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

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World Inequality Conference, Paris

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Motivation

Motivation (1)

- We already knew before that energy across countries is distributed very unequally.

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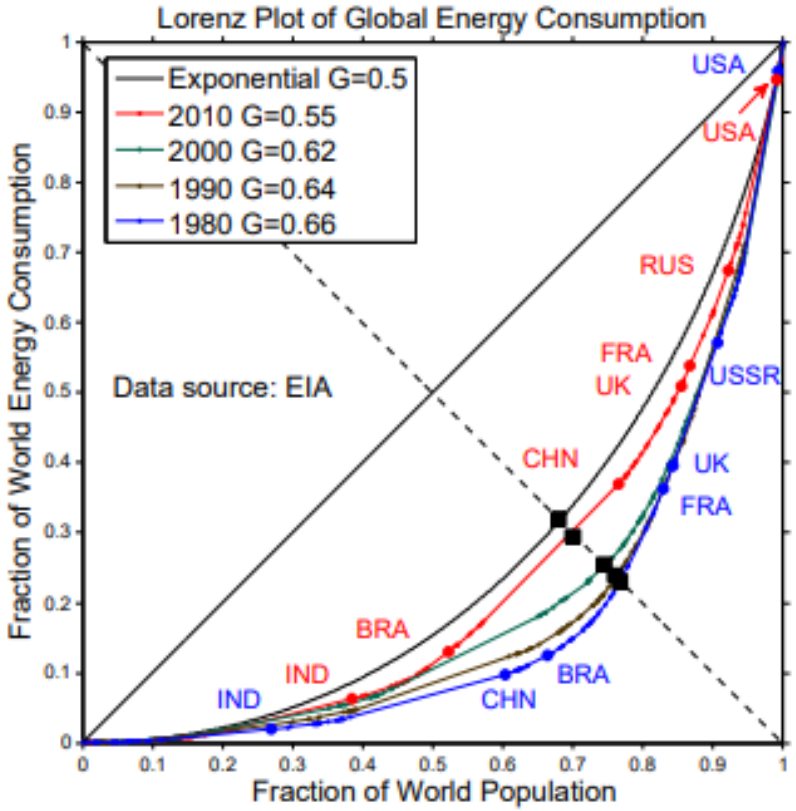

Picture taken from Lawrence et al. 2013

Motivation (2).. But!

Previous

Primary energy

Vs.

Our study

Final energy

Motivation (2).. But!

Previous

Primary energy

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Consumption purpose

Motivation (2).. But!

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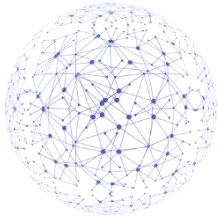
Production-based

Vs.

Consumption-based



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Production-based

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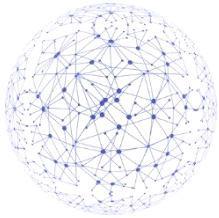
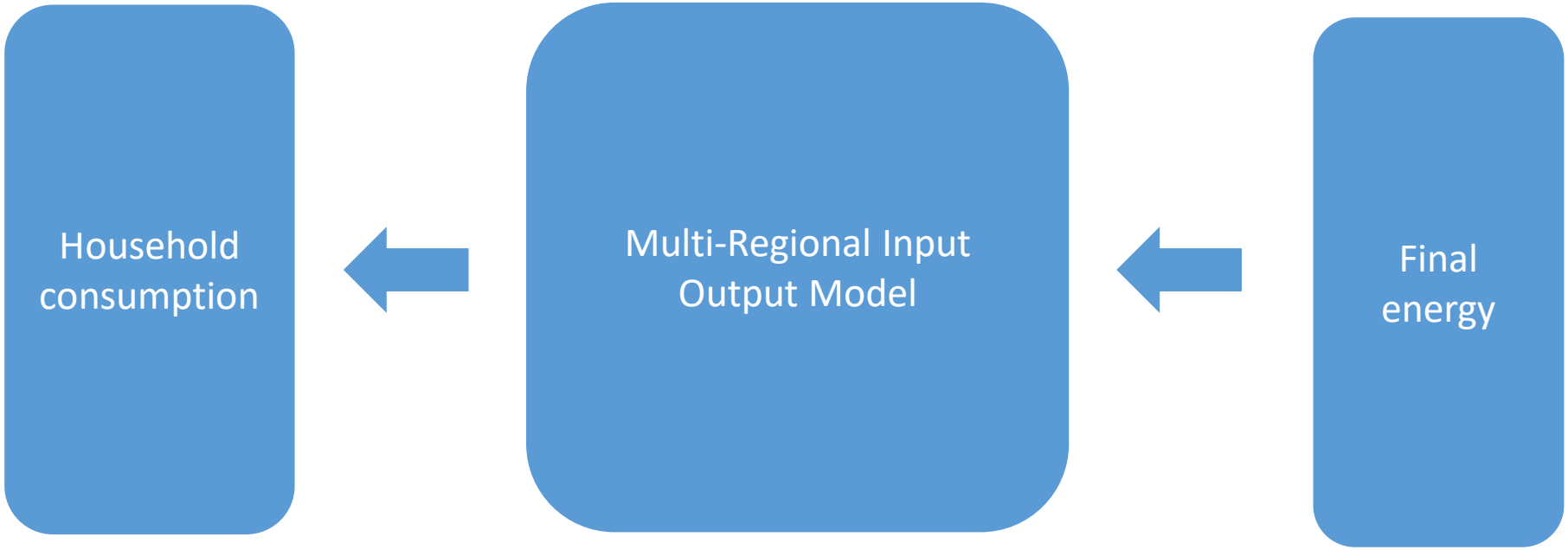


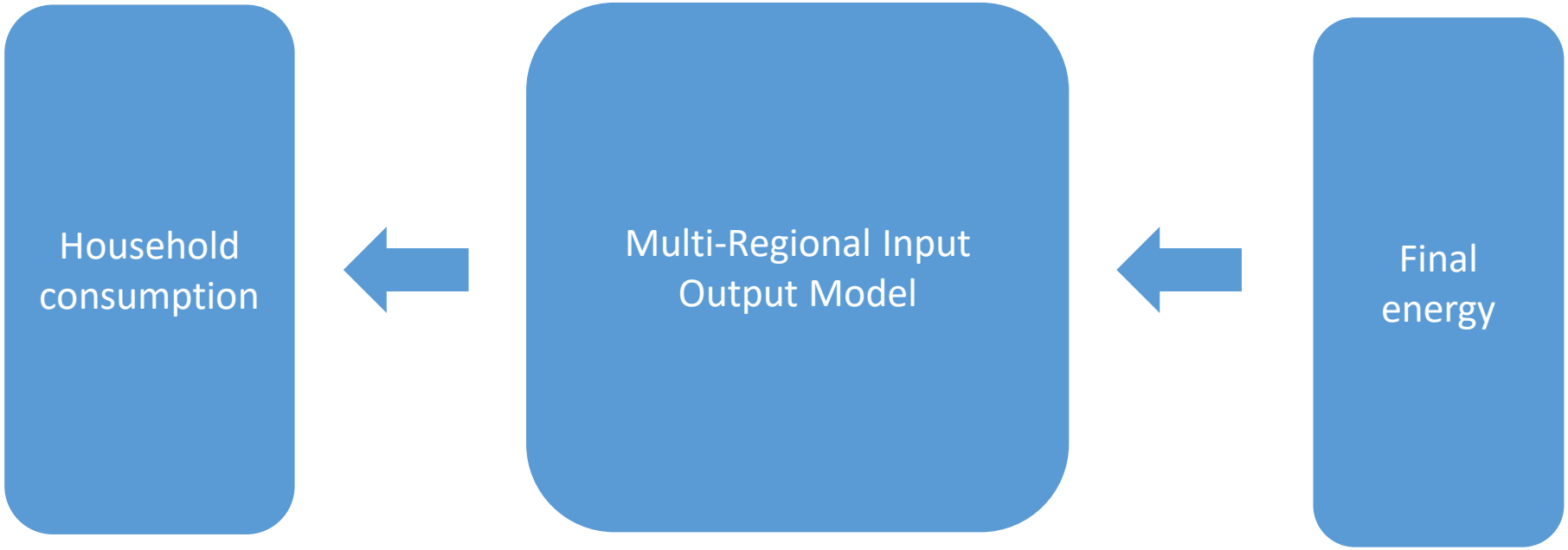
Between country inequality

Vs.

Between country inequality +
Within country inequality of households

Data brief


Household consumption
Multi-Regional Input Output Model
Final energy

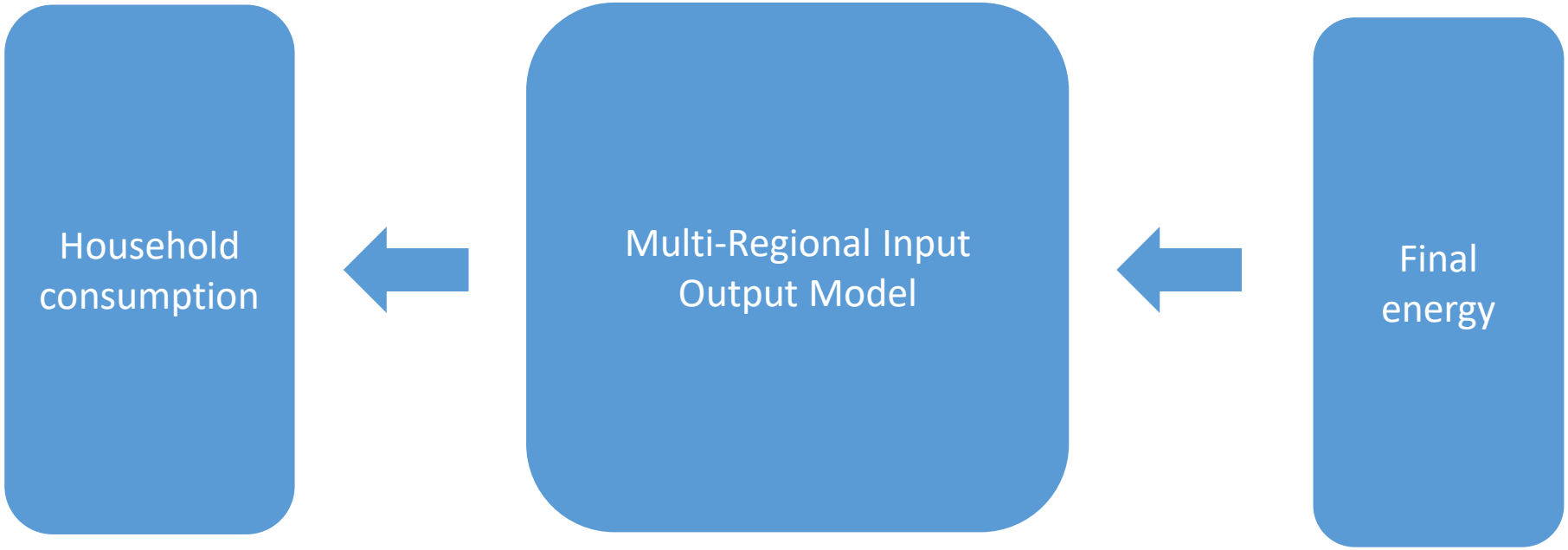


Global consumption database (developing countries)
Income groups according to World Bank daily per capita $PPP

Eurostat (developed countries)
Income groups are quintiles

=>

86 countries incl. BRICS + Europe, 2011



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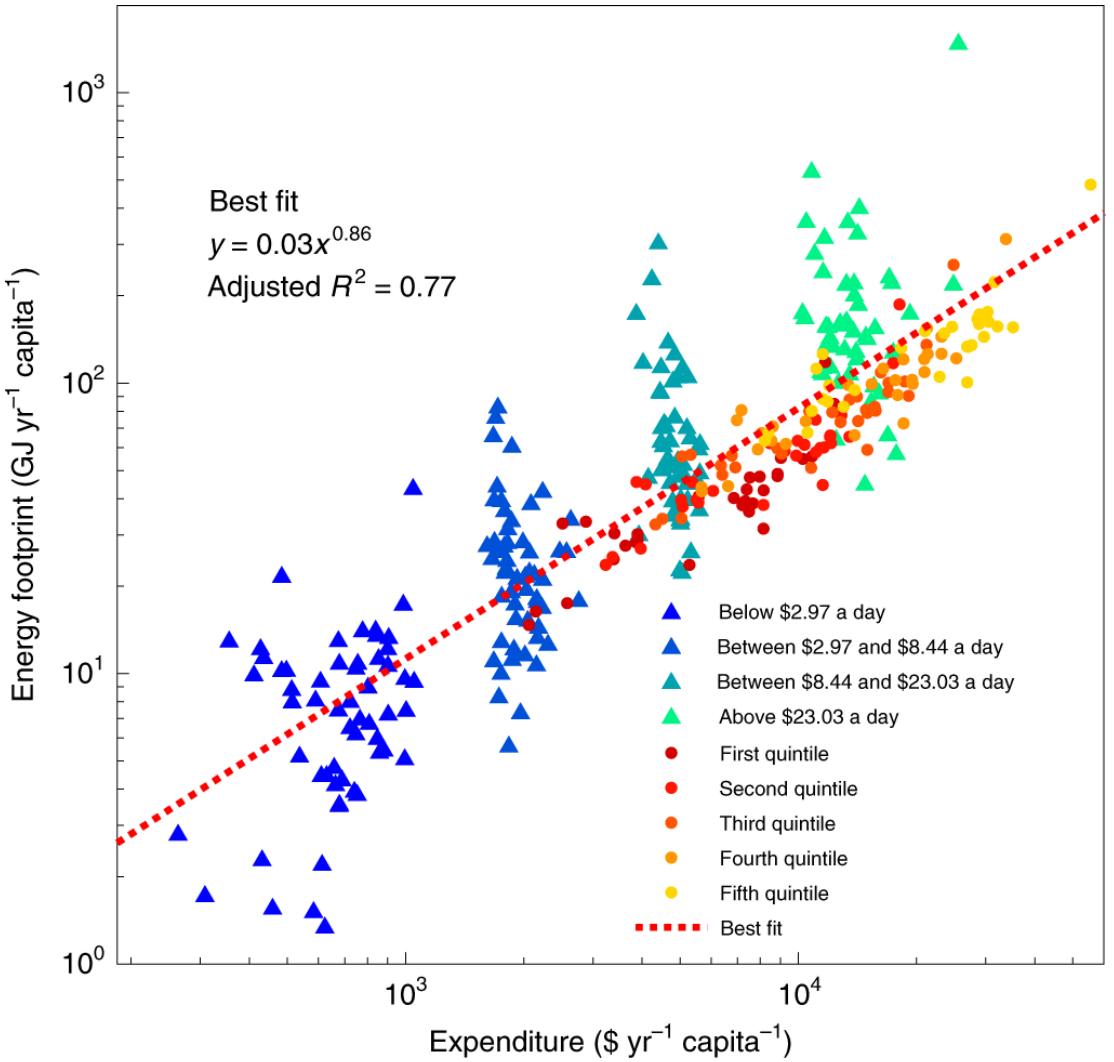
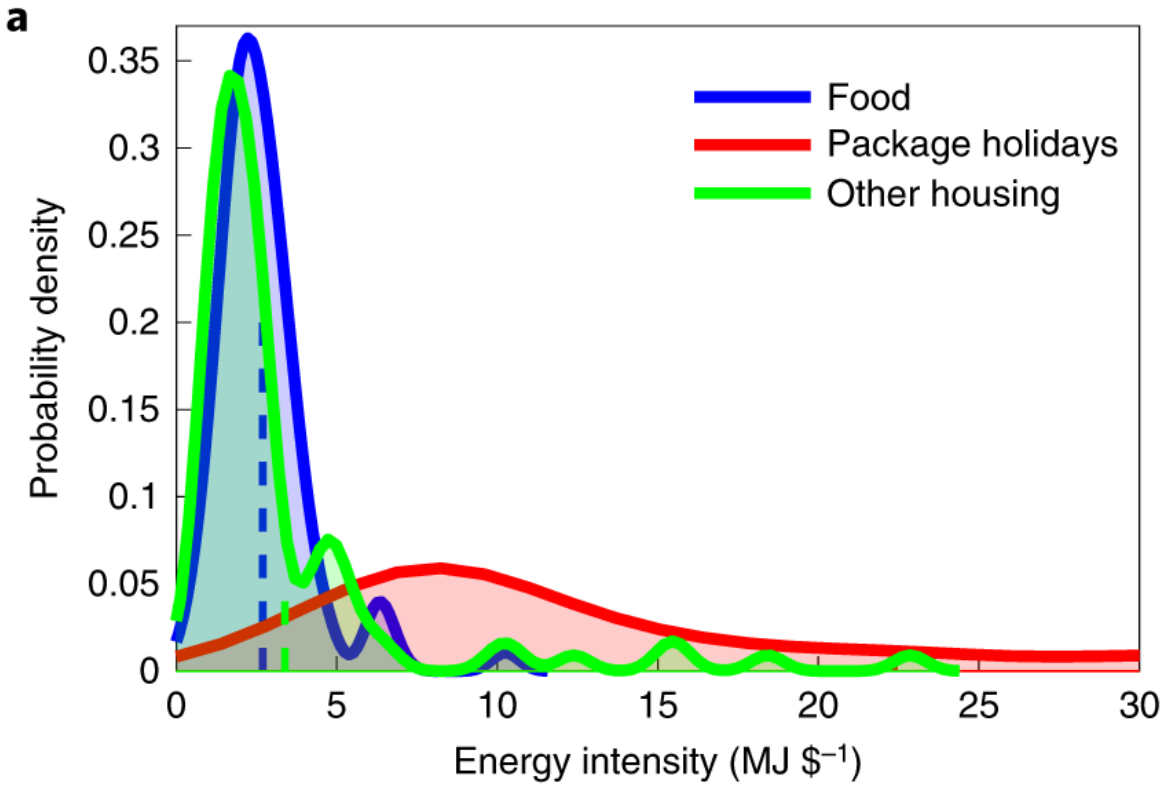
International energy agency (IEA) data

Results

Energy-expenditure elasticity global is ~ 0.85



Distributions of energy intensities and elasticities across consumption categories overlap



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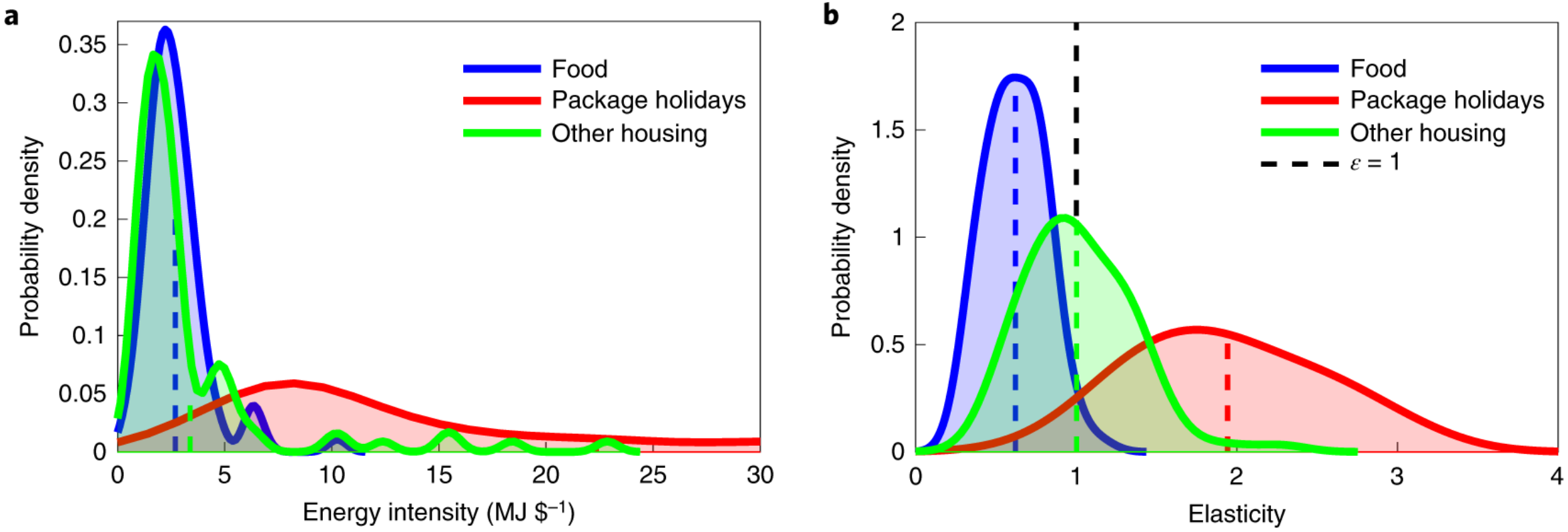
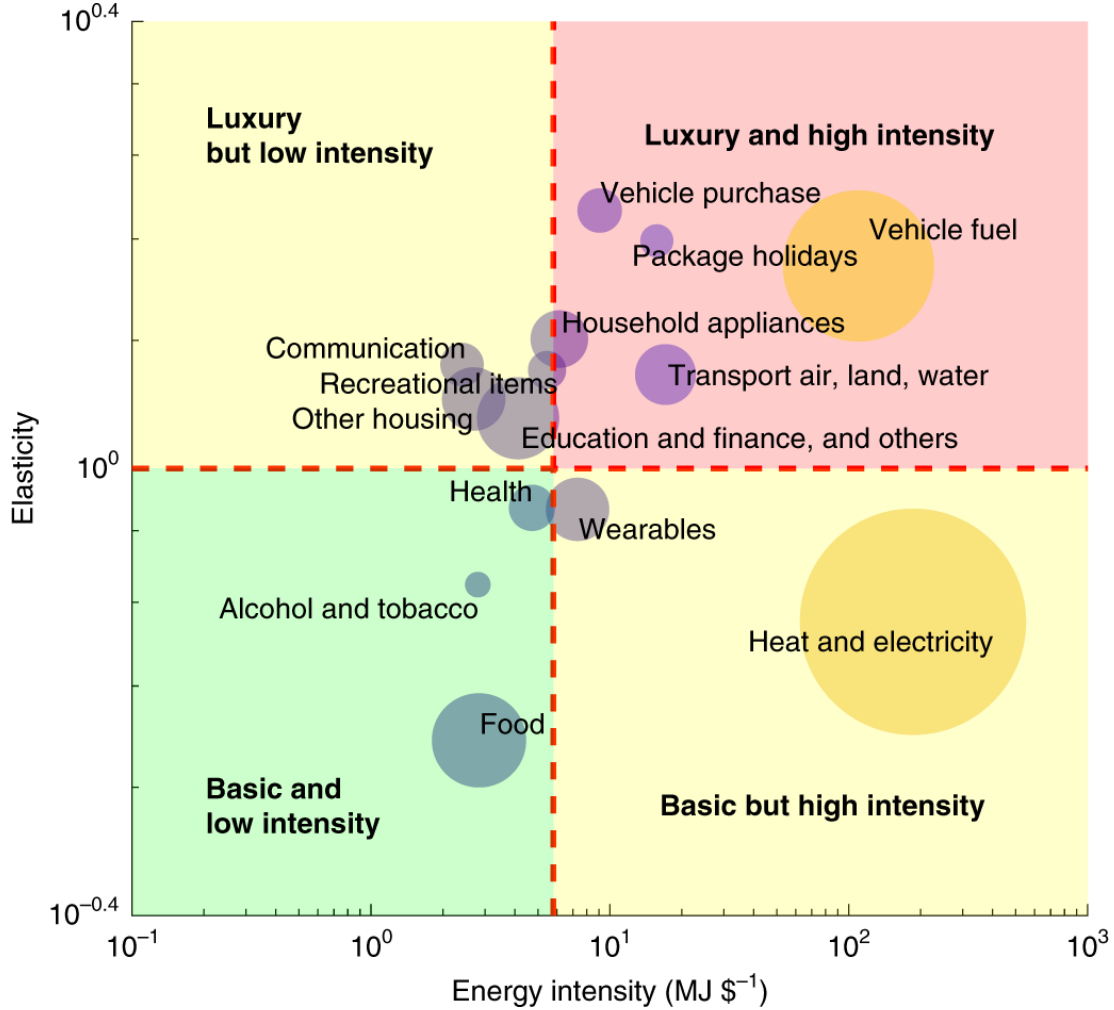


Biggest energy consumption is residential energy which is a basic good but Luxury goods are energy intensive too



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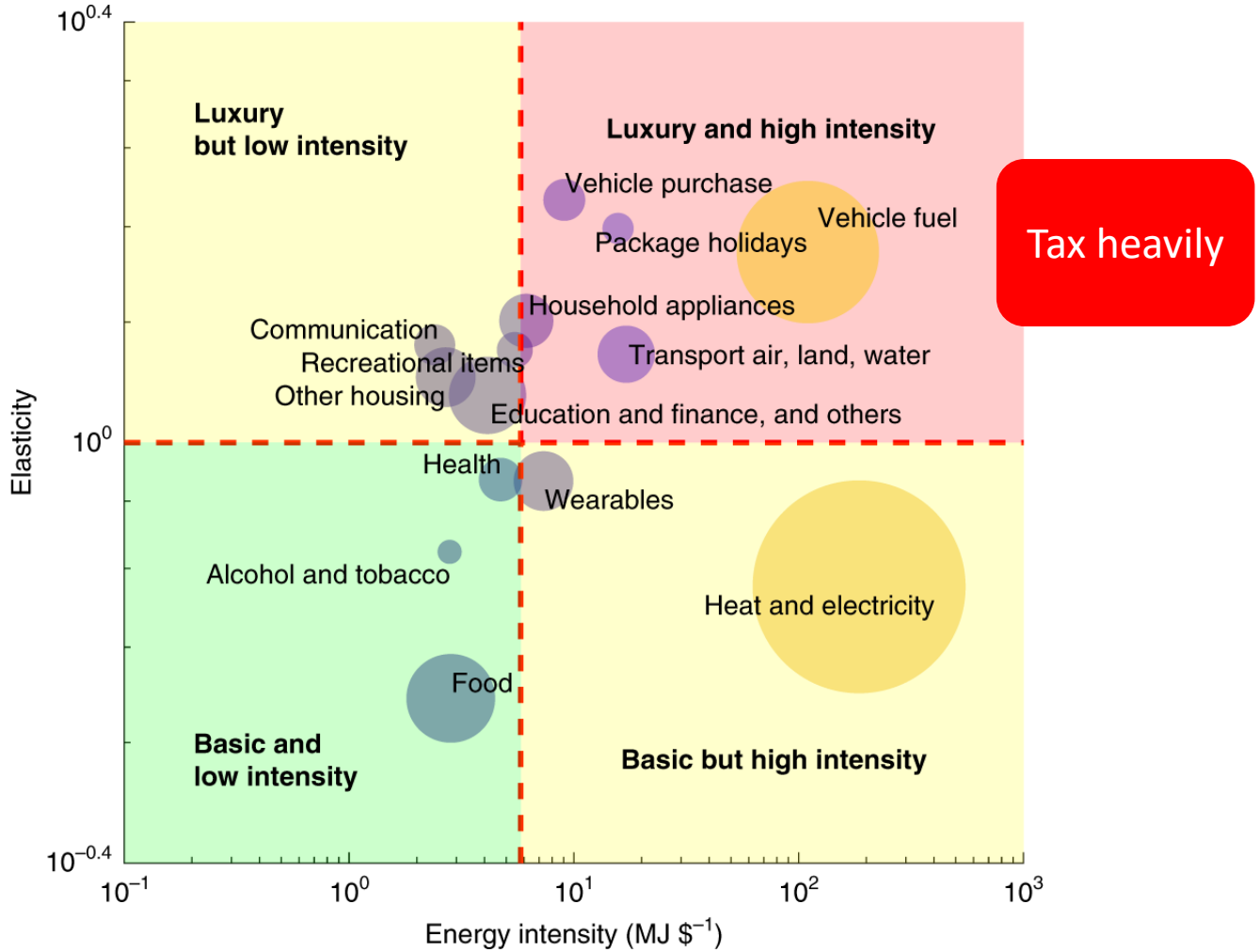
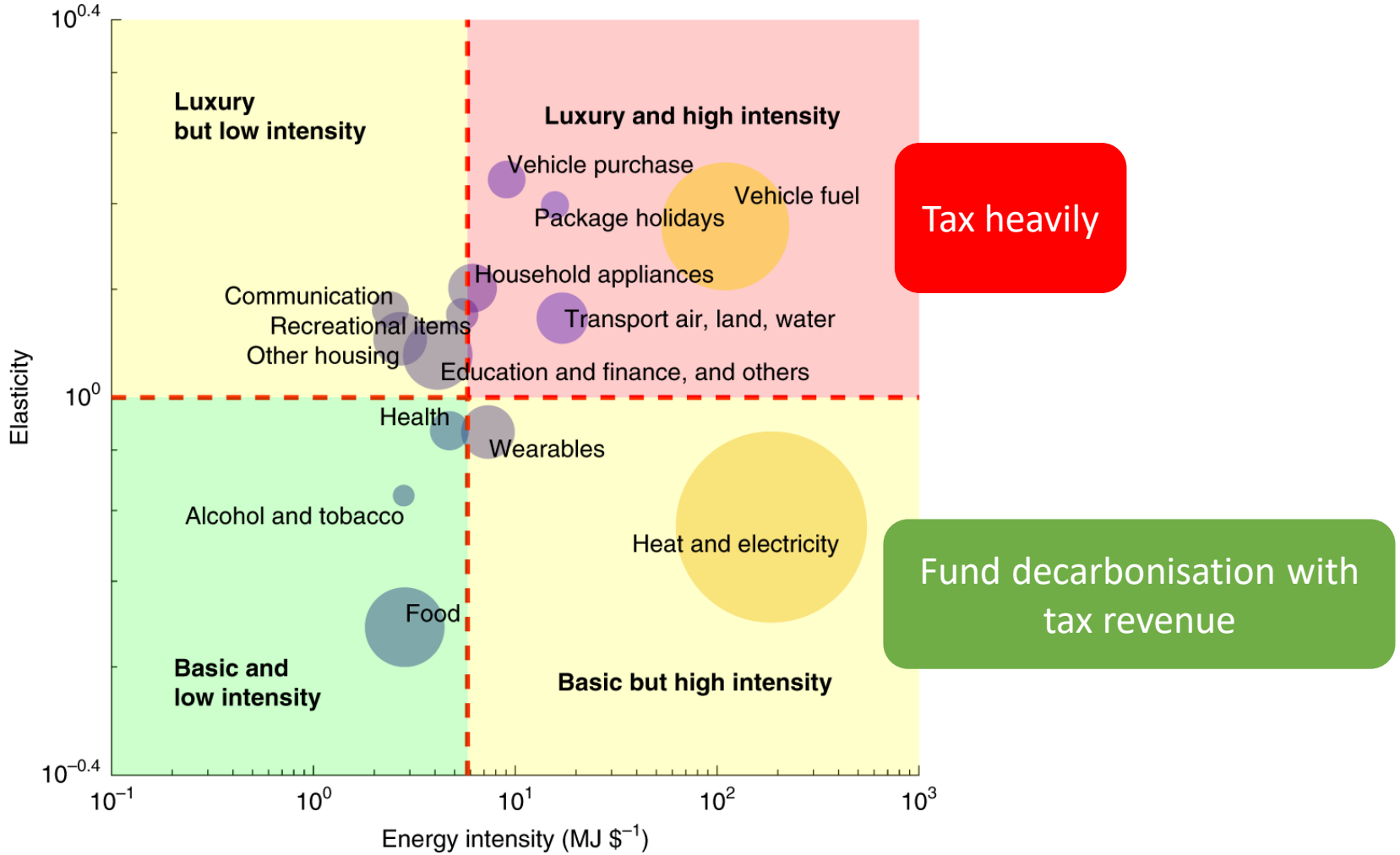
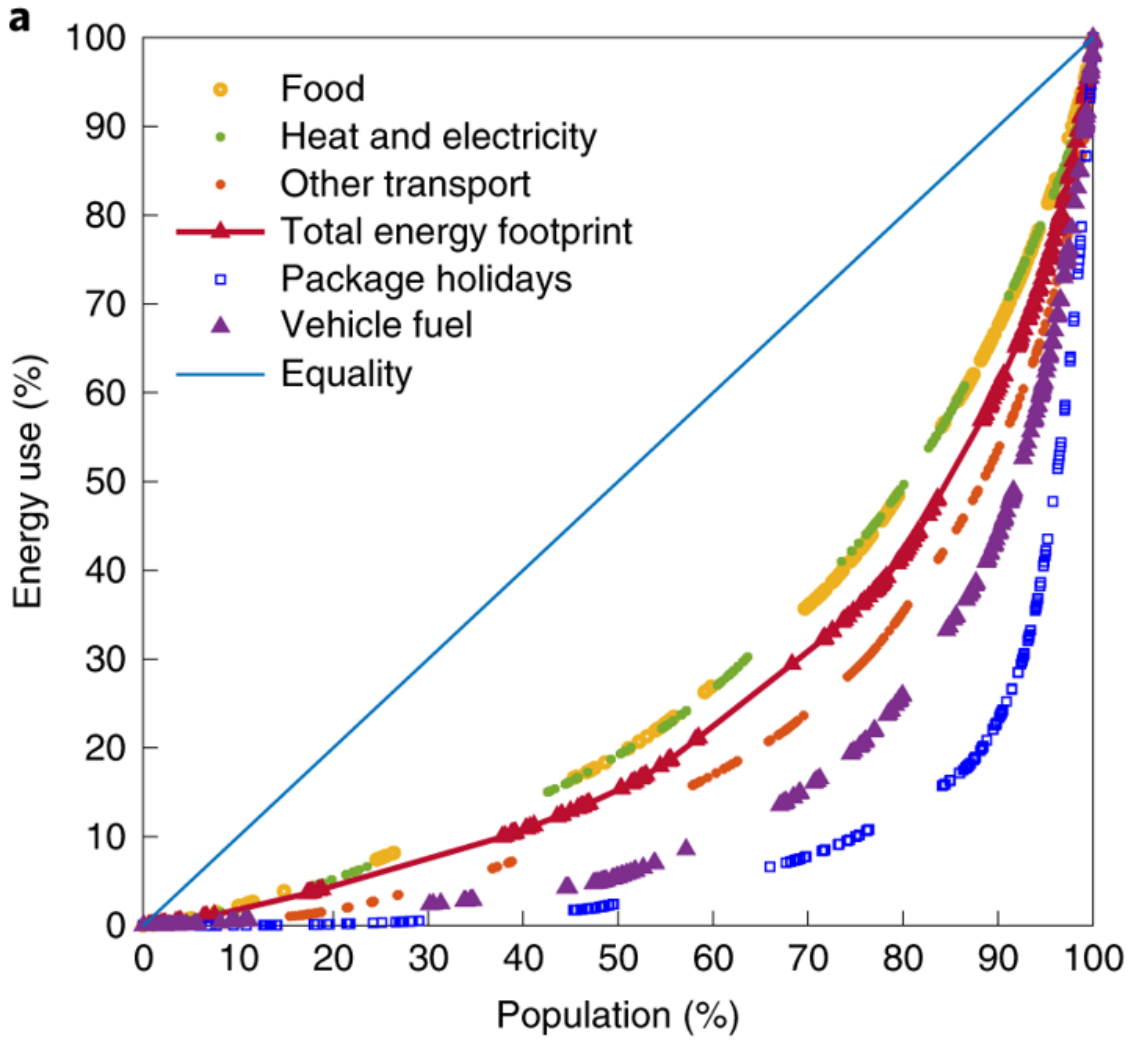


Tax heavily

Biggest energy consumption is residential energy which is a basic good but Luxury goods are energy intensive too



International Gini Coefficients of energy footprints vary with category from 0.45 to 0.8



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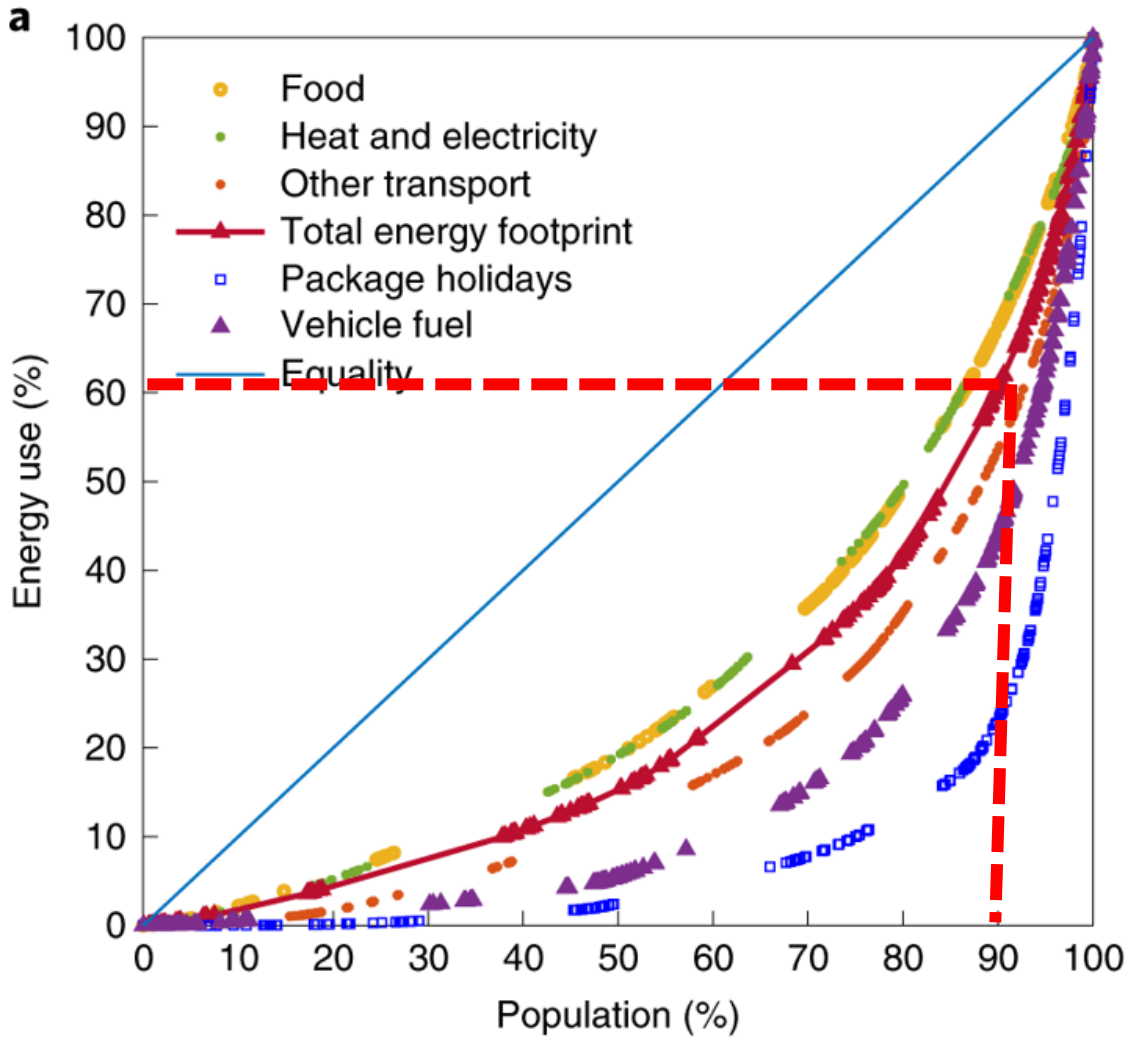

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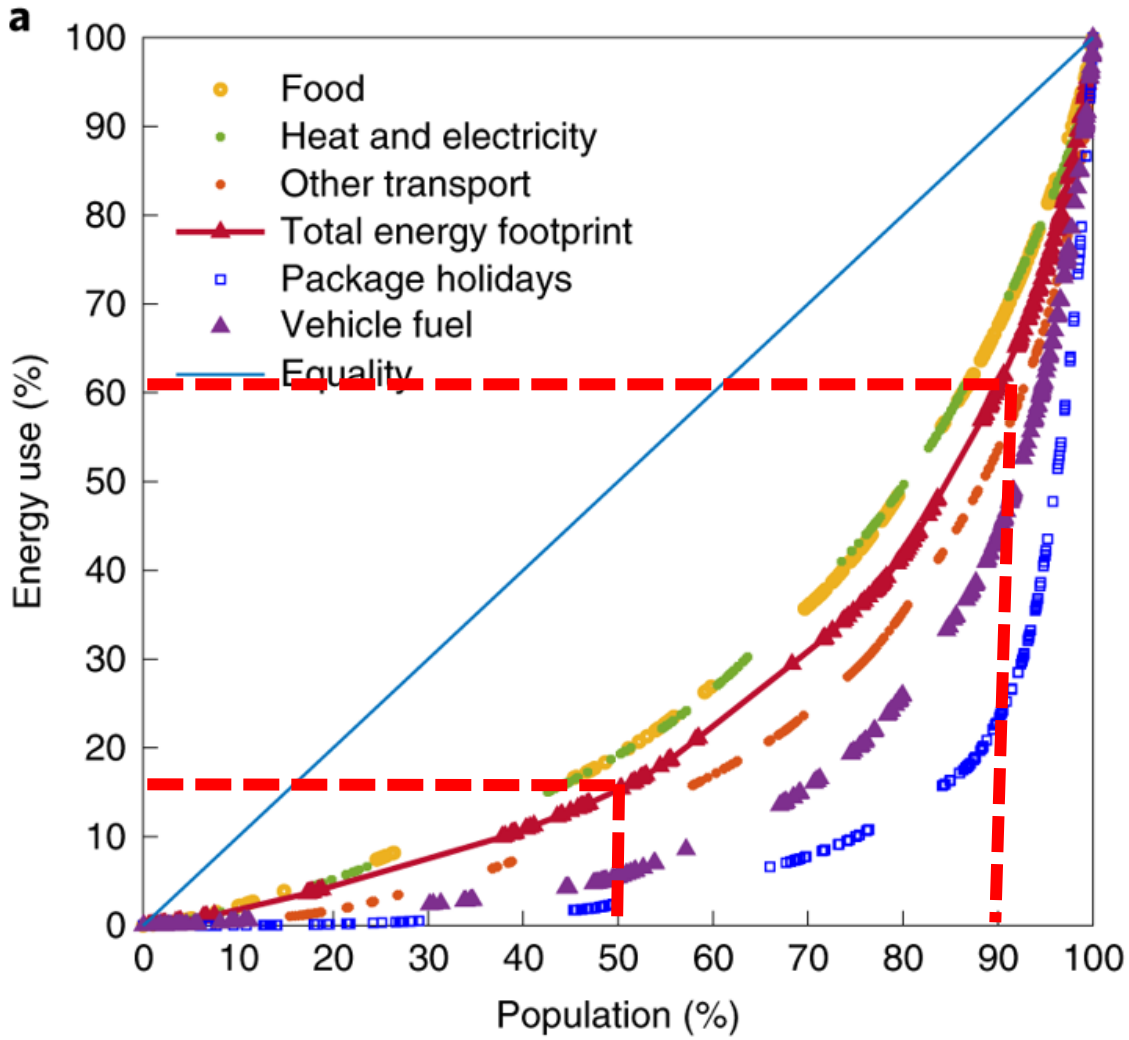

Discussion

- All energy-footprints are distributed very unequally.
- Changing economic inequality is energy policy (see Oswald et al. 2021).
- International expenditure-energy elasticity might be overestimated due to monetary data e.g. (Girod and de Haan 2010).
- Cross-sectional data, longitudinal studies necessary.
- Very top energy consumers? What's the variability within income groups?

Thank you.

References for presentation

- Images, if not referenced or in results, from Pixabay free for all use types.
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