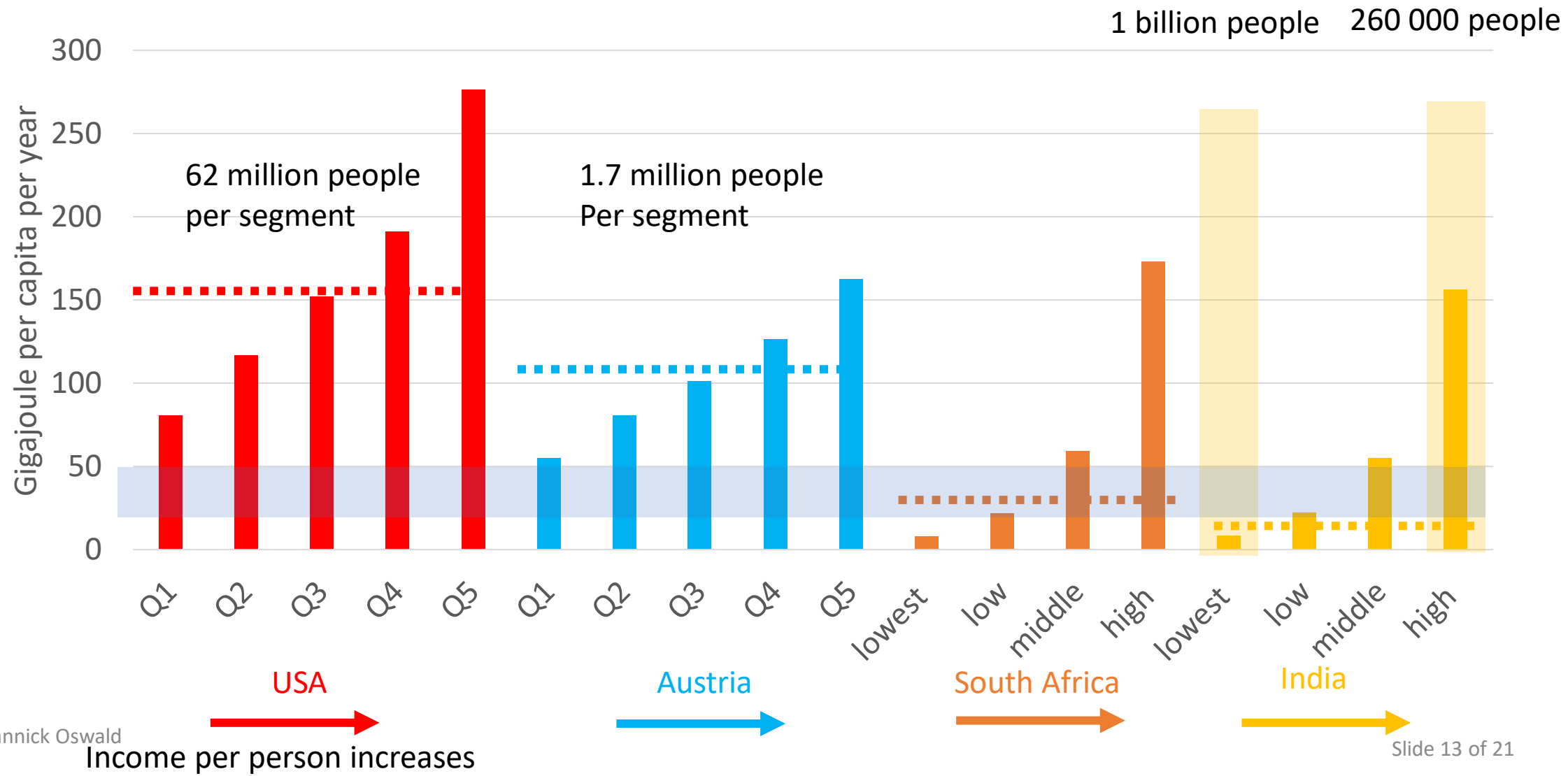
1 GJ = 277 kWh

~ powering 300 laptops all day

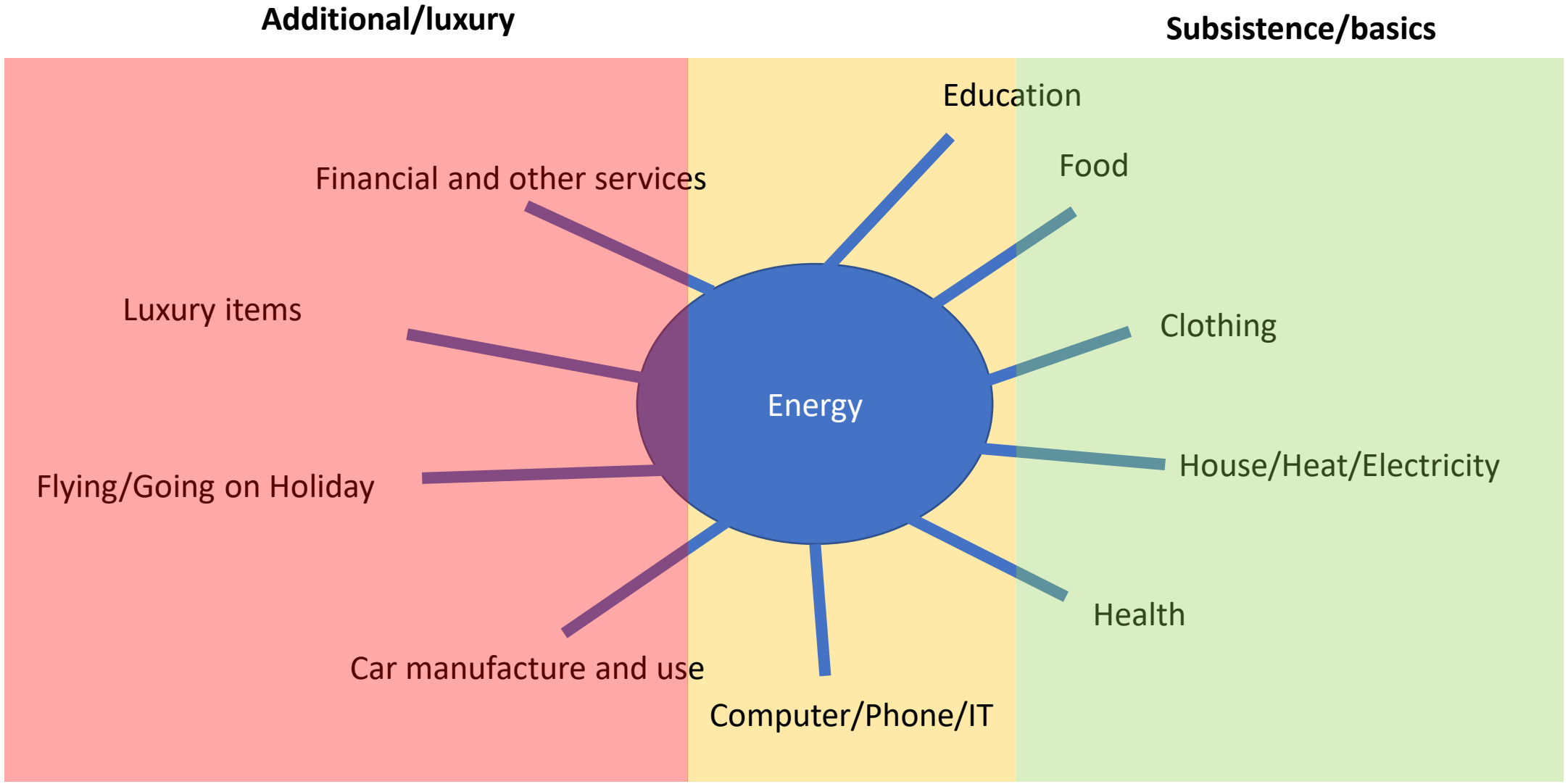
~ 450 km in VW Golf



Adding inequality within countries

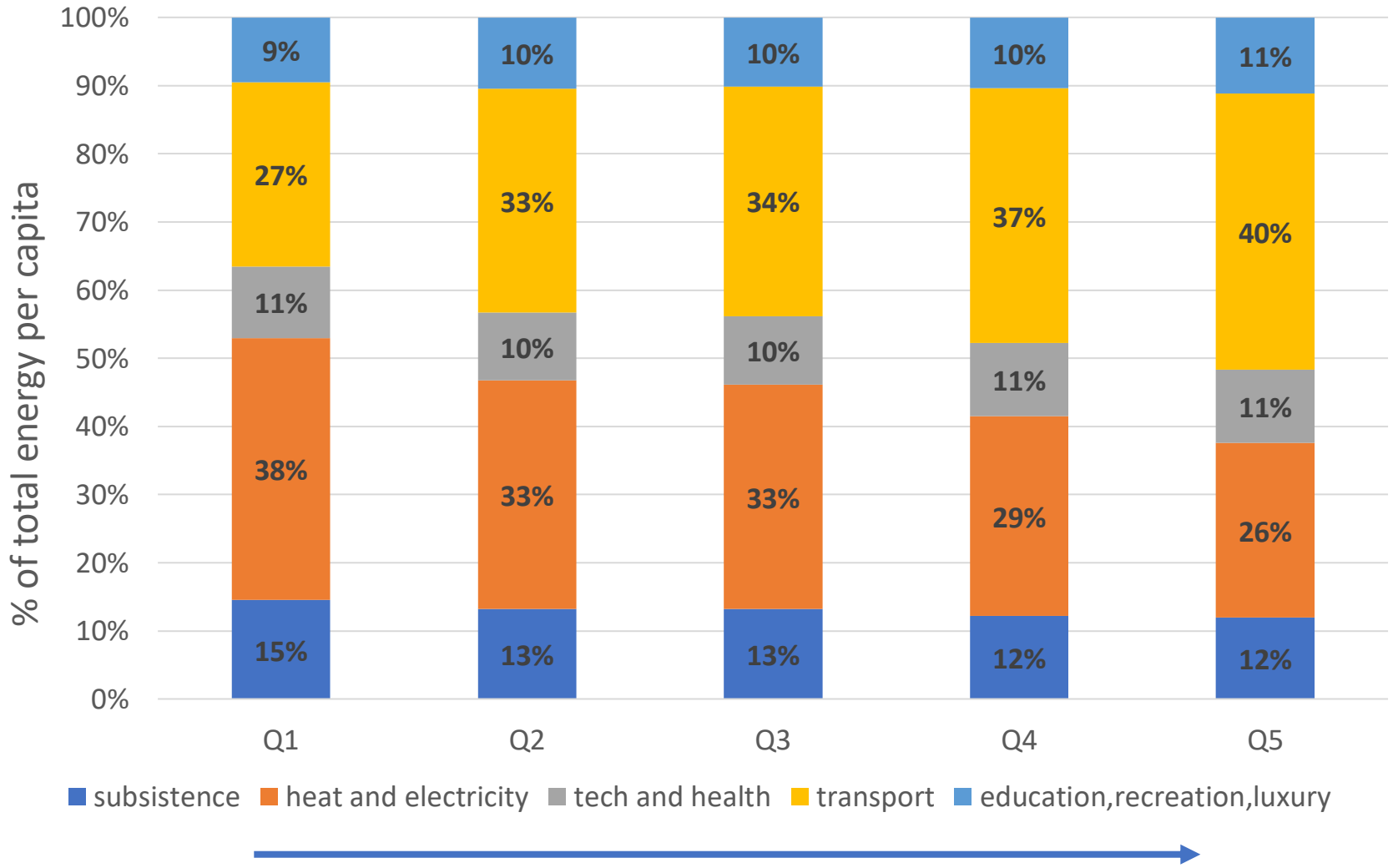


Adding inequality by energy service – example Austria

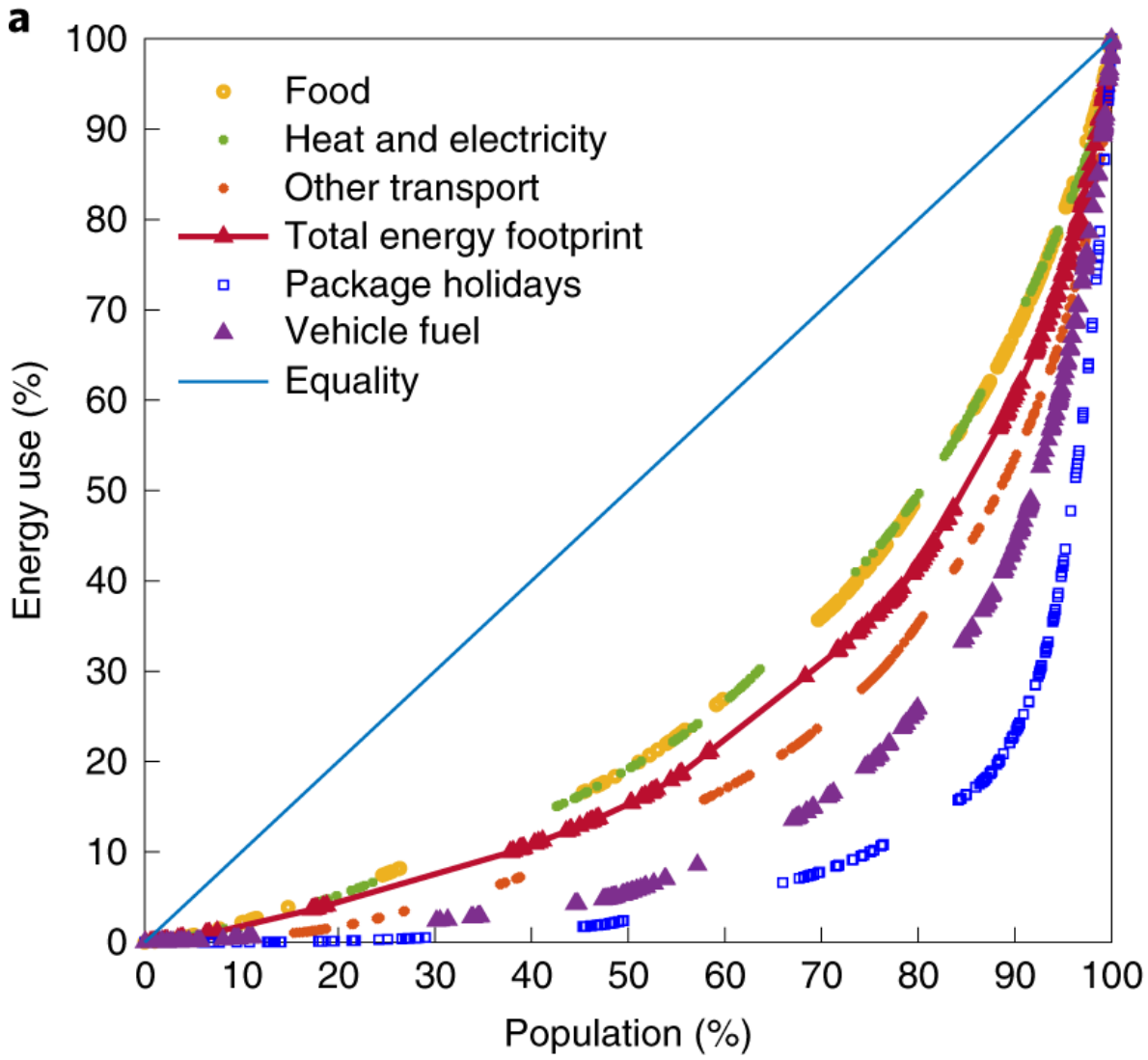


***very rough segmentation for illustrative purposes**

Adding inequality by energy service – example Austria



Generalizing these results over 86 countries



Interpretation

- At high incomes people use a lot of energy and often for things that are not really necessary
- At low incomes, especially in developing countries, people often have not enough access to energy for a decent quality of life

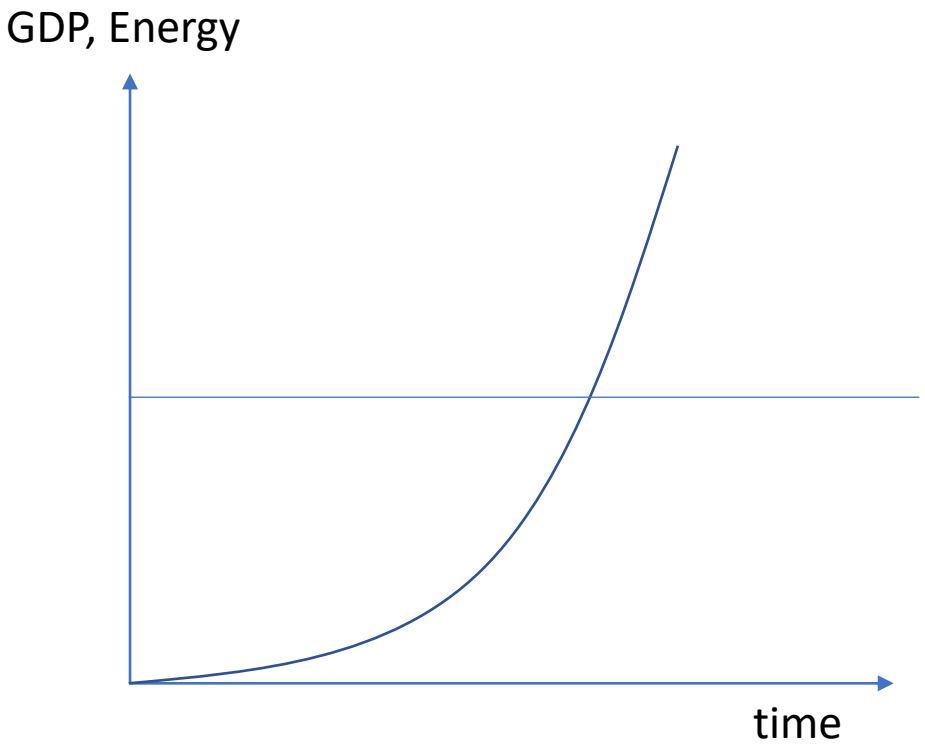
=> HUGE implications for economics and climate policy on how to reduce energy consumption and get in line with climate targets and eradicating poverty

Ecological Economics

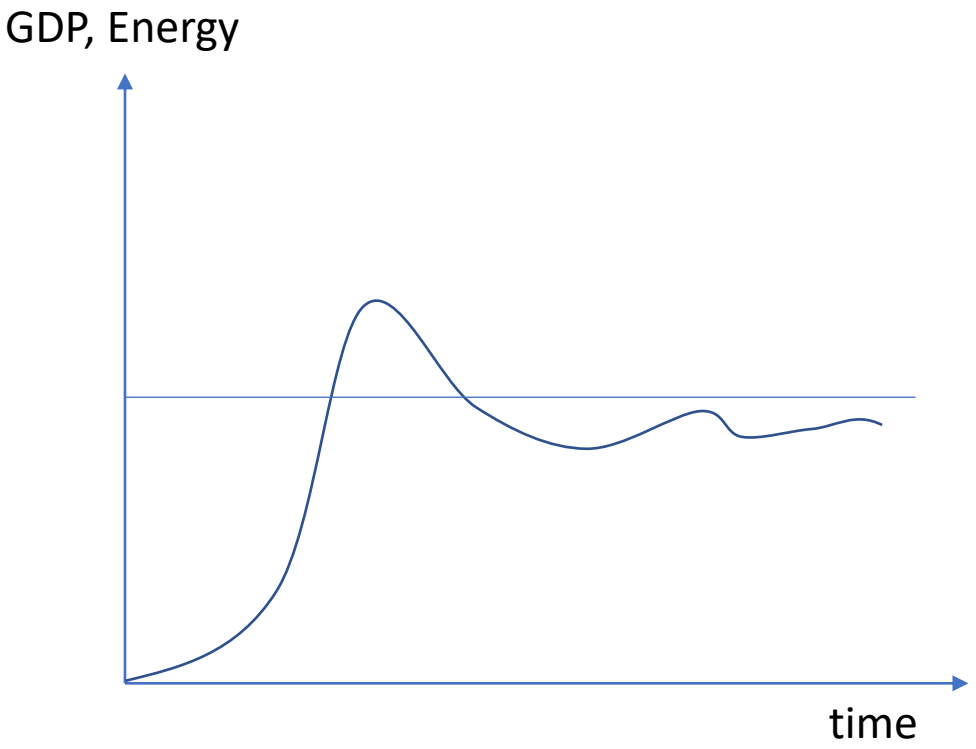
Why I am presenting this to biologists: We may have more in common than you think.

Growth dynamics and resource constraints

- Current growth model



- Steady-State Model/Equilibrium



Resource distribution and cooperation

- Which rules for interaction lead to the distribution that we have just seen?

- Which rules for interaction lead to cooperation and a fair distribution of resources?

More readings:

I recommend these two as a starter…

Enough is enough – Dietz and O'Neill (2013)

The economics of the coming spaceship earth – Boulding (1966)

Thank you!
Happy to receive questions.