Updates on the development, social and economics side of climate science

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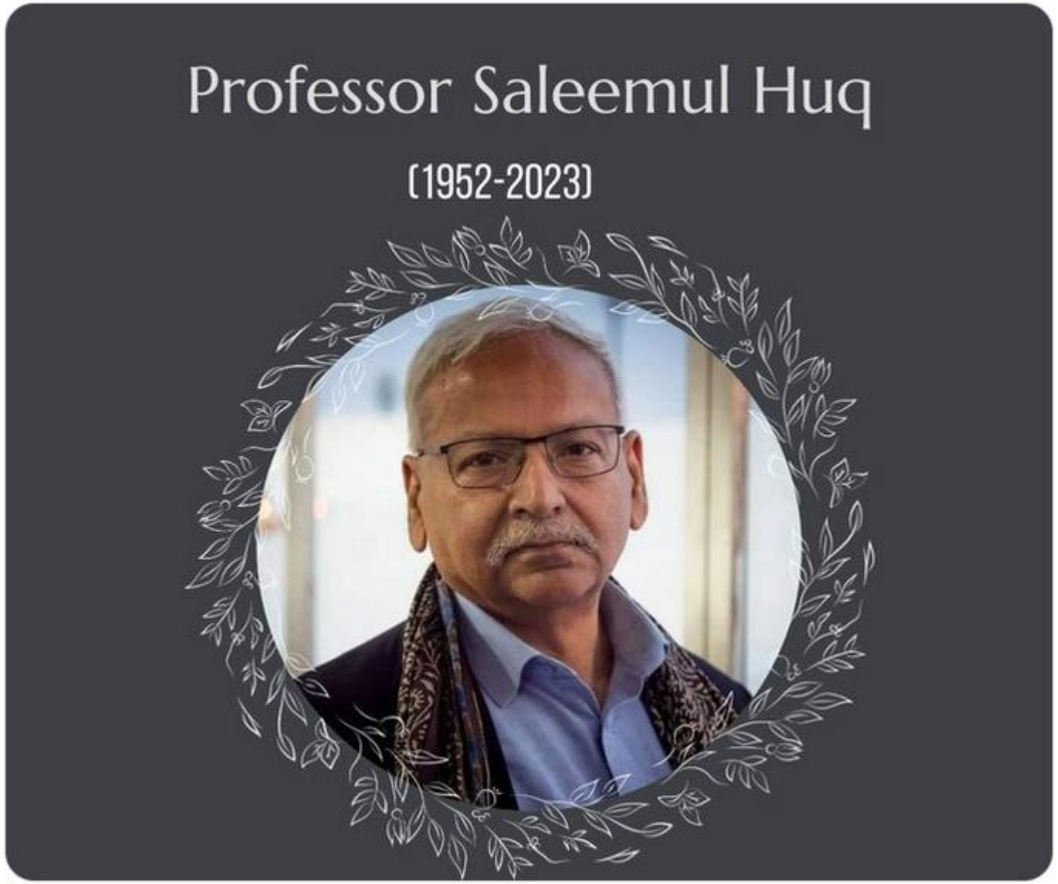
In memoriam Prof. Saleemul Huq, 1952-2023

Loss and Damage Youth Coalition
@LossDamageYouth

The Loss and Damage Youth Coalition is deeply saddened by the passing of our beloved mentor, Prof. Saleemul Huq, a true luminary in the realm of climate justice advocacy. Our heartfelt condolences go out to his family and all those who had the privilege to work alongside him.



Amitav Ghosh
@GhoshAmitav

In the climate space, Professor Saleemul Huq was one of the most important voices from the global south, tireless in his advocacy of climate justice. His death, at a time when voices like his are most needed, is a tragic loss.

dhakatribune.com
Eminent climate expert Prof Saleemul Huq passes away
Professor Saleemul Huq, eminent climate change expert and director of International Centre for Climate Change an...

We are headed for cataclysm

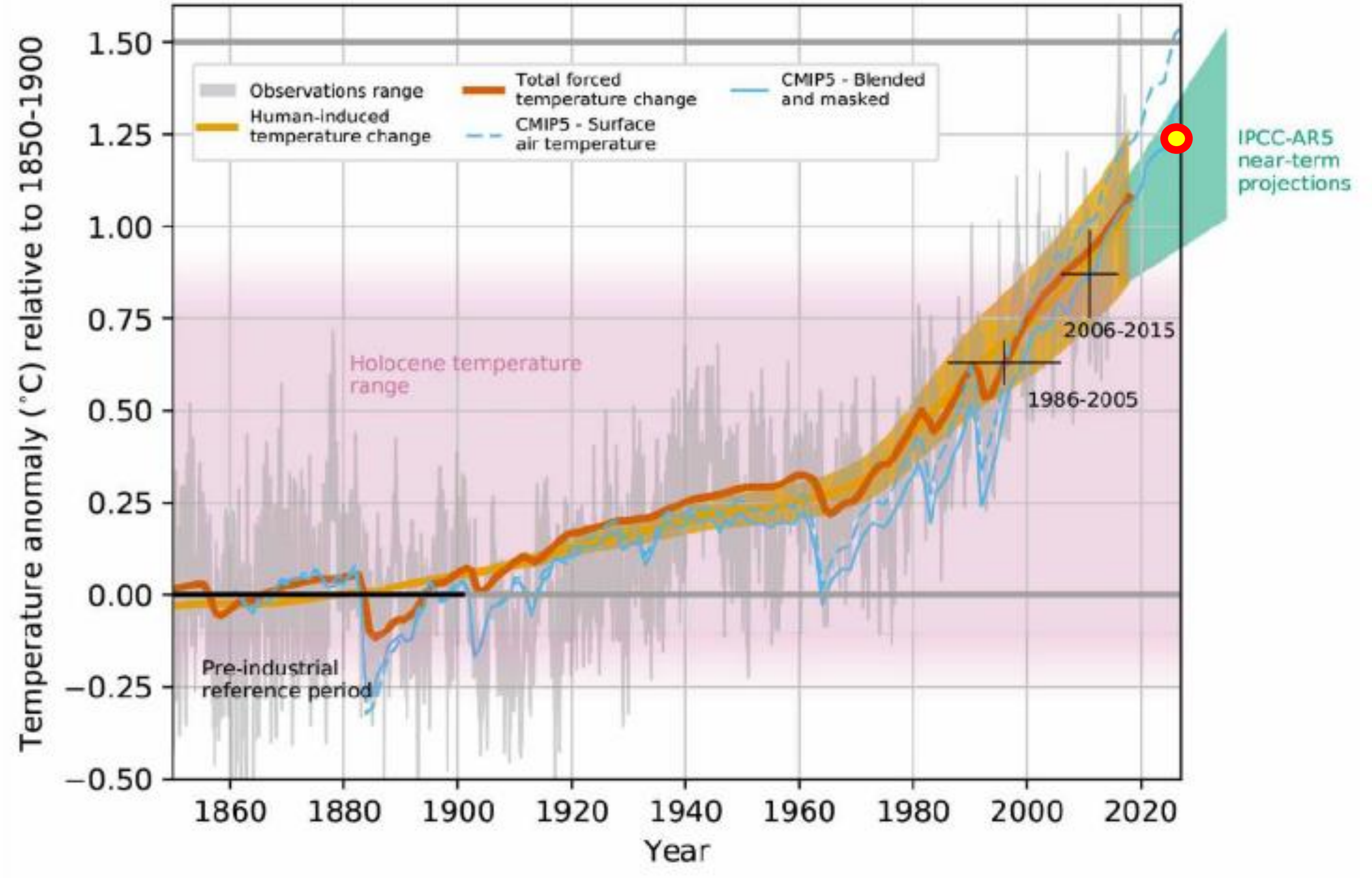
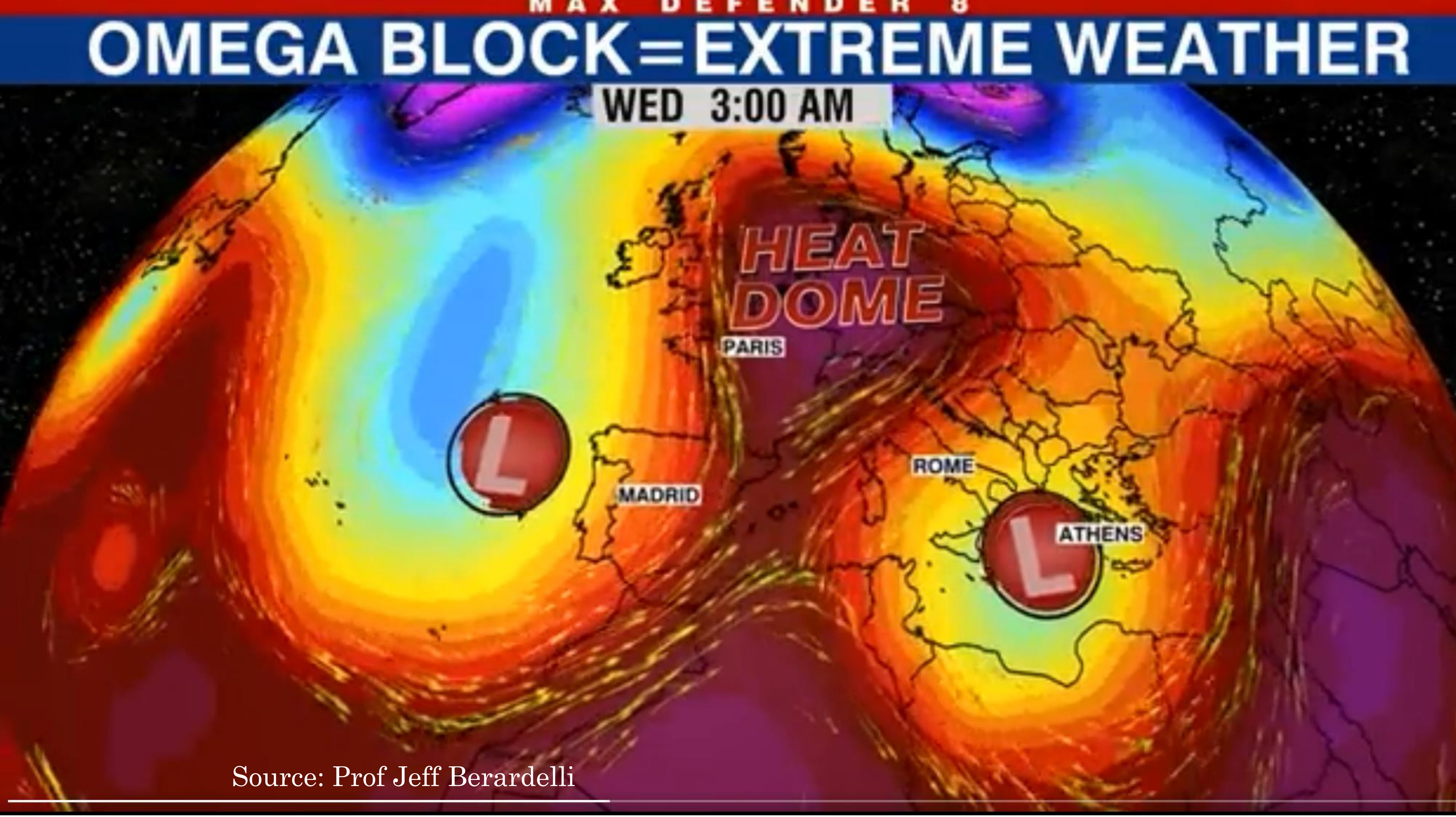


Figure 1.2: Evolution of global mean surface temperature (GMST) over the period of instrumental observations. Grey line shows monthly mean GMST in the HadCRUT4, NOAA, GISTEMP and

IPCC, Special Report on 1.5 degrees



Source: Prof Jeff Berardelli


Greece, 08/09/2023
OICHALIANEWS.GR
0:10 / 0:20

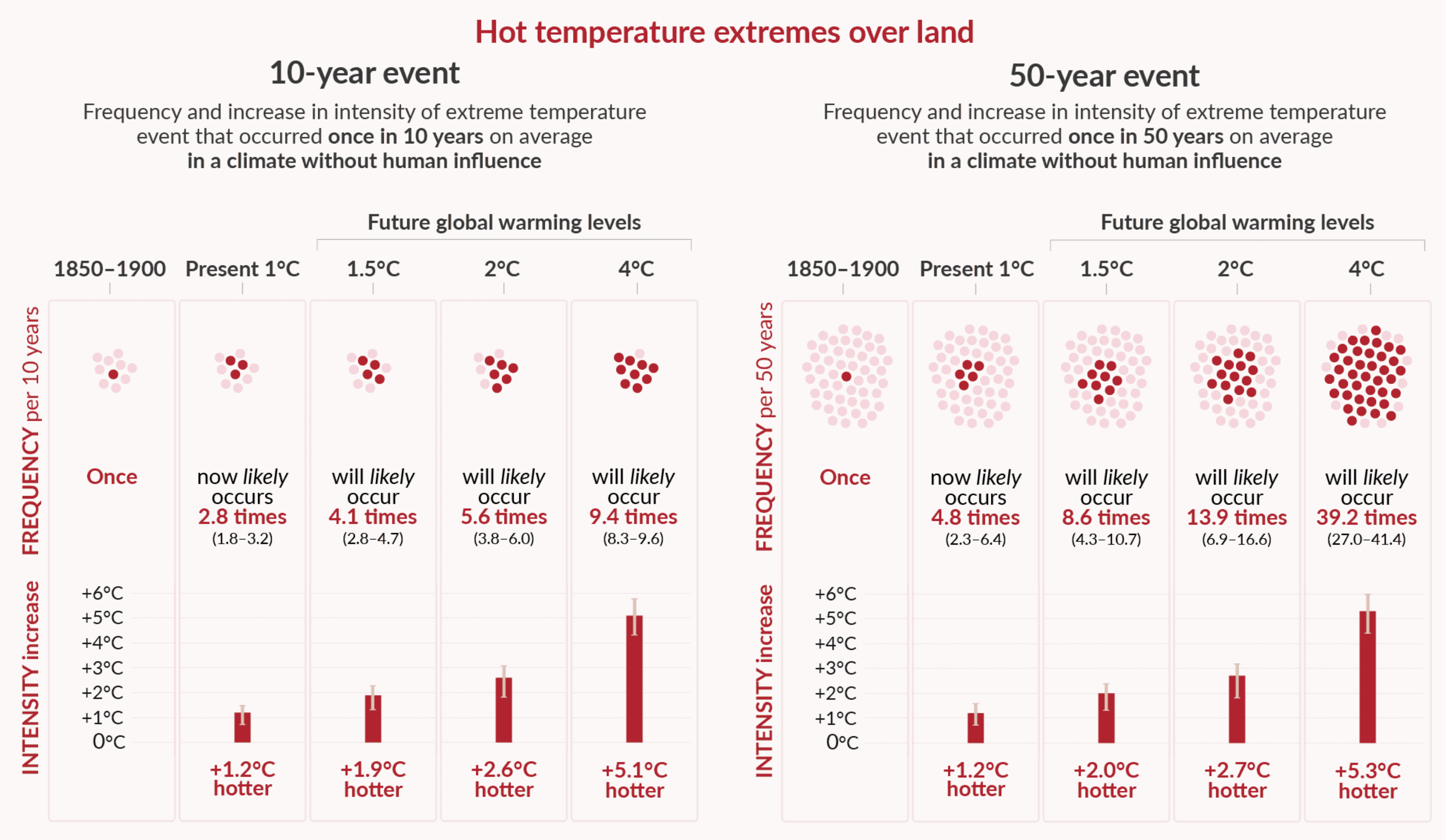

Derna, Libya, 12/09/2023
© ليبيا الأحرار via @WxNB_ on X


Acapulco, Mexico, 29/10/2023
Image source: AFP

Scientific motivation for the climate crisis

6th assessment reports from the Intergovernmental Panel on Climate Change (IPCC)

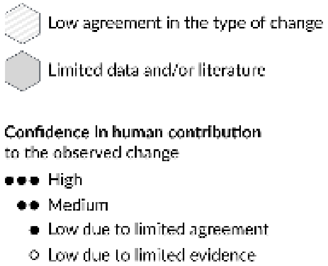
Projected changes in extremes are larger in frequency and intensity with every additional increment of global warming



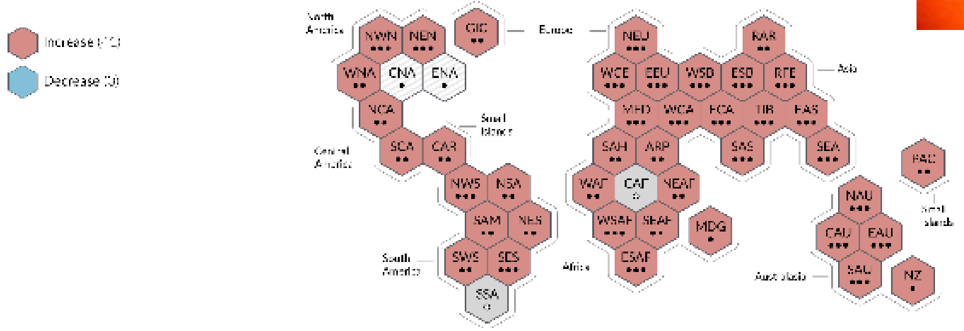
WG1, Figure SPM6

Global warming increases extreme weather in all global regions.

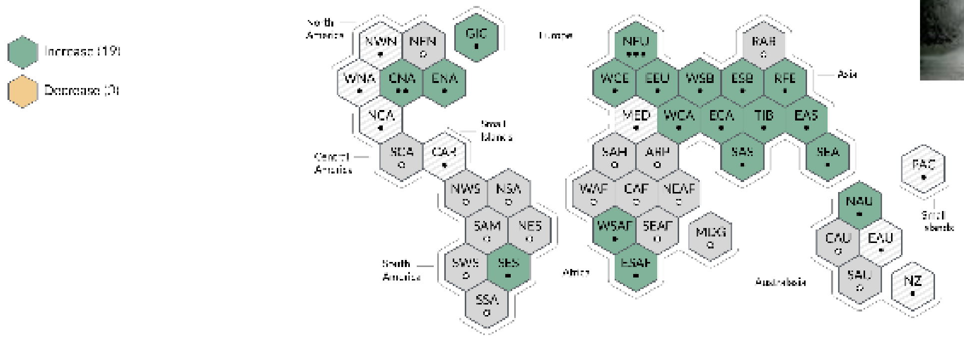
(IPCC AR6 WG1, Fig. SPM.3)



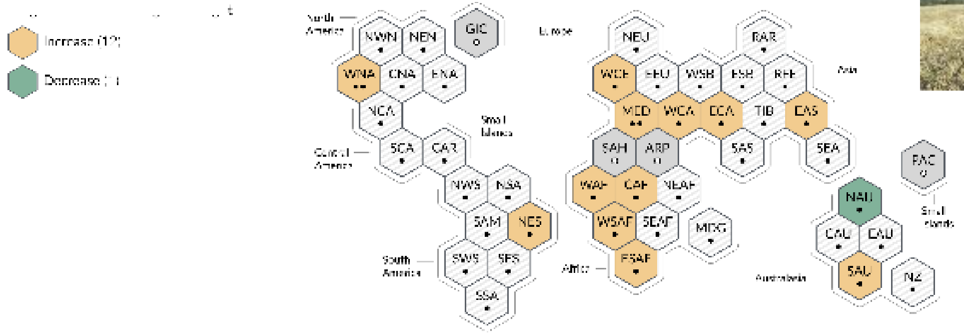
Heatwaves



Extreme rainfall

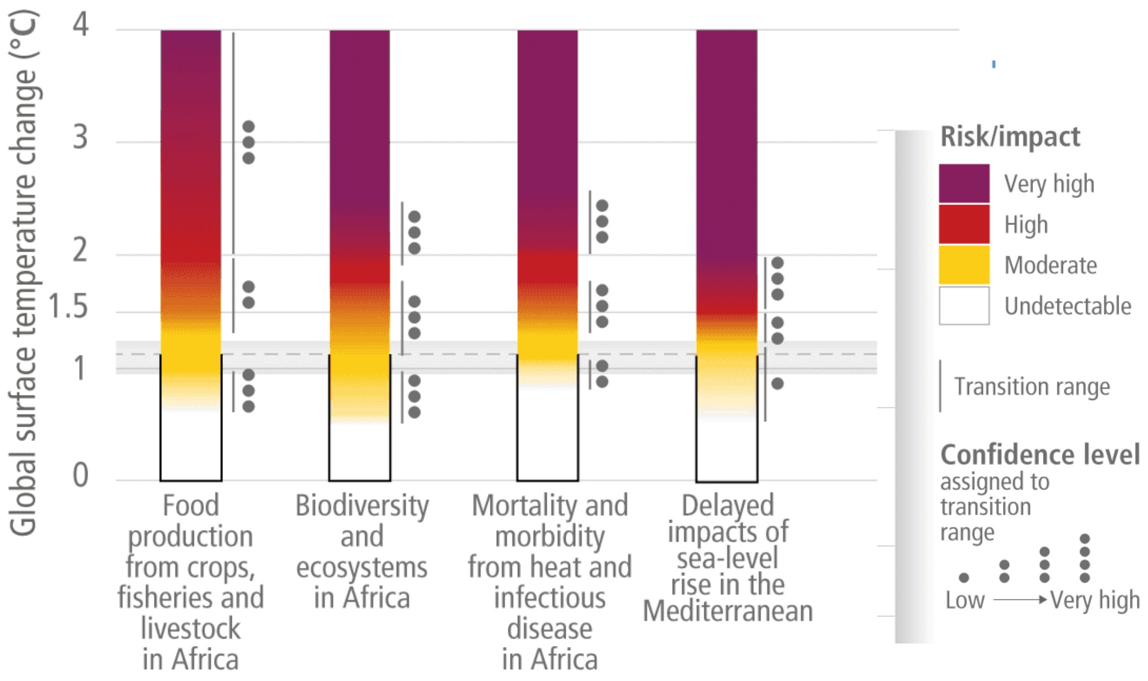


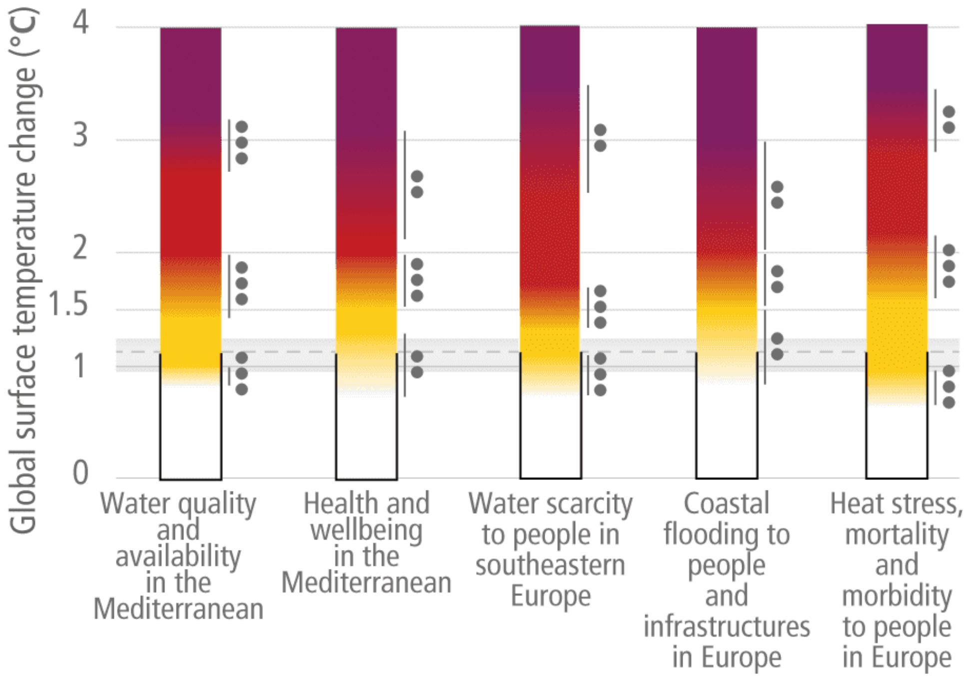
Droughts



weather

Central and South America	- Risk to water security - Severe health effects due to increasing epidemics, in particular vector-borne diseases - Coral reef ecosystems degradation due to coral bleaching - Risk to food security due to frequent/extreme droughts - Damages to life and infrastructure due to floods, landslides, sea level rise, storm surges and coastal erosion
Aus-tralasia	- Degradation of tropical shallow coral reefs and associated biodiversity and ecosystem service values - Loss of human and natural systems in low-lying coastal areas due to sea level rise - Impact on livelihoods and incomes due to decline in agricultural production - Increase in heat-related mortality and morbidity for people and wildlife - Loss of alpine biodiversity in Australia due to less snow
Asia	- Urban infrastructure damage and impacts on human well-being and health due to flooding, especially in coastal cities and settlements - Biodiversity loss and habitat shifts as well as associated disruptions in dependent human systems across freshwater, land, and ocean ecosystems - More frequent, extensive coral bleaching and subsequent coral mortality induced by ocean warming and acidification, sea level rise, marine heat waves and resource extraction - Decline in coastal fishery resources due to sea level rise, decrease in precipitation in some parts and increase in temperature - Risk to food and water security due to increased temperature extremes, rainfall variability and drought
Africa	- Species extinction and reduction or irreversible loss of ecosystems and their services, including freshwater, land and ocean ecosystems - Risk to food security, risk of malnutrition (micronutrient deficiency), and loss of livelihood due to reduced food production from crops, livestock and fisheries - Risks to marine ecosystem health and to livelihoods in coastal communities - Increased human mortality and morbidity due to increased heat and infectious diseases (including vector-borne and diarrhoeal diseases) - Reduced economic output and growth, and increased inequality and poverty rates - Increased risk to water and energy security due to drought and heat





WG2, Figure SPM.3

world weather attribution

Home About Analyses News Projects Resources

Reporting extreme weather and climate change

A guide for journalists

https://www.worldweatherattribution.org/reporting-extreme-weather-and-climate-change-a-guide-for-journalists/

Heatwaves

Every heatwave in the world is now made stronger and more likely to happen because of human-caused climate change

Floods

Extreme rainfall is more common and more intense because of human-caused climate change across most of the world, specifically in Europe, most of Asia, central and eastern North America, and parts of South America, Africa and Australia. Elsewhere it is not yet possible to be confident about the changes. Flooding has likely become more frequent and severe in these locations as a result, though it is also affected by other human factors.

Droughts

Droughts are becoming more common and more severe due to climate change only in some areas, including Europe, the Mediterranean, southern Africa, central and eastern Asia, southern Australia, and western North America. There is some evidence of increases in western and central Africa, northeast South America, and New Zealand.

Tropical cyclones

(Hurricanes, typhoons and cyclones)

The overall number of tropical cyclones per year has not changed globally, but climate change has increased the occurrence of the most intense and destructive storms. Extreme rainfall from tropical cyclones has increased substantially, in line with rainfall from other sources. Storm surges are higher due to climate change-driven sea level rise.

Is green growth happening? An empirical analysis of achieved versus Paris-compliant CO_2–GDP decoupling in high-income countries

Jefim Vogel, Jason Hickel

Findings The emission reductions that high-income countries achieved through absolute decoupling fall far short of Paris-compliant rates. At the achieved rates, these countries would on average take more than 220 years to reduce their emissions by 95%, emitting 27 times their remaining 1·5°C fair-shares in the process. To meet their 1·5°C fair-shares alongside continued economic growth, decoupling rates would on average need to increase by a factor of ten by 2025.

Interpretation The decoupling rates achieved in high-income countries are inadequate for meeting the climate and equity commitments of the Paris Agreement and cannot legitimately be considered green. If green is to be consistent with the Paris Agreement, then high-income countries have not achieved green growth, and are very unlikely to be able to achieve it in the future. To achieve Paris-compliant emission reductions, high-income countries will need to pursue post-growth demand-reduction strategies, reorienting the economy towards sufficiency, equity, and human wellbeing, while also accelerating technological change and efficiency improvements.

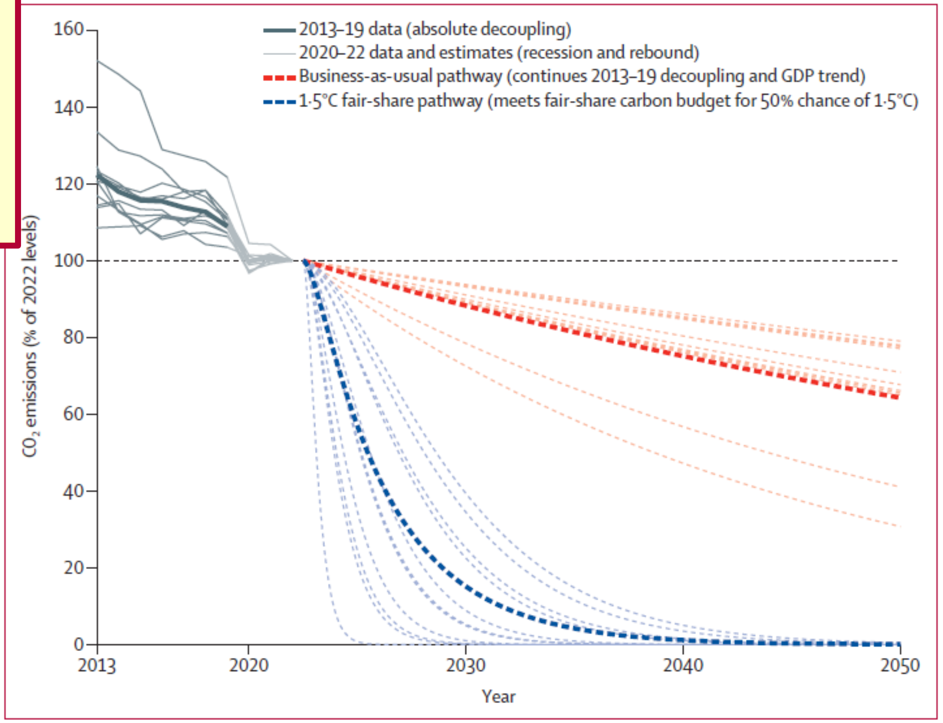


Figure 1: Emission reductions achieved in high-income countries through recent absolute decoupling are highly insufficient for complying with their fair-shares of the 1·5°C global carbon budget

And «green growth» claims are greenwashing.

What should we do?

Interpretation The decoupling rates achieved in high-income countries are inadequate for meeting the climate and equity commitments of the Paris Agreement and cannot legitimately be considered green. If green is to be consistent with the Paris Agreement, then high-income countries have not achieved green growth, and are very unlikely to be able to achieve it in the future. To achieve Paris-compliant emission reductions, high-income countries will need to pursue post-growth demand-reduction strategies, reorienting the economy towards sufficiency, equity, and human wellbeing, while also accelerating technological change and efficiency improvements.

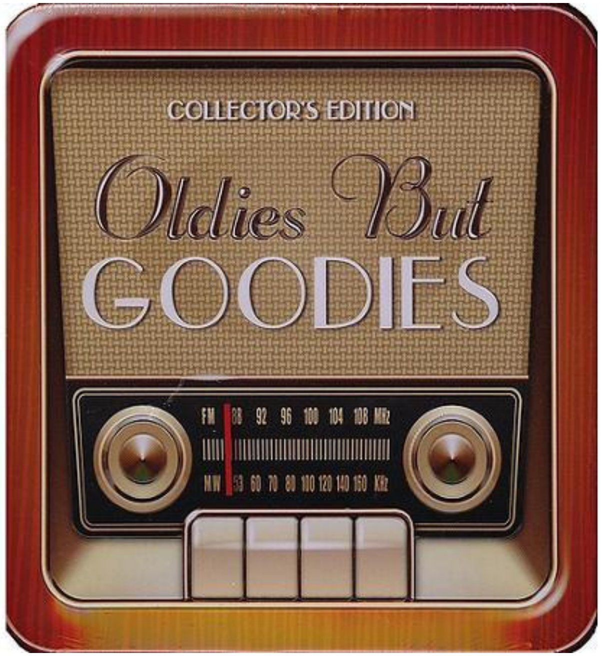
What do “post-growth strategies, reorienting the economy towards sufficiency, equity and human well-being” mean?

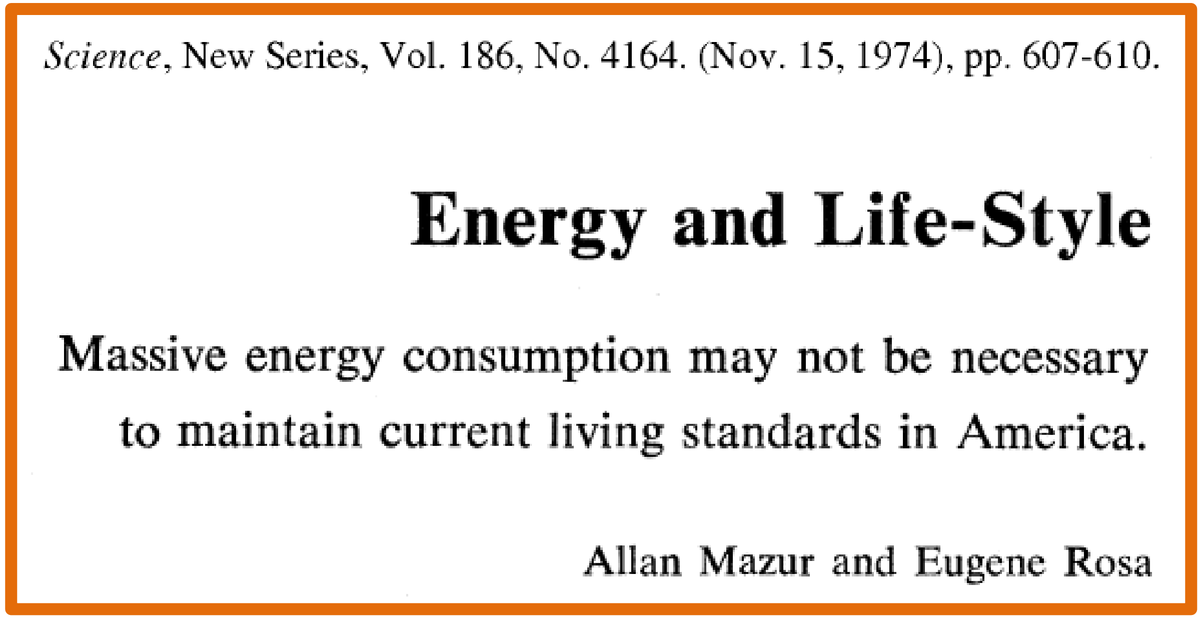

Stylised facts
on
Energy &
Well-being

Energy & well-being: stylised fact #1

"The high plateau"

Beyond a certain level, energy increases do not result in measurably higher well-being.



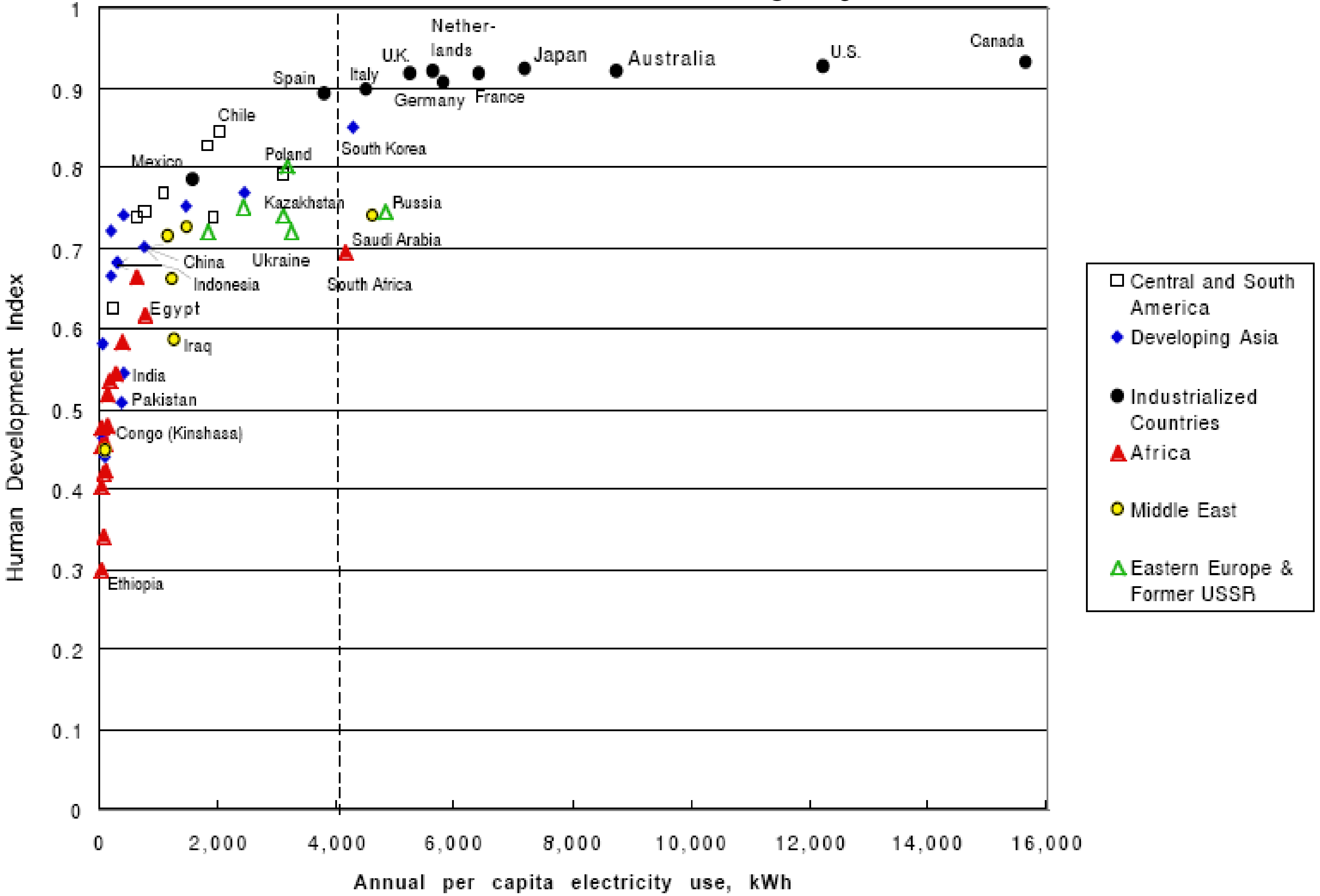

Science, New Series, Vol. 186, No. 4164. (Nov. 15, 1974), pp. 607-610.

Energy and Life-Style

Massive energy consumption may not be necessary to maintain current living standards in America.

Allan Mazur and Eugene Rosa

"The high plateau"

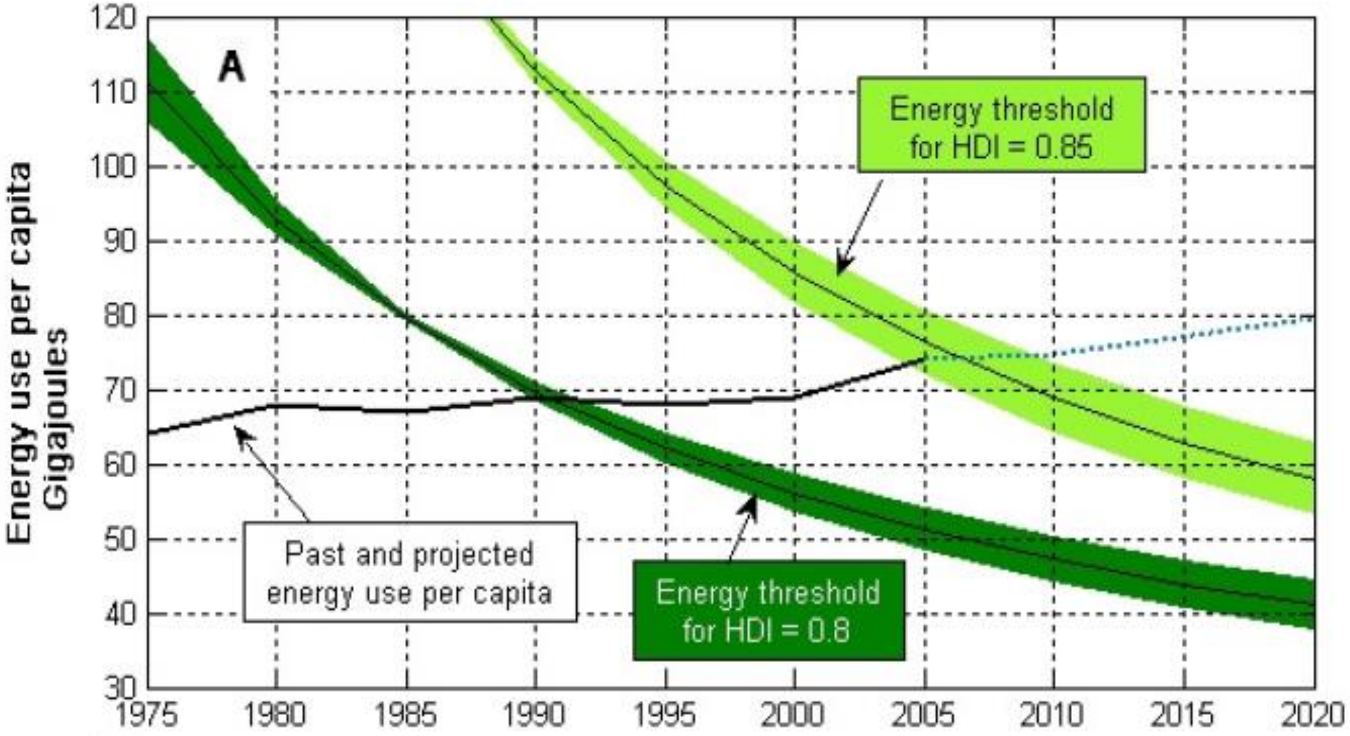


Source: A. Pasternak, United States Department of Energy, 2000

Energy & well-being: stylised fact #2

"Dynamic decline"

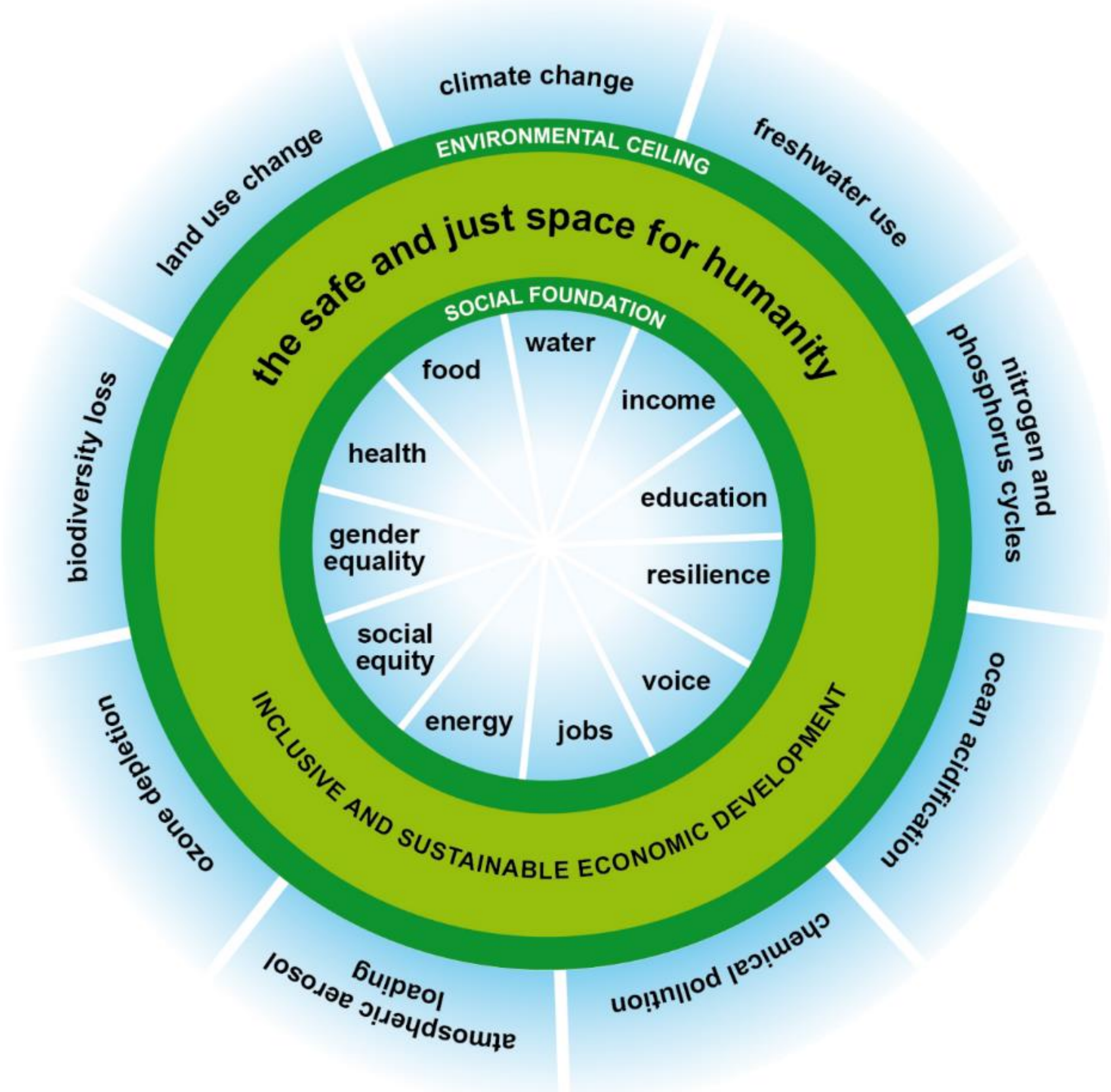
The energy threshold associated with any given level of well-being decreases dramatically over time.

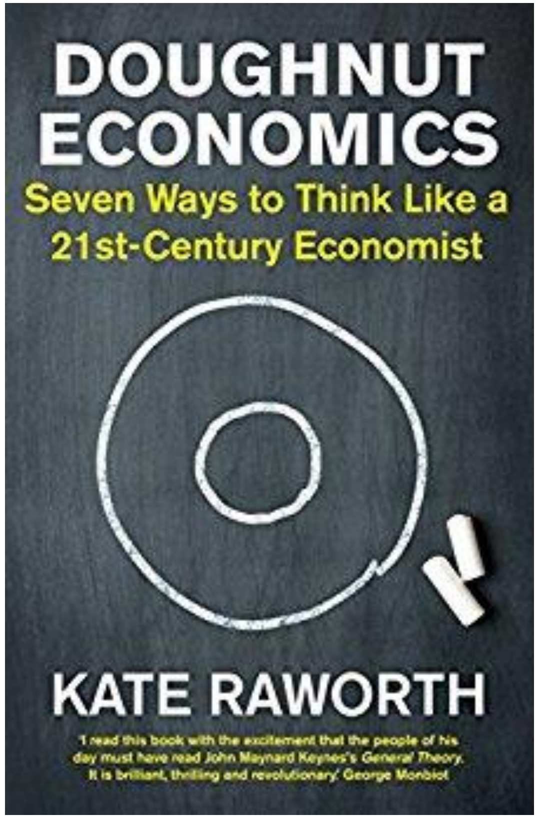


*Steinberger, J. K. and J. T. Roberts (2010). "From constraint to sufficiency: the decoupling of energy and carbon from human needs, 1975-2005." Ecological Economics **70**(2): 425-433.*

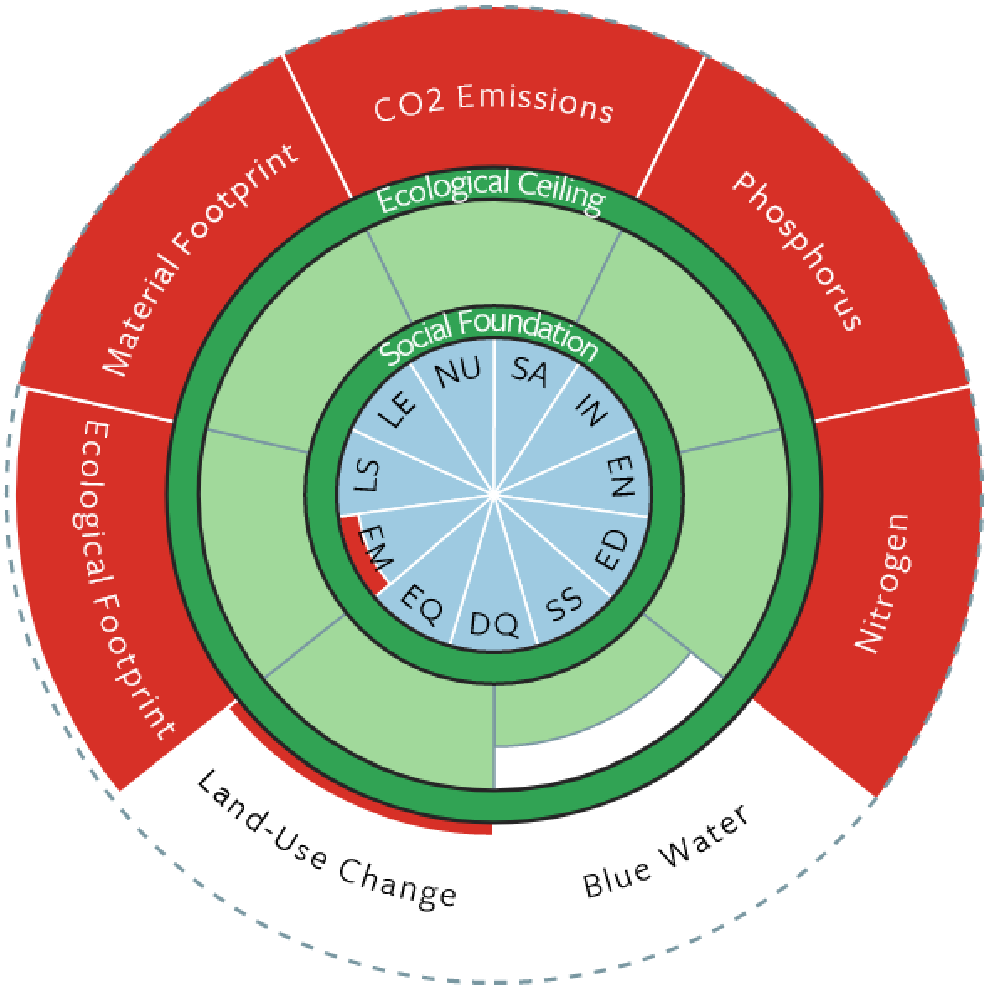
Does well-being within limits exist internationally?

Testing Kate Raworth's Doughnut.

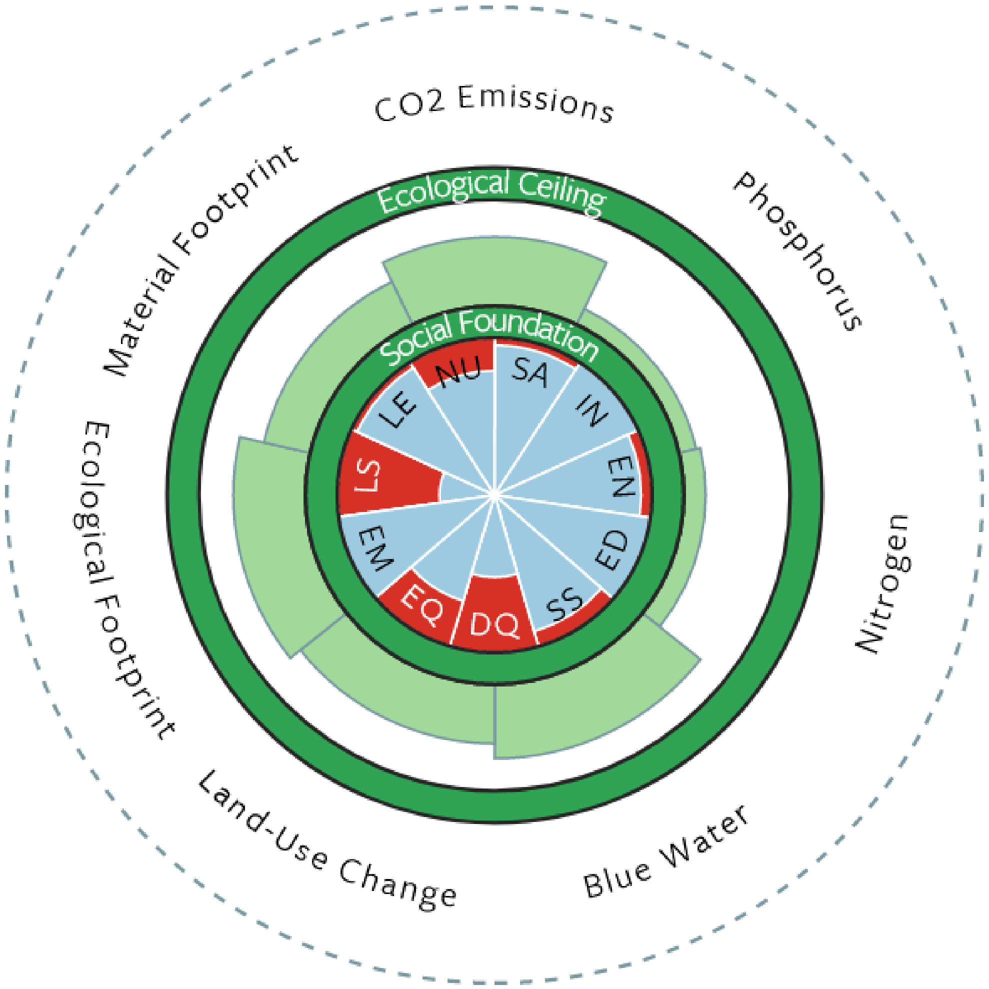




France

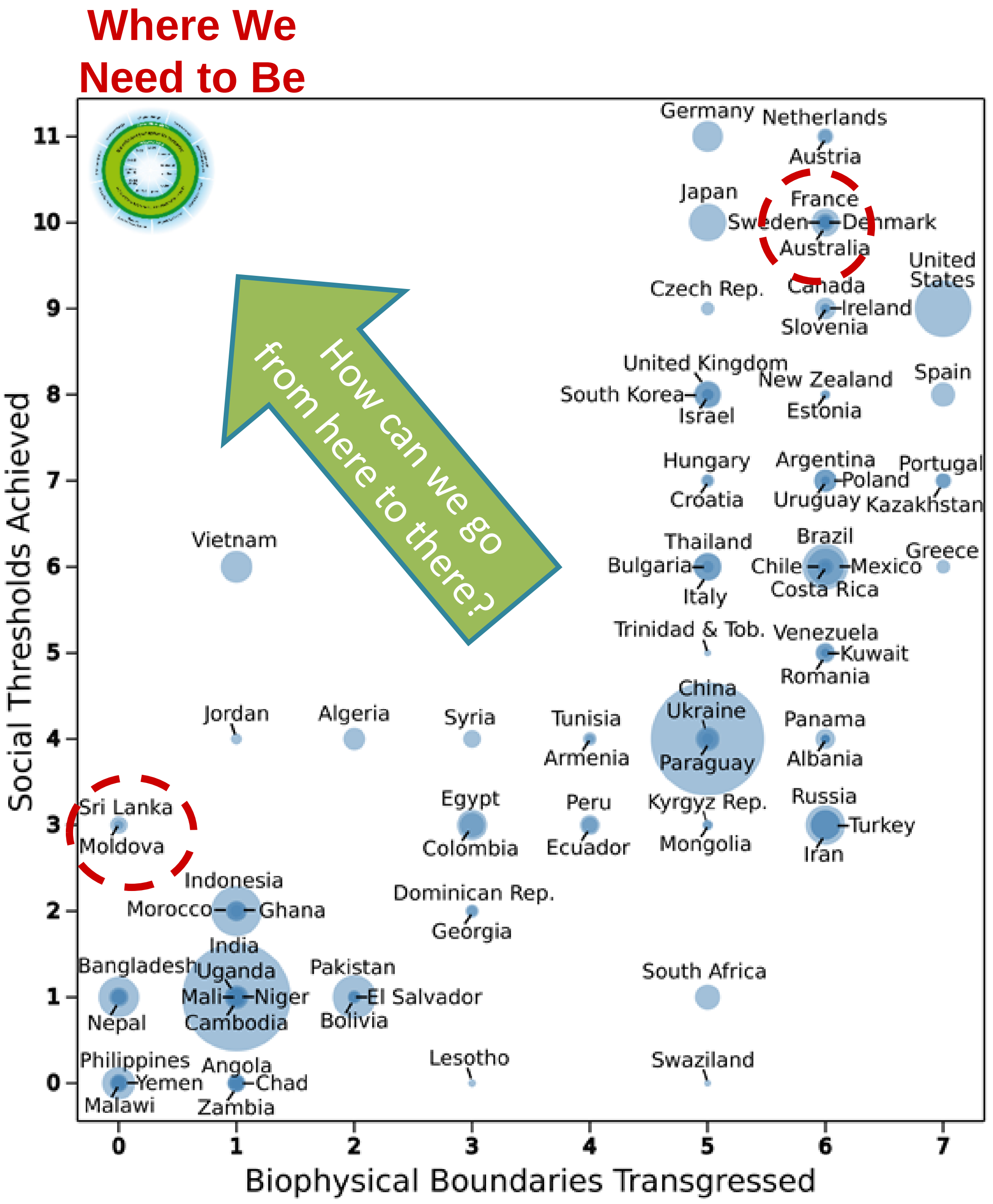


Sri Lanka



LS - Life Satisfaction
LE - Healthy Life Expect.
NU - Nutrition
SA - Sanitation
IN - Income
EN - Access to Energy
ED - Education
SS - Social Support
DQ - Democratic Quality
EQ - Equality
EM - Employment

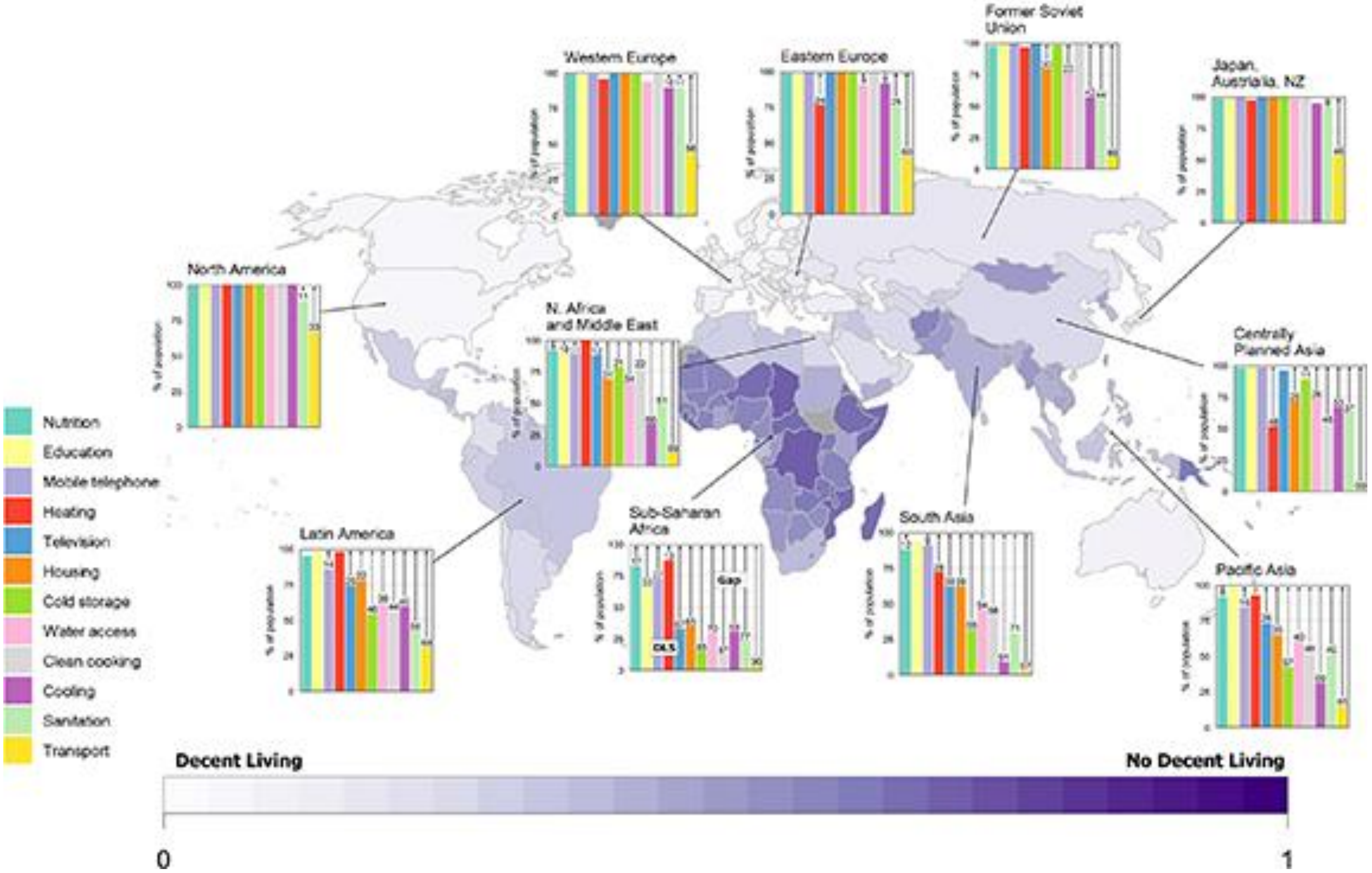
https://goodlife.leeds.ac.uk



O'Neill, Fanning, Lamb & Steinberger 2018, Nature Sustainability

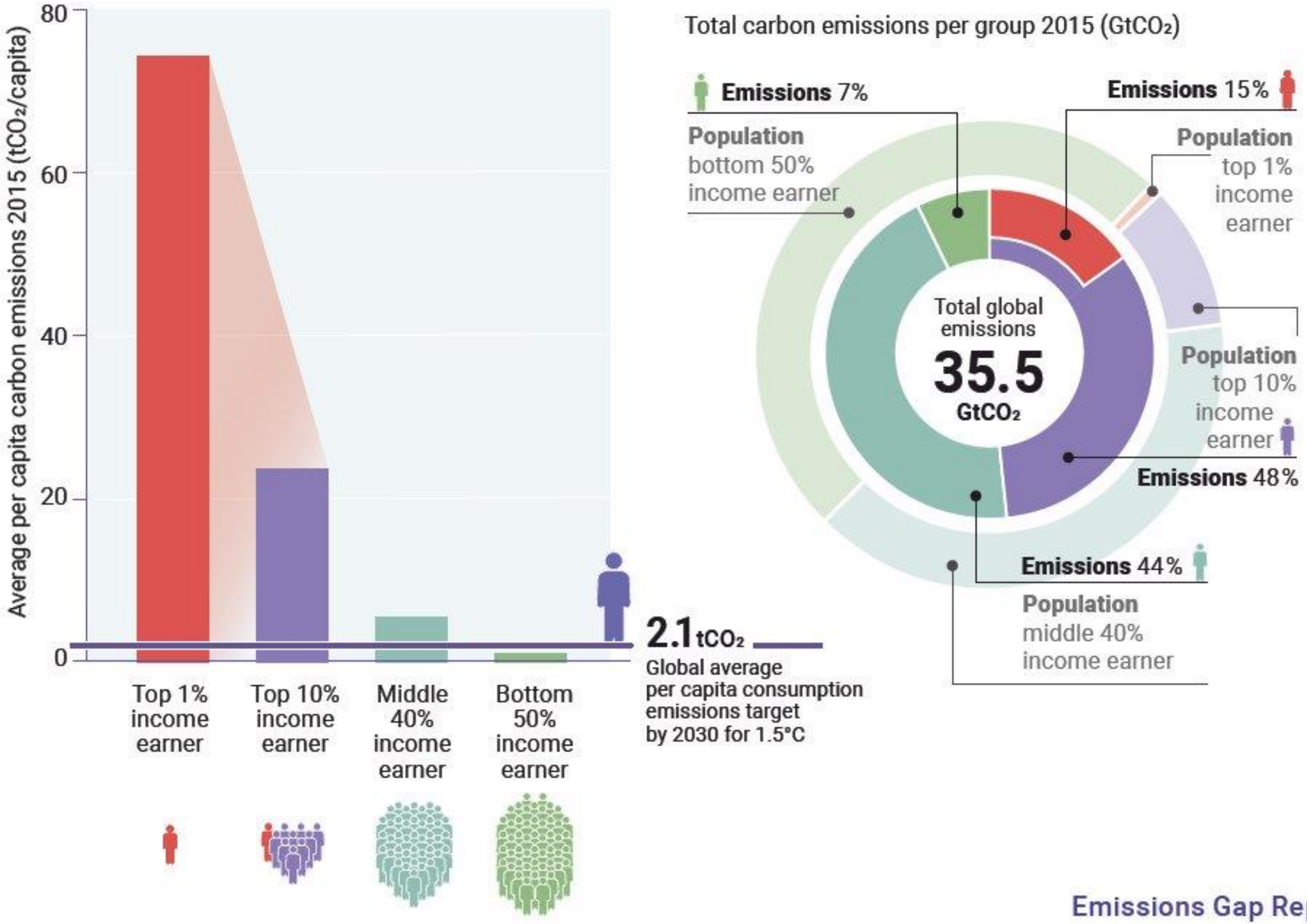
https://goodlife.leeds.ac.uk

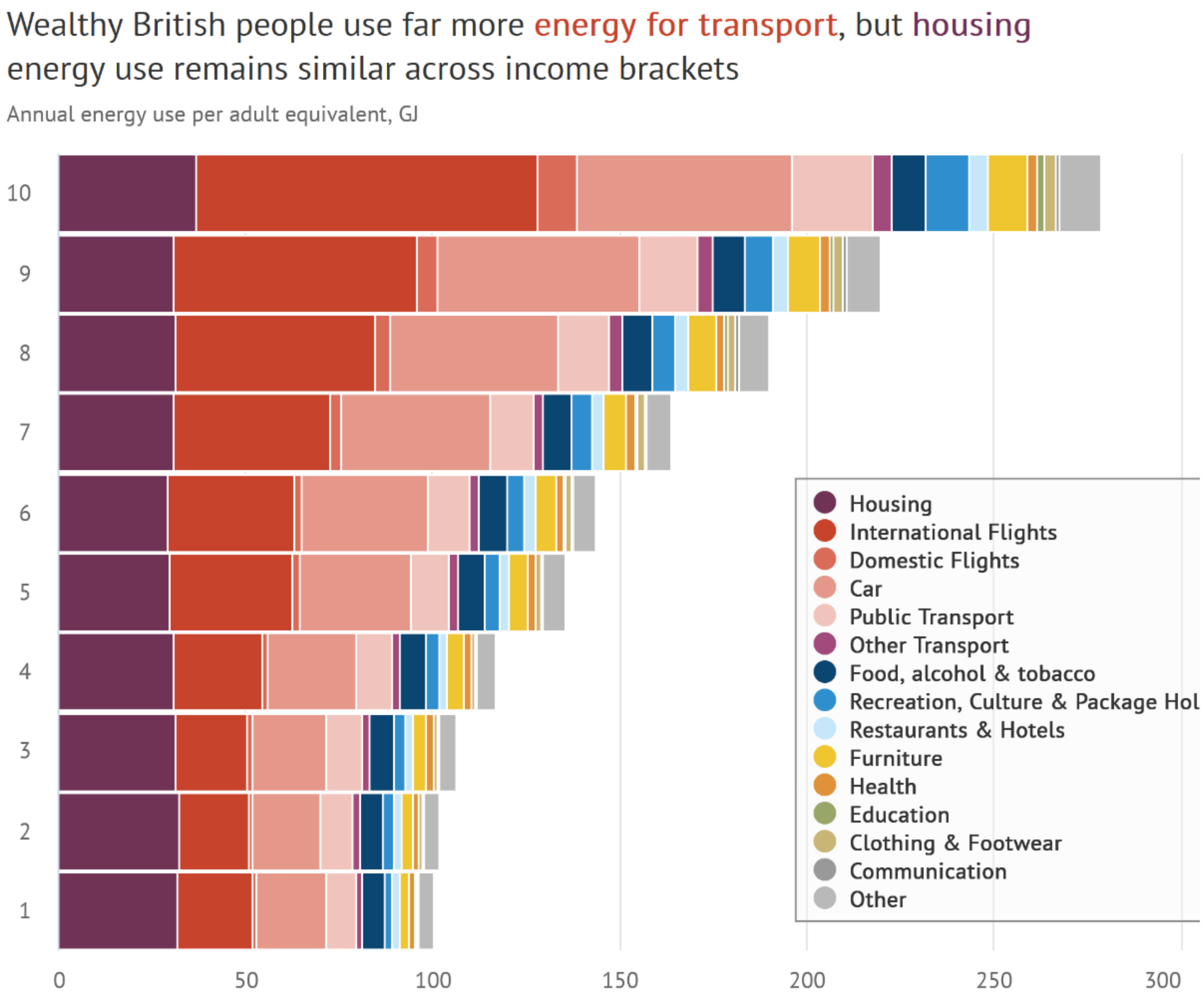
Mean decent living standards deprivation indicator



Kikstra et al 2021 “Decent Living Gaps”


What role does
inequality play?

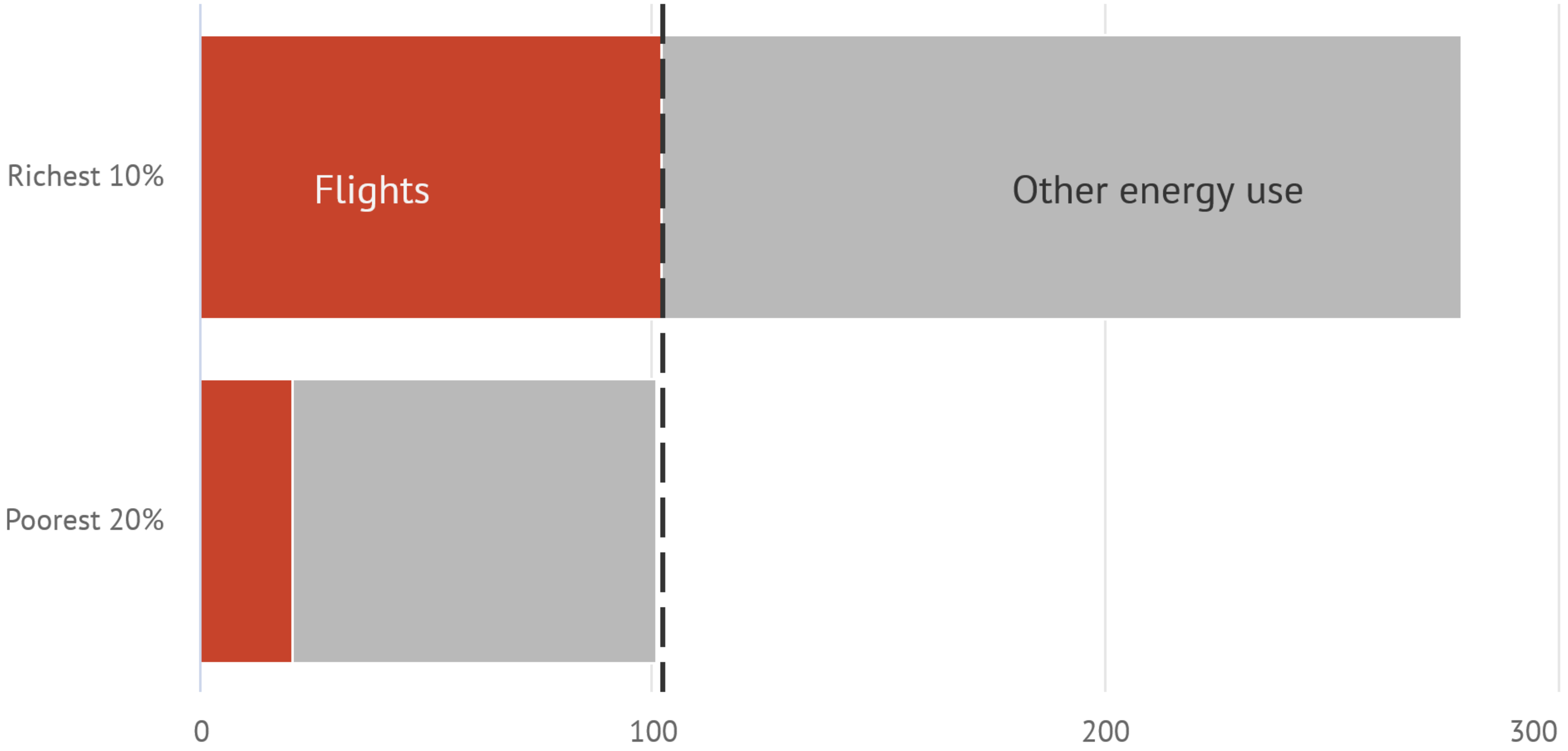

Average per capita carbon emissions 2015 (tCO₂/capita)
80
60
40
20
0
Top 1% income earner
Top 10% income earner
Middle 40% income earner
Bottom 50% income earner
2.1tCO₂
Global average per capita consumption emissions target by 2030 for 1.5°C
Total carbon emissions per group 2015 (GtCO₂)
Emissions 7%
Population bottom 50% income earner
Emissions 15%
Population top 1% income earner
Total global emissions
35.5
GtCO₂
Population top 10% income earner
Emissions 48%
Emissions 44%
Population middle 40% income earner



Baltruszewicz et al 2023
Carbon Brief https://www.carbonbrief.org/richest-people-in-uk-use-more-energy-flying-than-poorest-do-overall/

The richest British people use more energy flying than the poorest use overall

Annual energy use per adult equivalent, GJ



Baltruszewicz et al 2023
Carbon Brief https://www.carbonbrief.org/richest-people-in-uk-use-more-energy-flying-than-poorest-do-overall/

NEPAL, VIETNAM AND ZAMBIA

EF = Energy Footprint

Includes international production and trade.

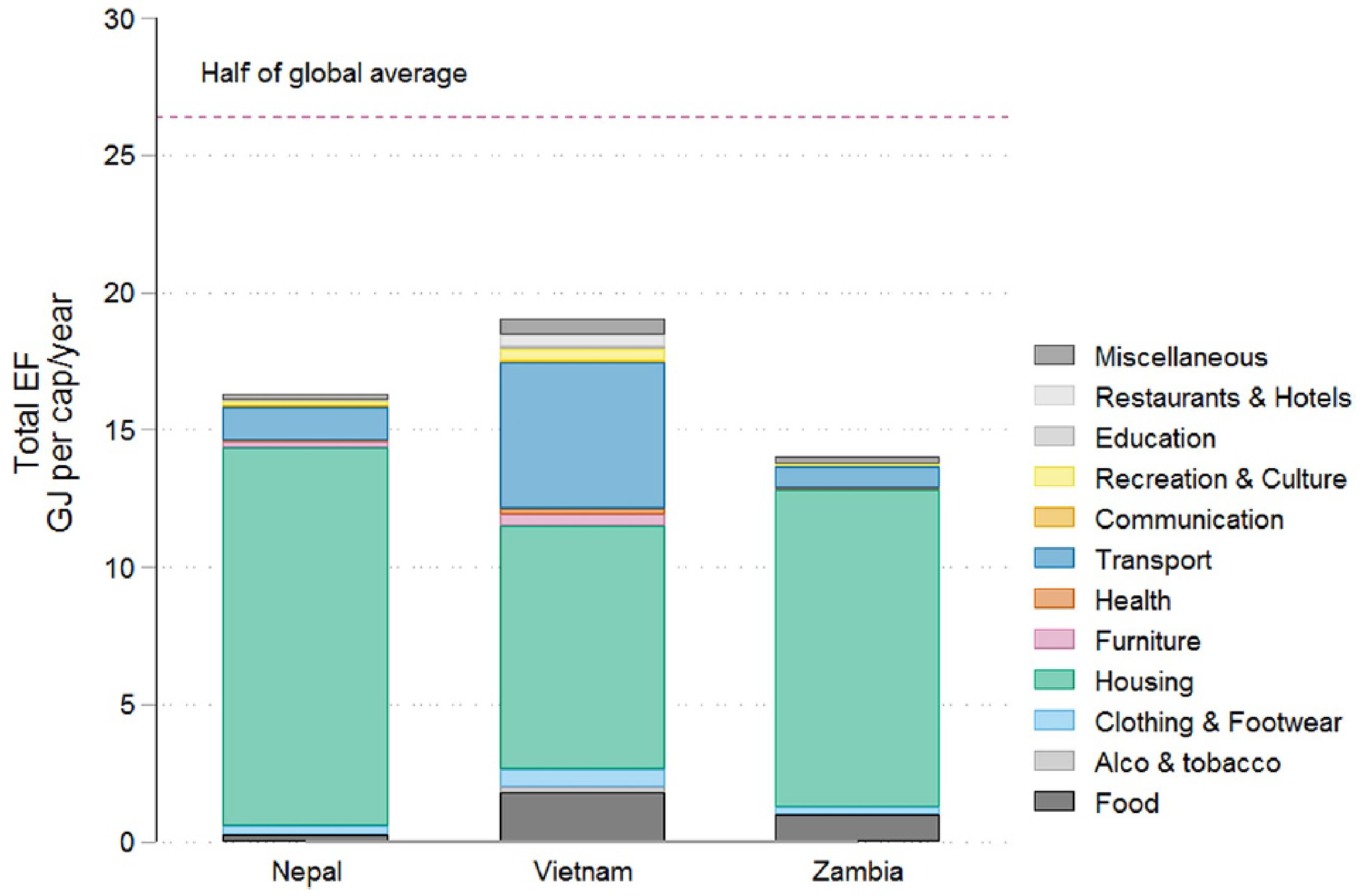


Figure 3. Total energy footprints in Nepal, Vietnam, and Zambia by consumption categories (GJ cap^{-1} yr^{-1}).

Baltruszewicz et al 2021

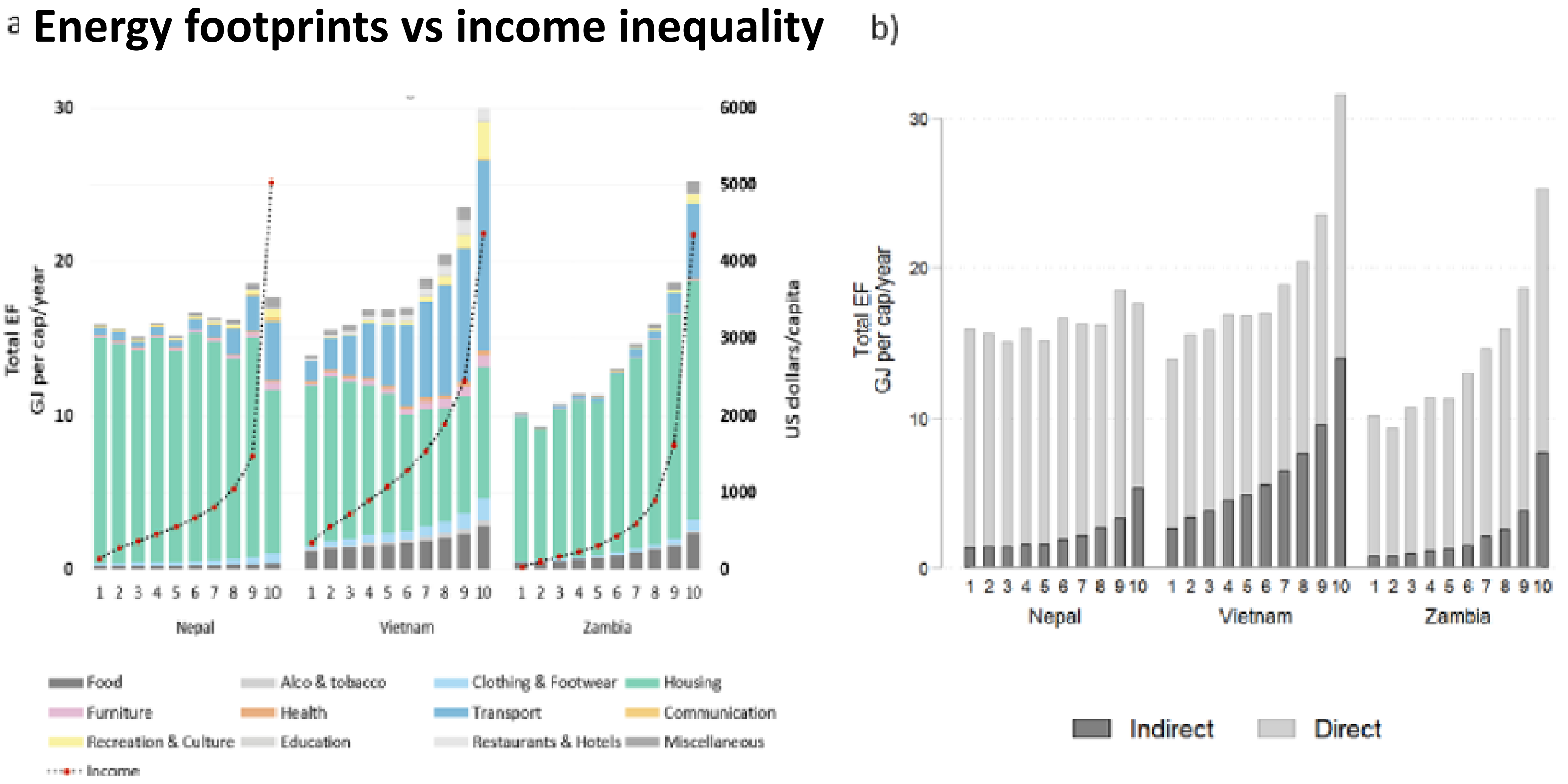


Figure 4. Household energy footprints by income deciles for Nepal, Vietnam, and Zambia for (a) 12 consumption groups. The *y*-axis represents average income per capita using the equalized OECD scale. (b) Total direct and indirect energy use.

ZOOM INTO RESIDENTIAL ENERGY

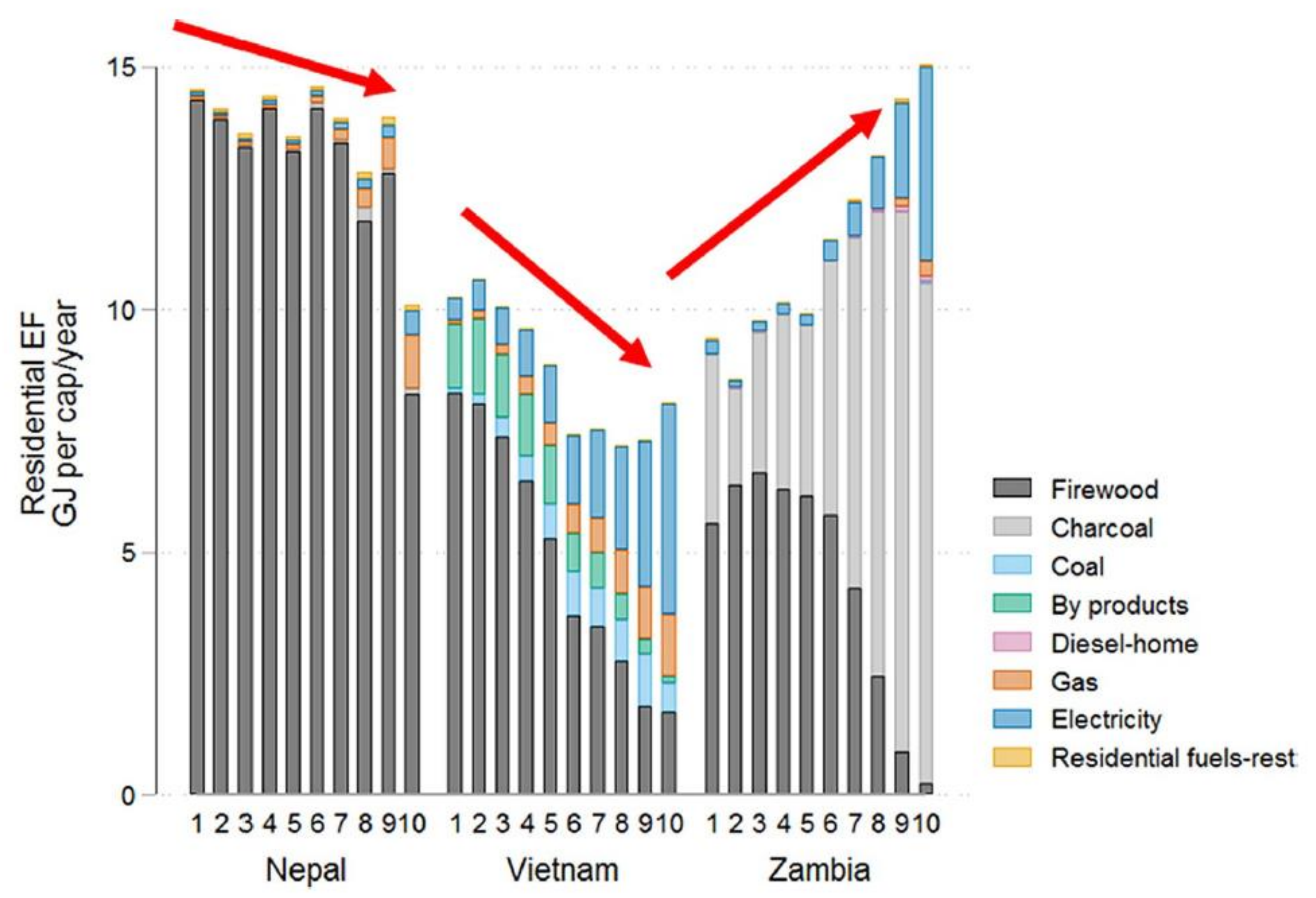
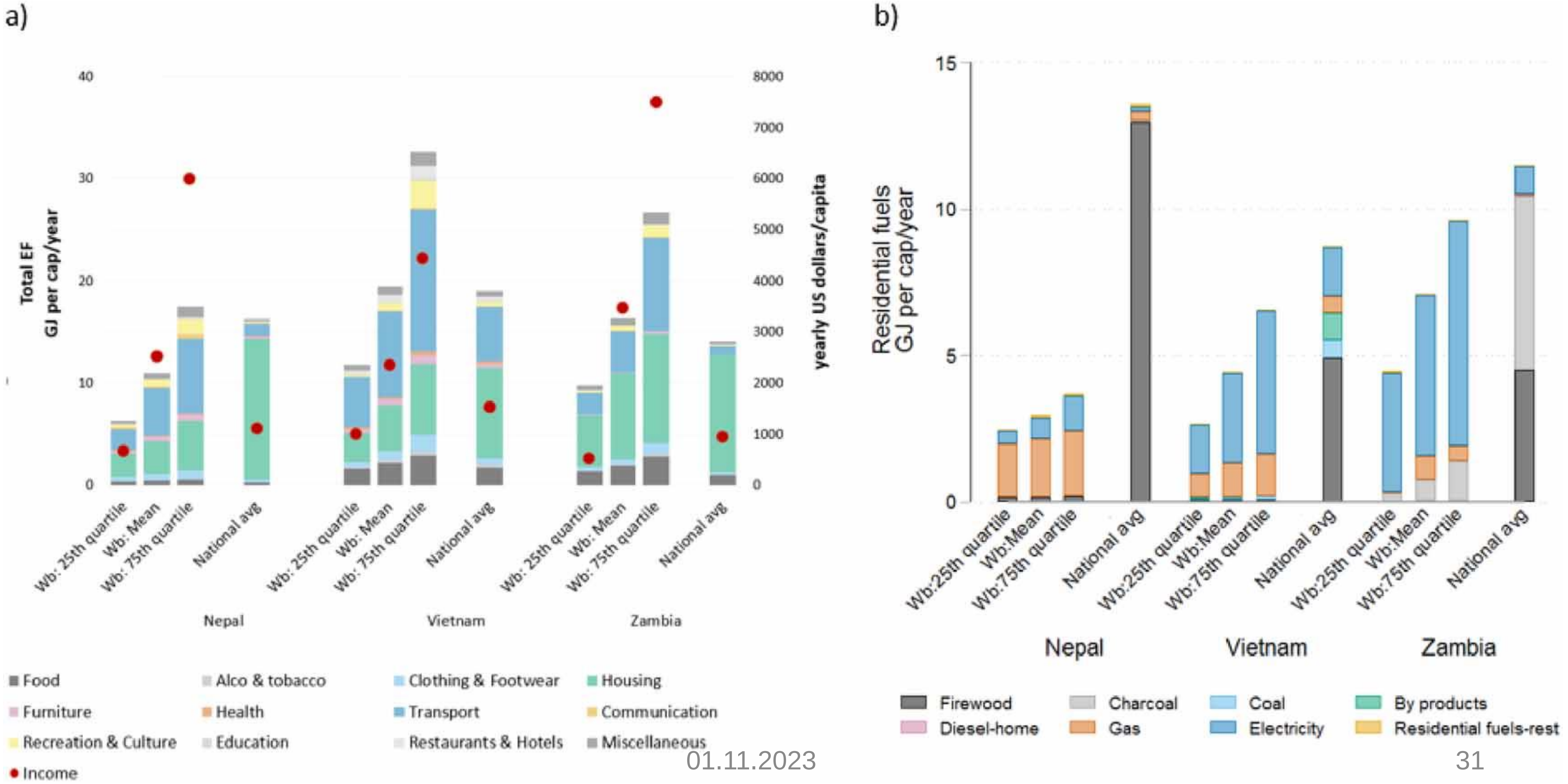


Figure 5. Per capita energy footprints by income deciles categorized by residential fuels in Nepal, Vietnam and Zambia.

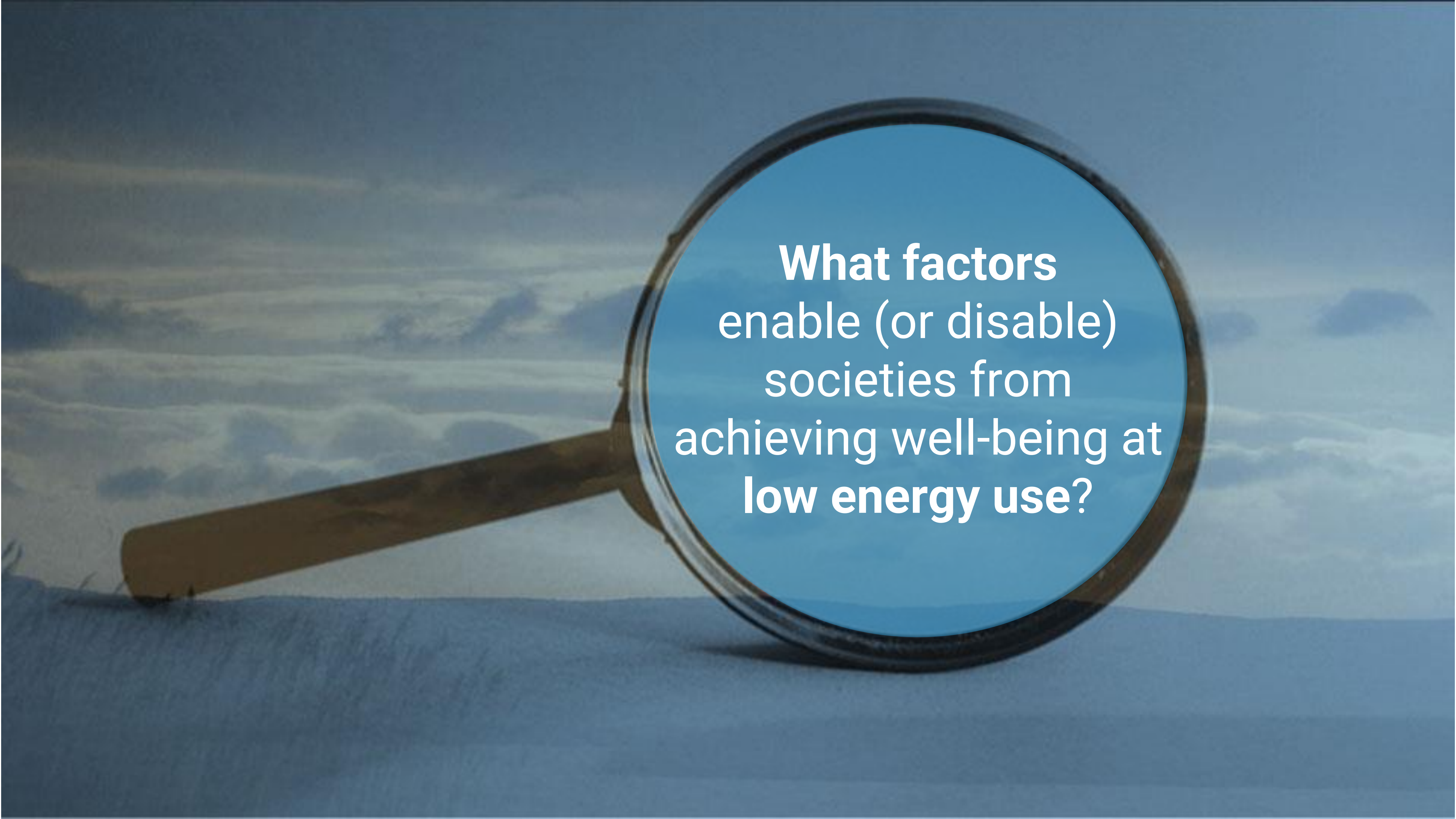
FOOTPRINTS AND WELLBEING



CONCLUSION?

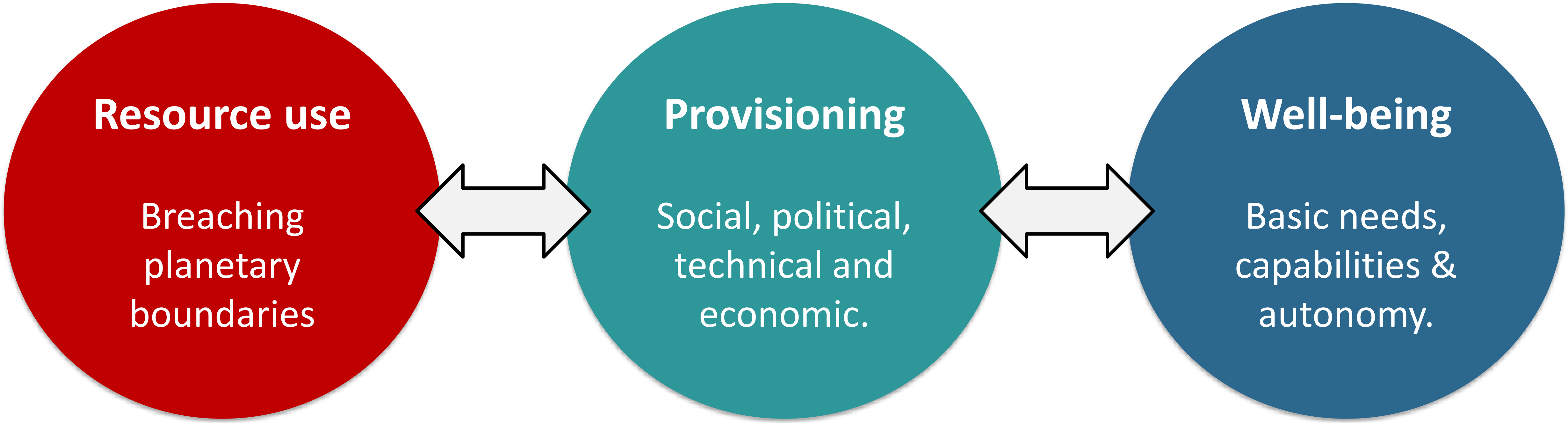
in Global South[3] (2018). Whereas in the Global North we need to challenge the consumption-oriented life-styles and bring sufficiency on agenda, for the Global South, the achievement of basic well-being outcomes mean efficiency gains and ensuring access to collective provisioning and protection that improve housing conditions, health, education, and communication. Indeed, our results demonstrate that the achievement of basic needs does not necessitate an increase in energy use, but rather (through improving energy services efficiency) improvements in the provisioning systems. This is an important finding, contradicting the narrative that achieving basic well-being outcomes require increased income or individual (rather than collective) consumption of energy. Rather than focusing on how much energy is used, we find more relevant the question of how and for which energy services.

Baltruszewicz et al 2021



What factors enable (or disable) societies from achieving well-being at **low energy use**?

PROVISIONING SYSTEMS ARE THE LYNCHPIN BETWEEN PLANETARY BOUNDARIES AND WELLBEING.



Provisioning systems could enable good lives at low resource use, but are often engineered to create resource dependency.

Dependency on resource-intensive consumption is itself an industrial product, driven by decades of lobbying, subsidies, and state-regulatory capture.

Mattioli et al 2020 A political economy of car dependency

Socio-economic factors enabling well-being at lower energy use

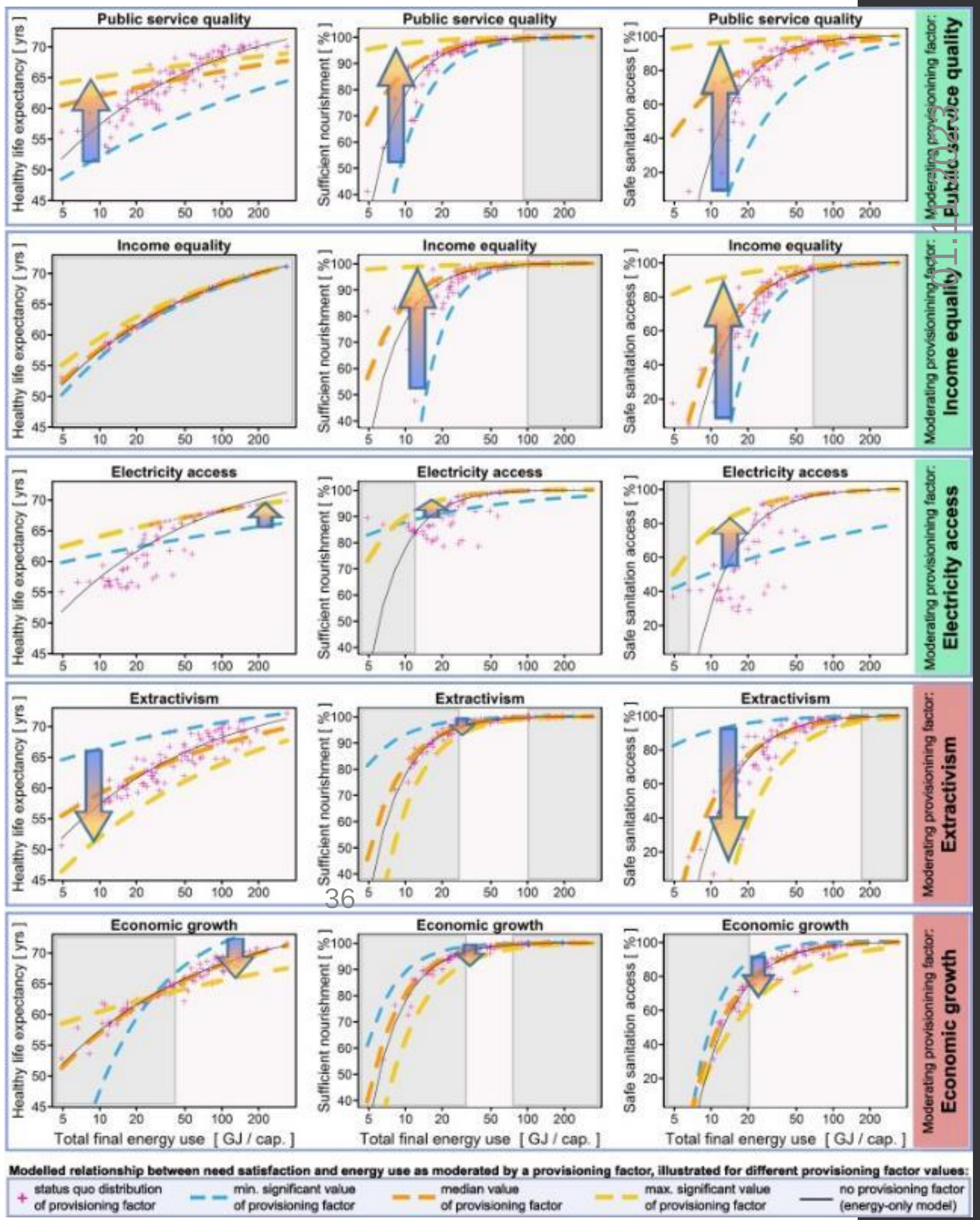
Positive factors

- Public services
- Income equality
- Democracy
- Electricity & sanitation access.

Negative factors:

- Extractivism
- Economic growth above a moderate income.

Vogel et al 2021



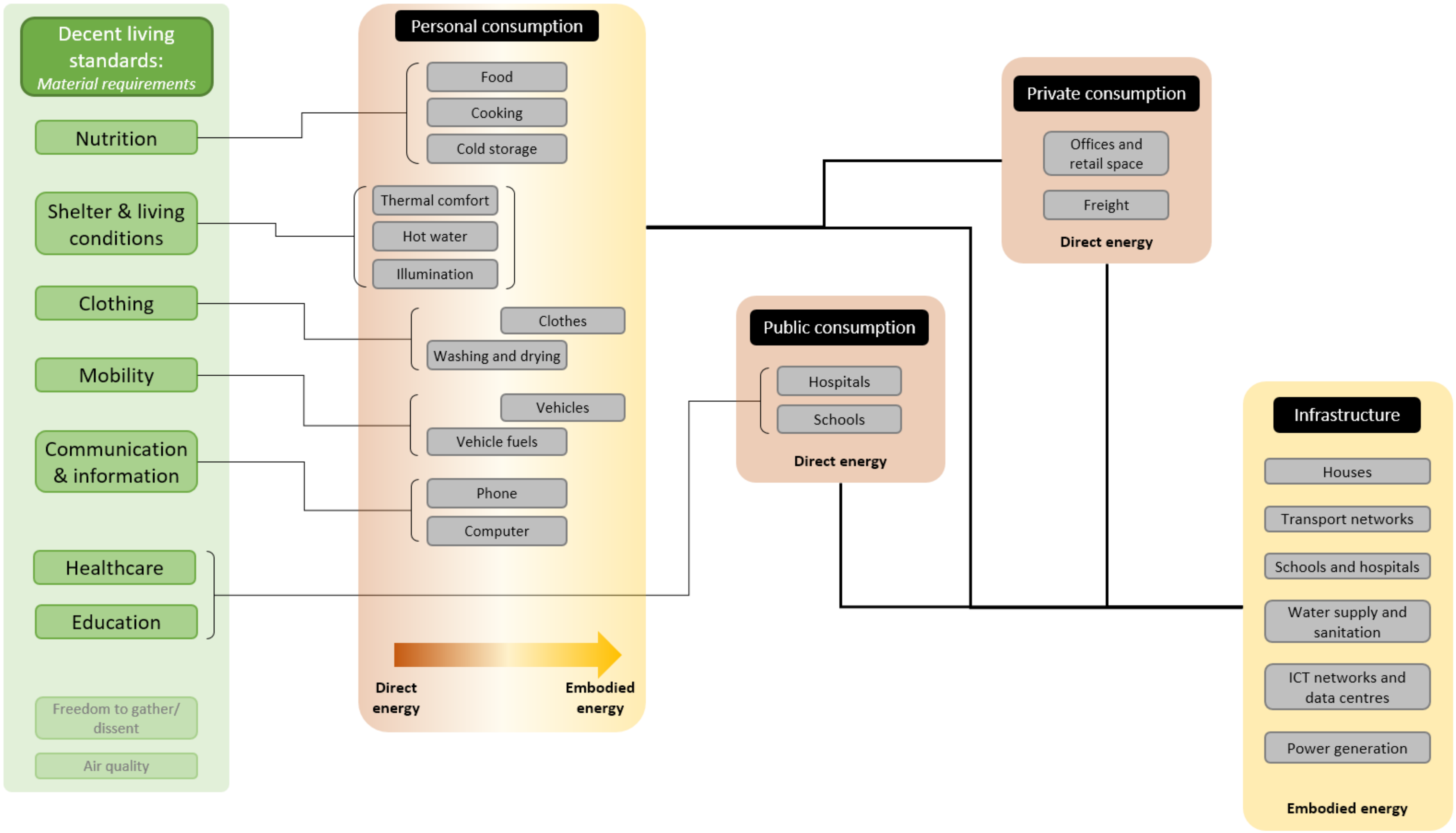
Modelling a low energy & high well-being future ….

Can we model a different future?

- Based on the "Decent Living Energy" framework of Professor Narasimha Rao, Yale.
- Connects needs to sufficient levels of energy services.
- Global model takes into account technology improvements, equal distribution, lower demand levels.

Millward-Hopkins, Steinberger, Rao & Oswald, 2020, Global Environmental Change

What the model looks like, and takes into account



Millward-Hopkins, Steinberger, Rao & Oswald, 2020, Global Environmental Change

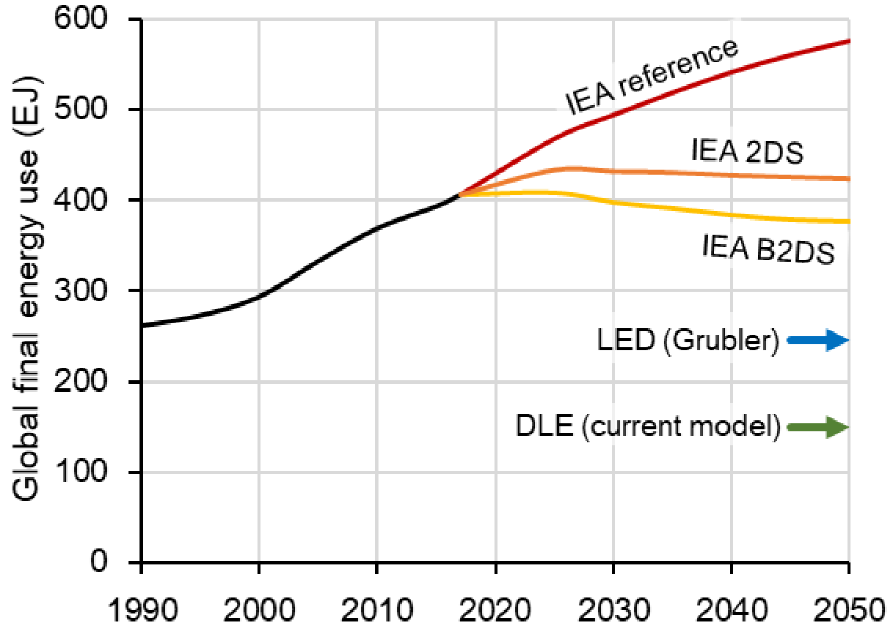
Decent Living Energy Services

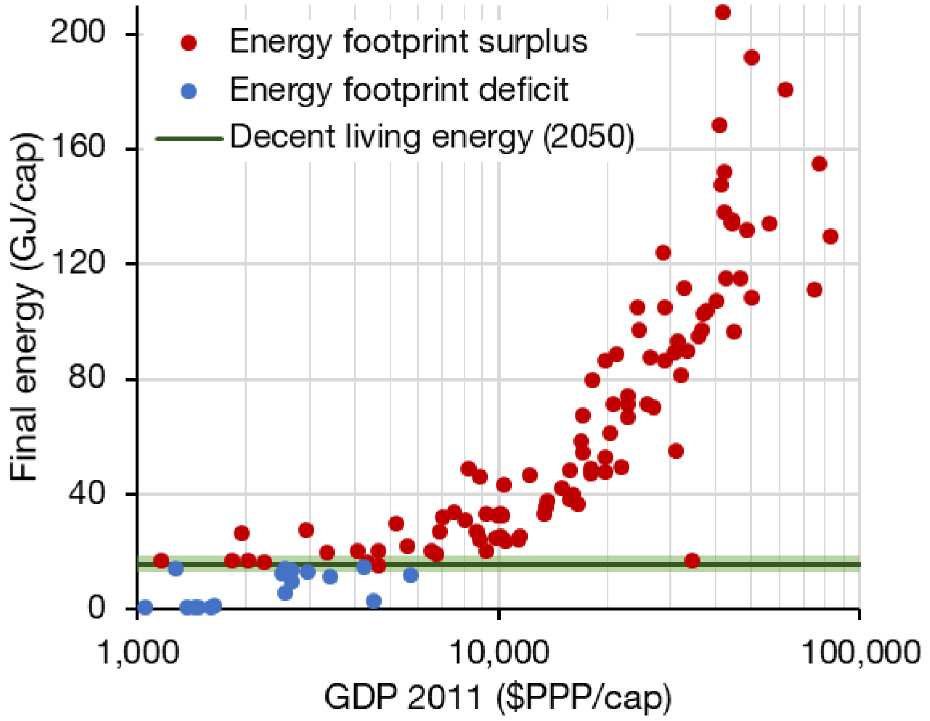
Energy service	Level per person	Depends upon
Nutrition	2000–2150 kcal/day	Demography
Living space heated or cooled to 20 degrees year round	15 m2 per person	Rural-urban Climate
Clean water	50 liters, of which 20 heated	
Communication	1 mobile phone per person 1 laptop per household	
Mobility	5’000 - 15’000 km/year	Rural-urban
Health	8 hospital beds per 1000 persons	
Education	5-19 year-olds in school	Demography

And the energy embodied in appliances, infrastructure, etc.

Millward-Hopkins, Steinberger, Rao & Oswald, 2020, Global Environmental Change

Global decent living energy results



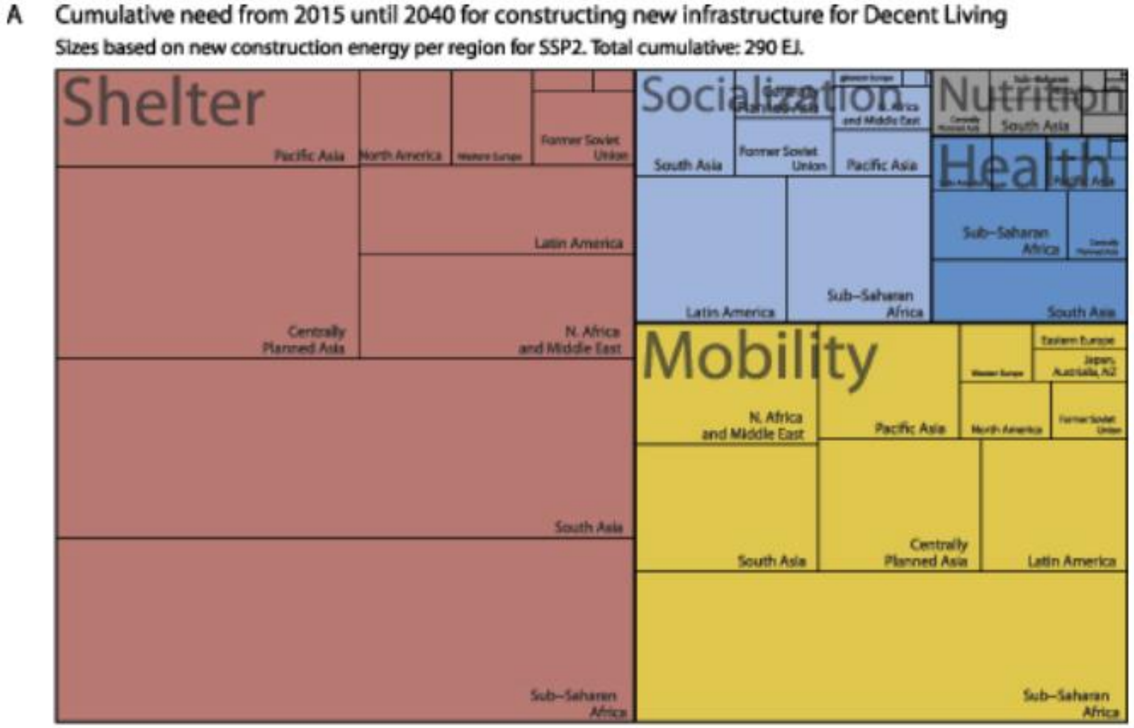


Decent Living Energy for all achievable at 40% of current energy use, despite population growth until 2050.

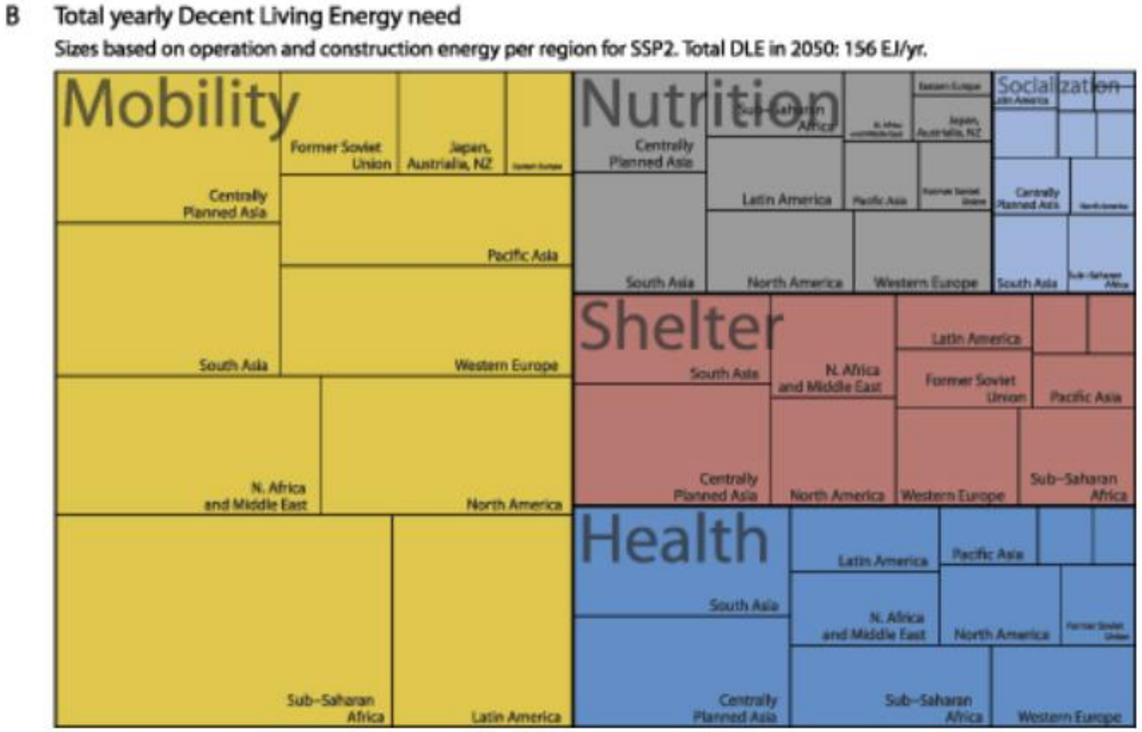
Millward-Hopkins, Steinberger, Rao & Oswald, 2020, Global Environmental Change

ENERGY FOR DECENT LIVING: INVESTMENT VS. ANNUAL USE

Investissements en infrastructure: 290 EJ



Utilisation annuelle après investissement: 156 EJ



Kikstra et al 2021

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A POST GROWTH DEAL

WP1 Planetary **Possibilities**

- North-South convergence scenarios of resource use.
- Material prerequisites for decent living.
- Postgrowth IAM scenarios.

WP2 Postgrowth **Policies**

- Mapping unequal exchange.
- Post-Growth Deals for EU and Global South.
- Modelling and feedback on policies.

WP3 Postgrowth **Provisioning**

- Determinants of social progress.
- Democratic provision alternatives.
- Modelling transformed provision.

WP4 Postgrowth **Politics**

- Learning from labour, peasant and municipal movements.
- Role of protest and conflict.
- Models of postgrowth political organizing.

WP4 Postgrowth **in Practice**

- Planning processes for postgrowth in practice.
- Execution and public consultation for Post-Growth.
- Prototyping Post-Growth Deals.

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Autonomous University of Barcelona, Spain

Prof. Julia Steinberger

University of Lausanne, Switzerland

Prof. Jason Hickel

LSE and Autonomous University of Barcelona, Spain

erc European Research Council
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A POST GROWTH DEAL

Major Contributions

01.

Ground-breaking models charting diverse aspects of post-growth pathways.

02.

Post-Growth Deals, for Europe and Global South, based on systemic analysis and evidence.

03.

Bridging the gap between Post-Growth theory and implementation, engaging with social movements and decision-makers.