

Living Well Within Planetary Limits: Is it possible? And what will it take?



**Philosophical
Perspectives**
for the
Anthropocene

Seminar Bern
Oct 9th 2023

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LEVERHULME
TRUST



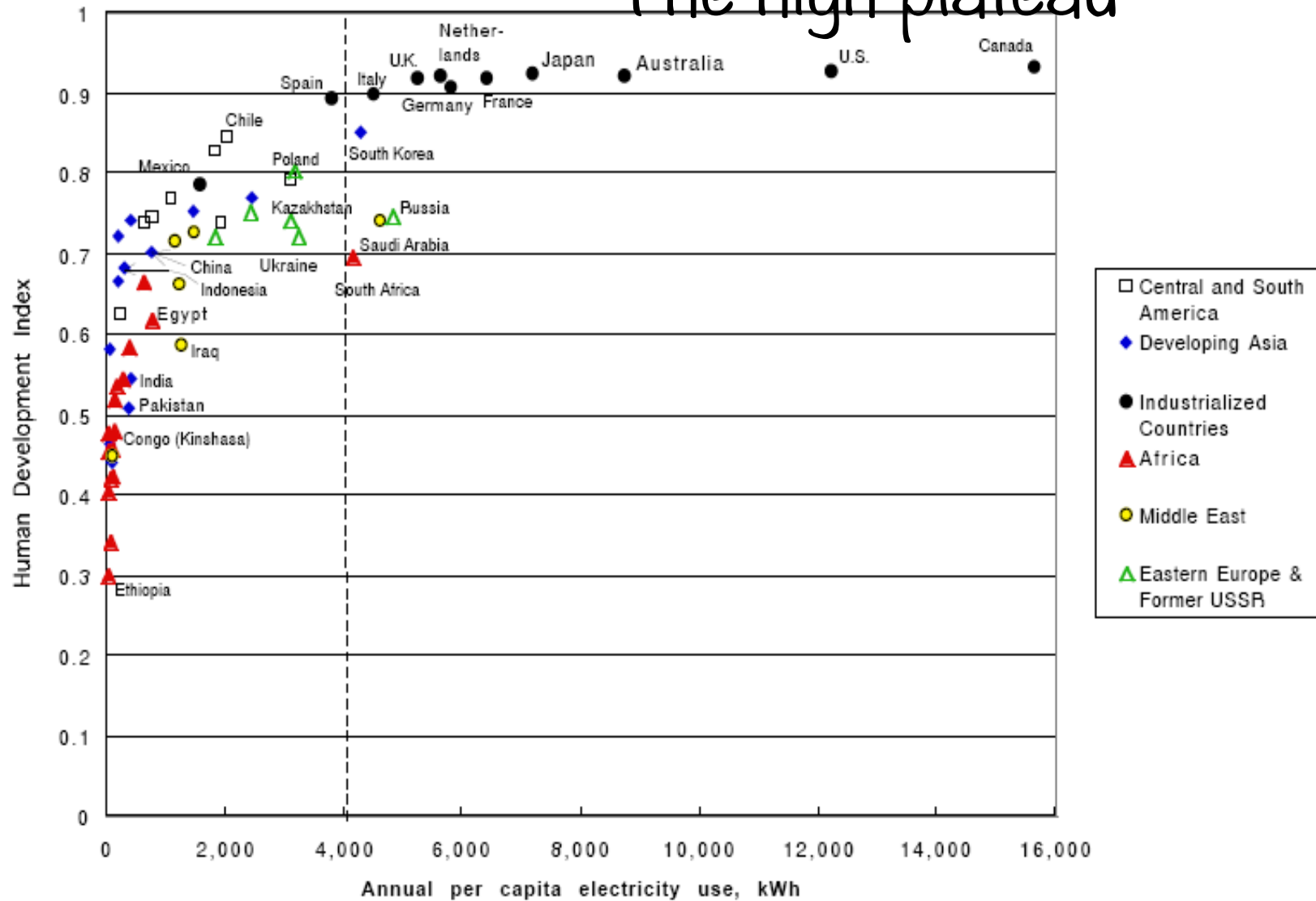
European Research Council
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Unil
UNIL | Université de Lausanne

A hand is shown from the bottom, holding a blue, stylized globe of the Earth. The globe is semi-transparent, showing faint outlines of continents. The background is a blurred landscape of a lake or river at dusk or dawn, with a dark, silhouetted forest on the far bank and a sky with soft, colorful clouds. The overall mood is serene and contemplative.

Stylised facts
on
**Energy &
Well-being**

“The high plateau”

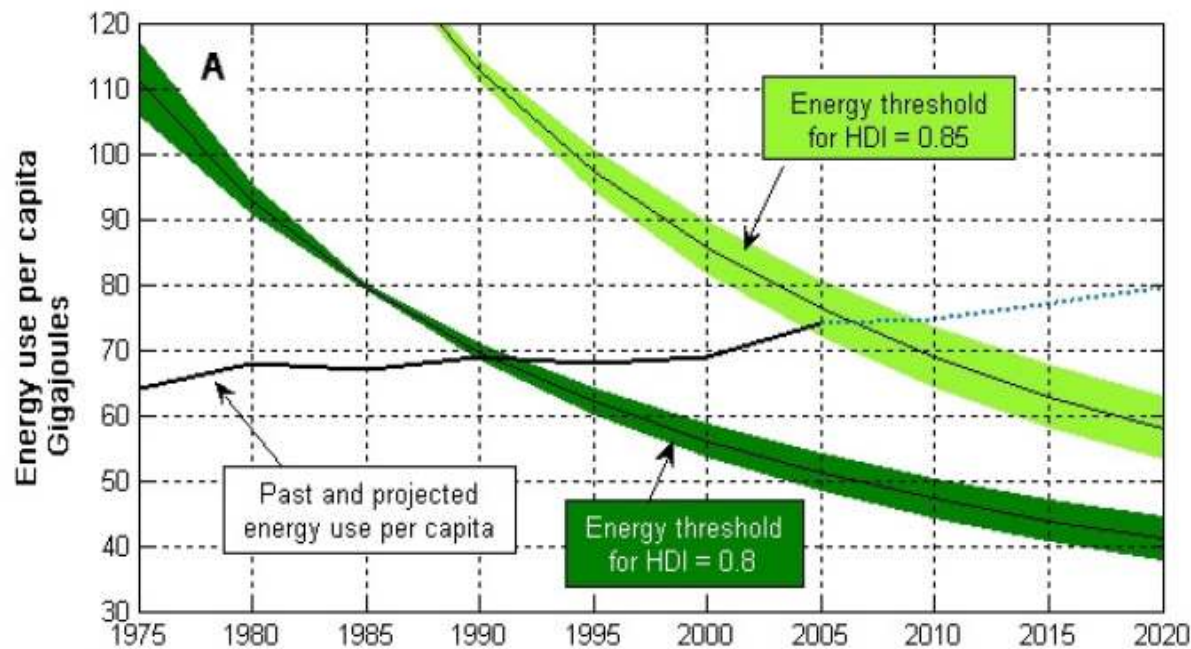


Source: A. Pasternak, United States Department of Energy, 2000

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.

“Dynamic decline”

used as a basis for emission reduction scenarios

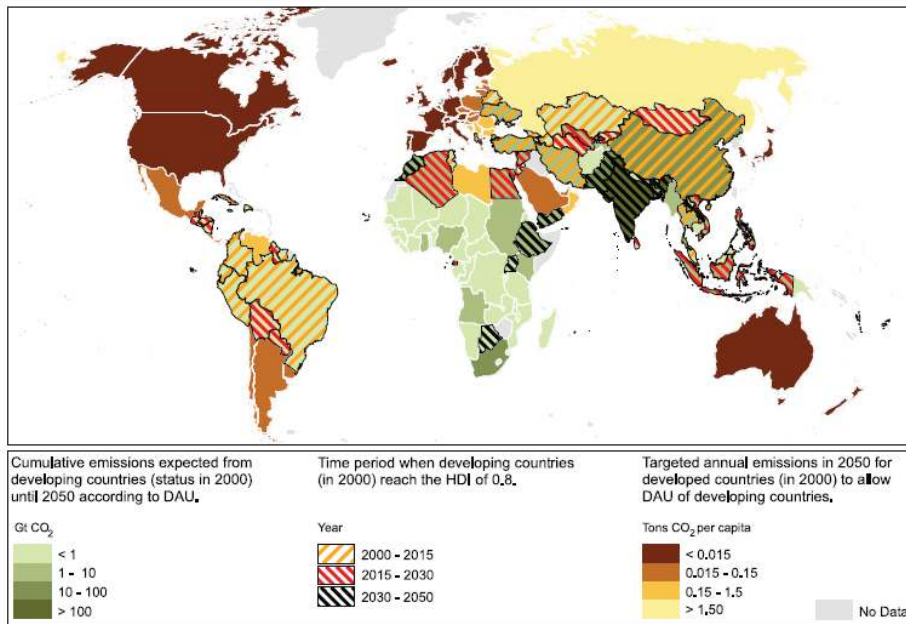
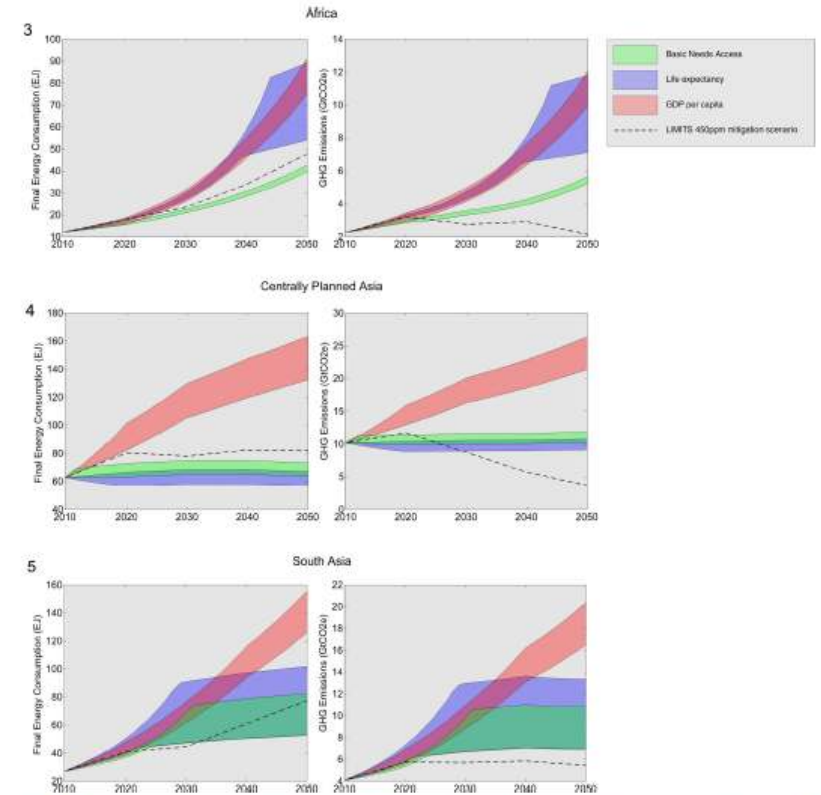


Figure 7. Global distribution of allowed emissions for DAU from developing countries (green shading) and per capita CO₂ targets in 2050 for developed countries (brown shading) under the proposed framework to keep temperatures below 2°C target – as implied by the M75 CO₂ budget. The period in time when developing countries are expected to reach an HDI of 0.8 is represented by the colored hatches.
doi:10.1371/journal.pone.0029262.g007

Costa, L., D. Rybski and J. P. Kropp (2011). "A Human Development Framework for CO₂ Reductions." *PLoS ONE* 6(12): e29262.



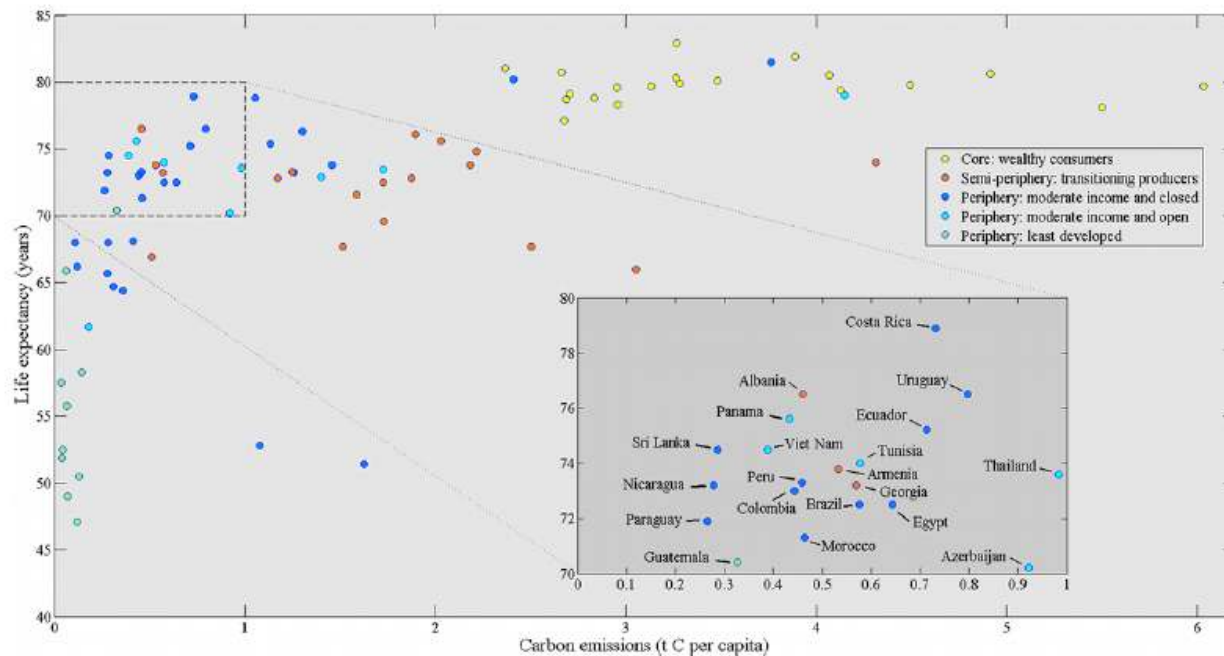
Figs. 3–5. Projections of energy and GHG emissions for human development. Final energy consumption and greenhouse gas emissions required to meet three dimensions of development from 2010 to 2050, contrasted with the LMWT 450ppm mitigation scenario. Each coloured area represents a sensitivity range: the upper bound consisting of a higher human development threshold (72.8 years, 89.9% access) and a low decoupling rate (a constant level from 2010); the lower bound consisting of low human development thresholds (70.4 years, 83.5% access) and a higher decoupling rate projected to 2020 and constant thereafter. (For interpretation of the references to color in figure legend, the reader is referred to the web version of the article.)

Lamb, W. F. and N. D. Rao (2015). "Human development in a climate-constrained world: What the past says about the future." *Global Environmental Change* 33(0): 14-22.

Energy & well-being: stylised fact #3

“Multi-dimensional diversity”

Many types of countries (climate, geography, history) achieve relatively high well-being at relatively low energy use.



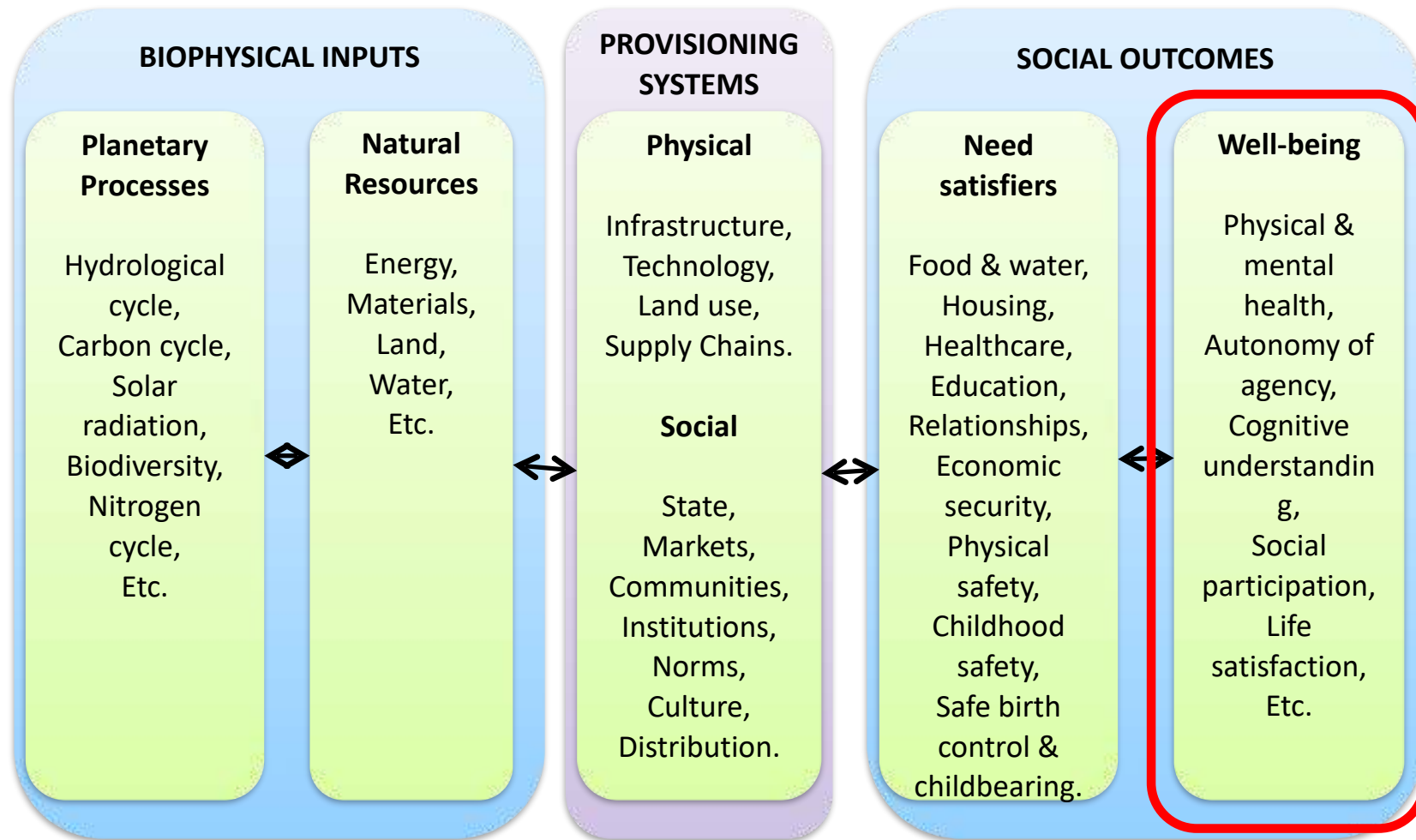
Lamb, W. F., J. K. Steinberger, A. Bows-Larkin, G. P. Peters, J. T. Roberts and F. R. Wood (2014). "Transitions in pathways of human development and carbon emissions." *Environmental Research Letters* 9(1): 014011.

**BEYOND STYLISED FACTS?
NEED FOR A NEW
FRAMEWORK: THE LIVING
WELL WITHIN LIMITS
(LILI) PROJECT**




The LiLi analytic framework

Living Well
Within
Limits [LiLi]

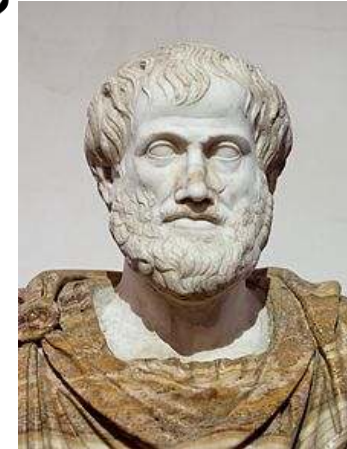


O'Neill, Fanning, Lamb & Steinberger 2018, Nature Sustainability

Welcome to Ancient Greece ...

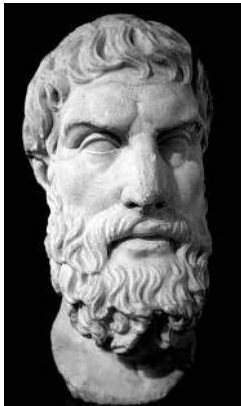


Well-being means being able to LIVE A LIFE AS FULLY AS POSSIBLE and flourish within one's society.

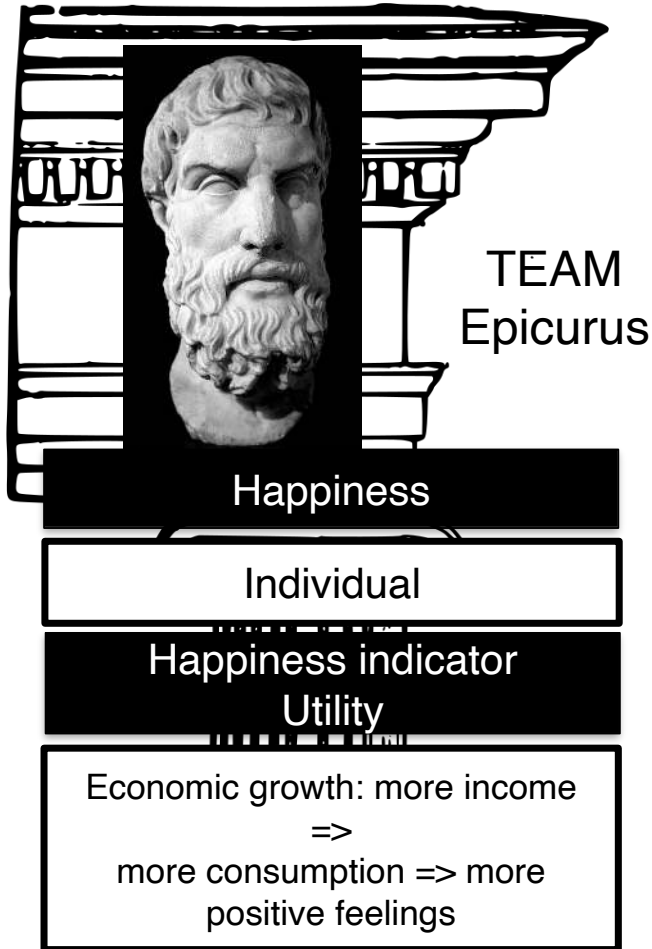


Aristotle, 350BC

Well-being means achieving the most positive and least negative feelings possible.



Epicurus, 300BC



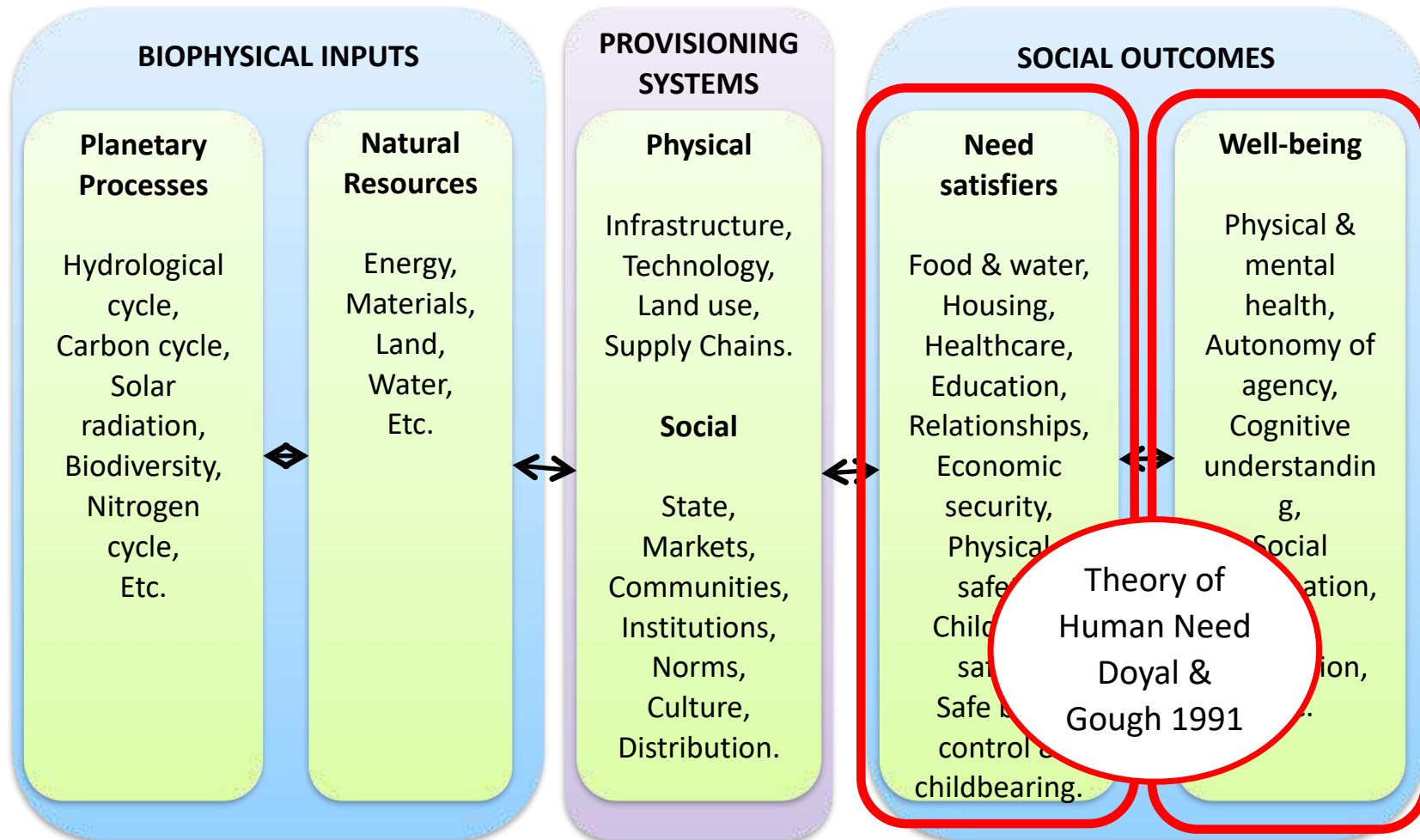
The two camps
persist to this day!



LiLI ARE New recruits of team Aristotle:
Brand Correa & Steinberger 2017
Lamb & Steinberger 2017

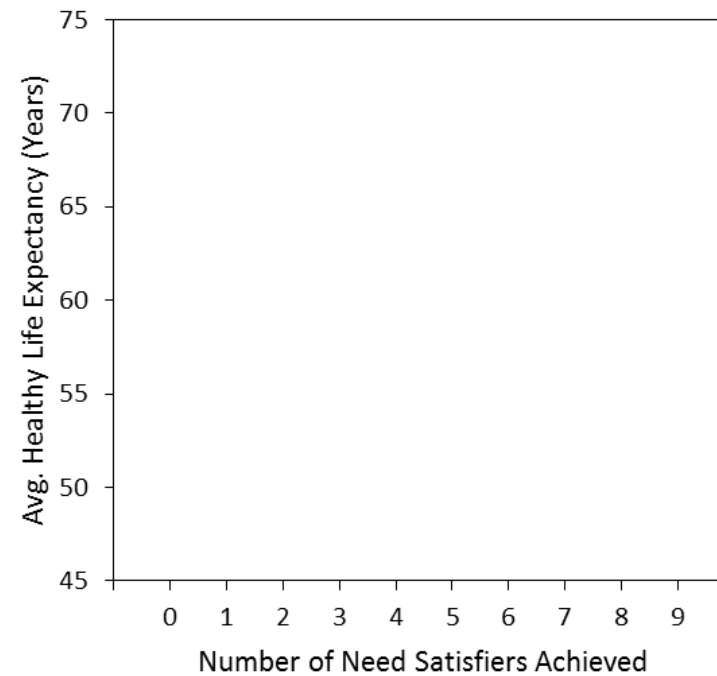
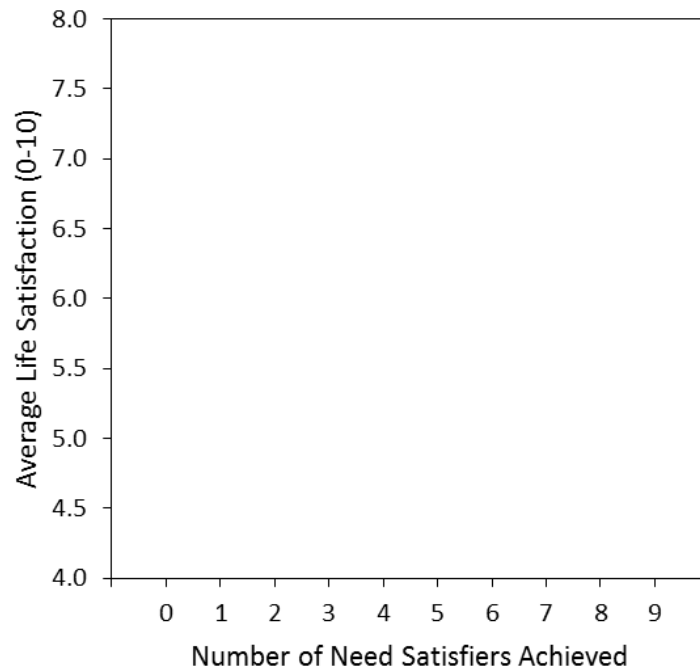
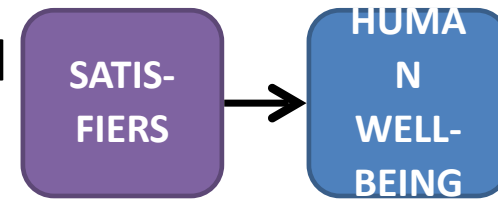
Can we test Aristotle's theory?

Living Well
Within
Limits [LiLi]



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

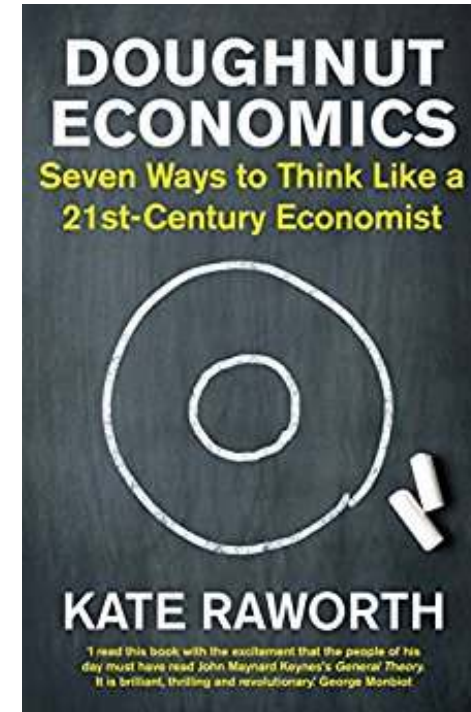
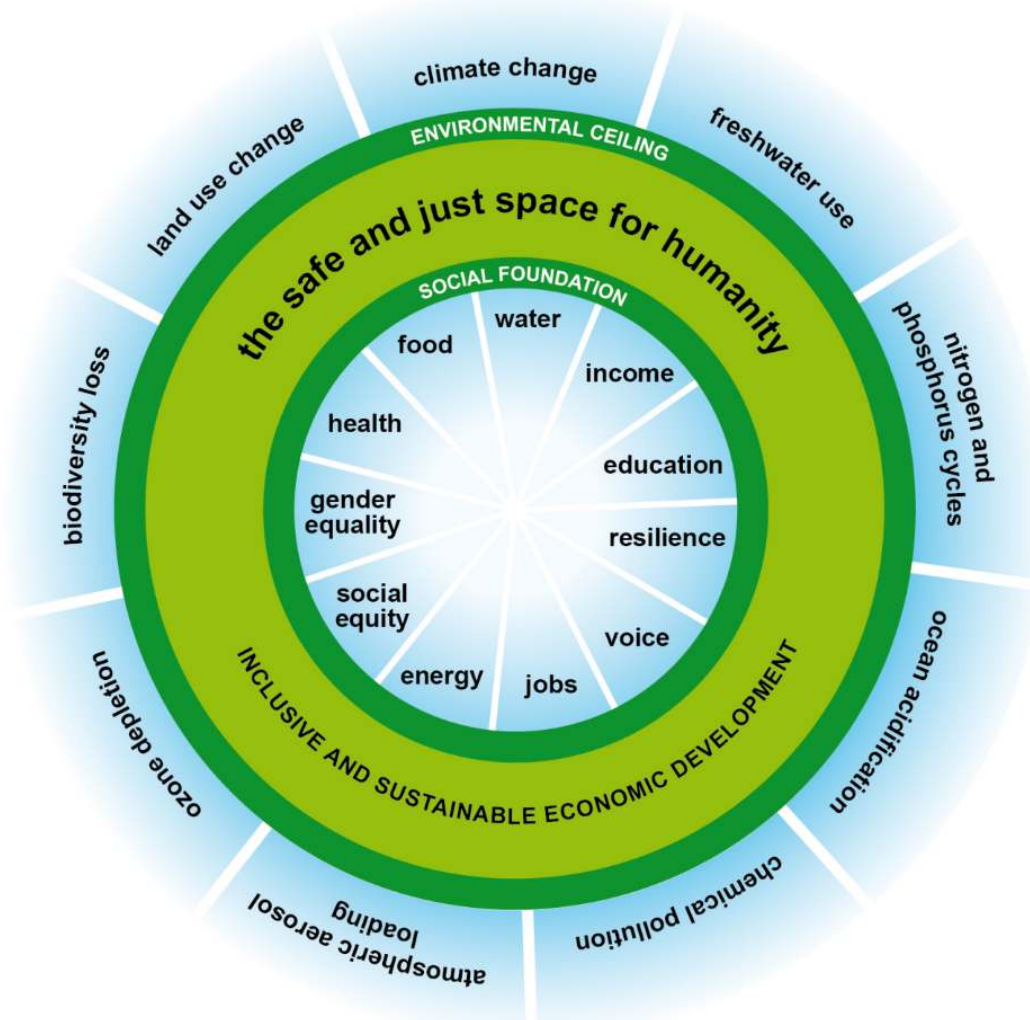
Empirical evidence that multidimensional need satisfaction is a pre-condition for well-being



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

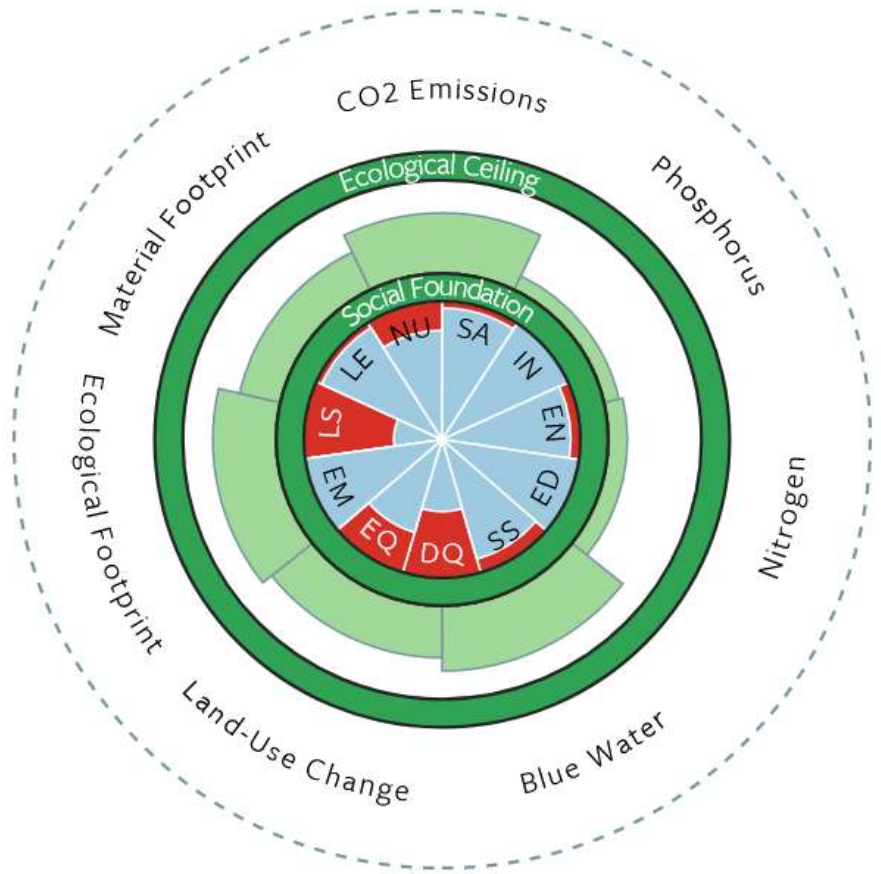
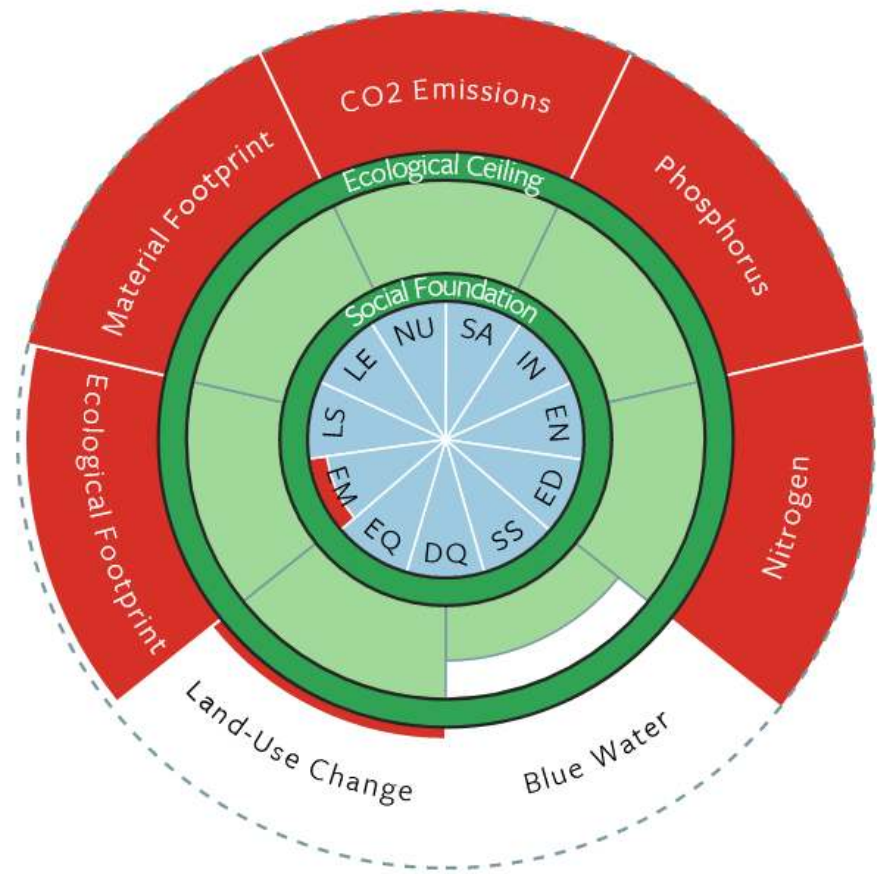
Does well-being within limits exist internationally?

Testing Kate Raworth's Doughnut.



France ▼

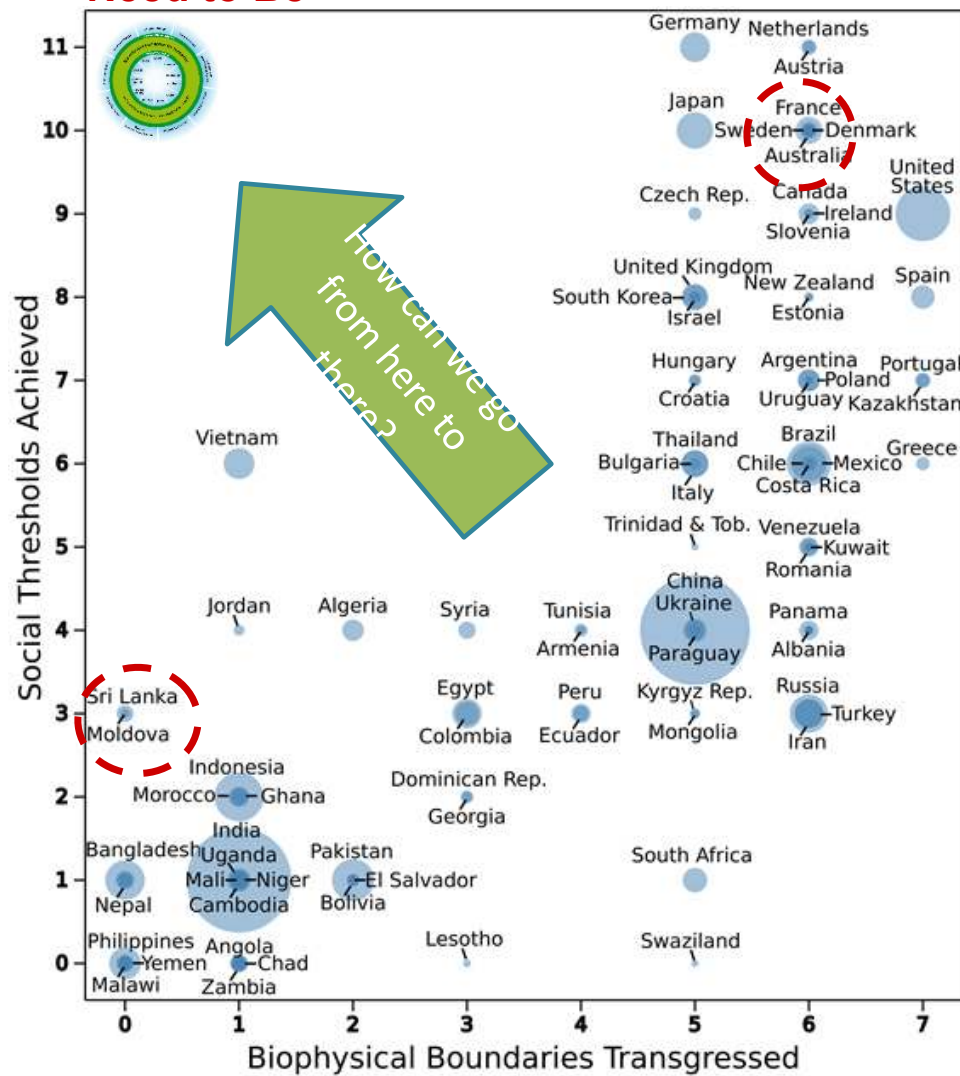
Sri Lanka ▼



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

<https://goodlife.leeds.ac.uk>

Where We Need to Be

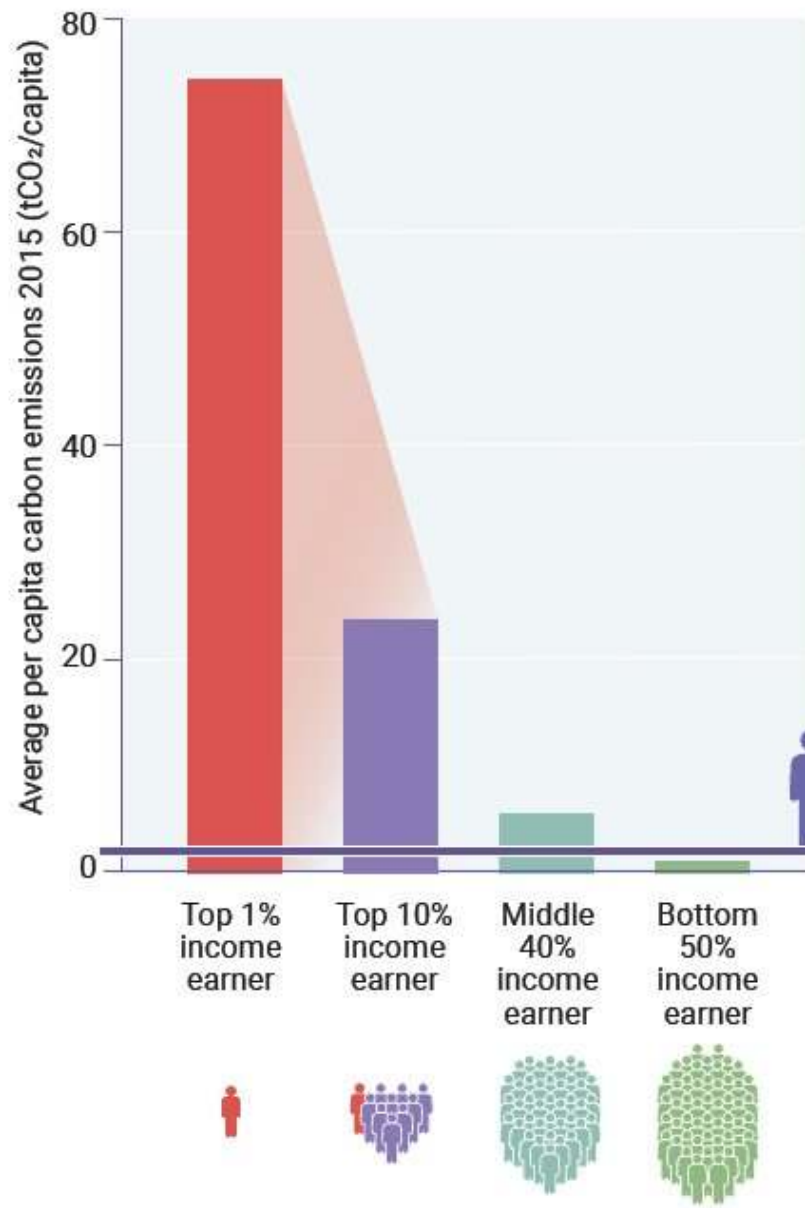


<https://goodlife.leeds.ac.uk>

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

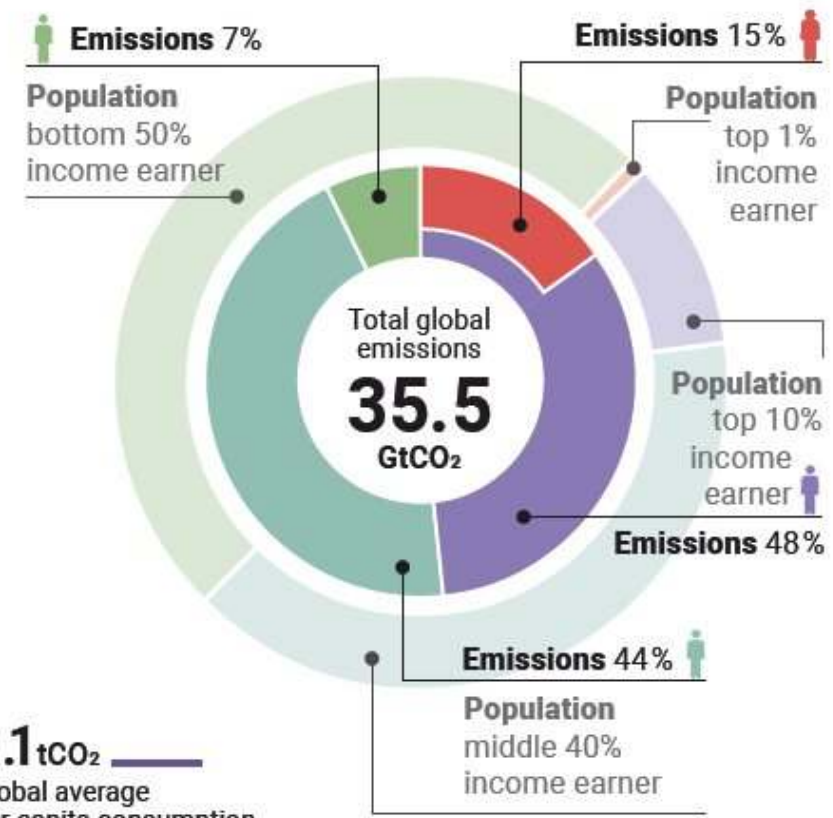


What role does
inequality play?



2.1 tCO₂
Global average per capita consumption emissions target by 2030 for 1.5°C

Total carbon emissions per group 2015 (GtCO₂)

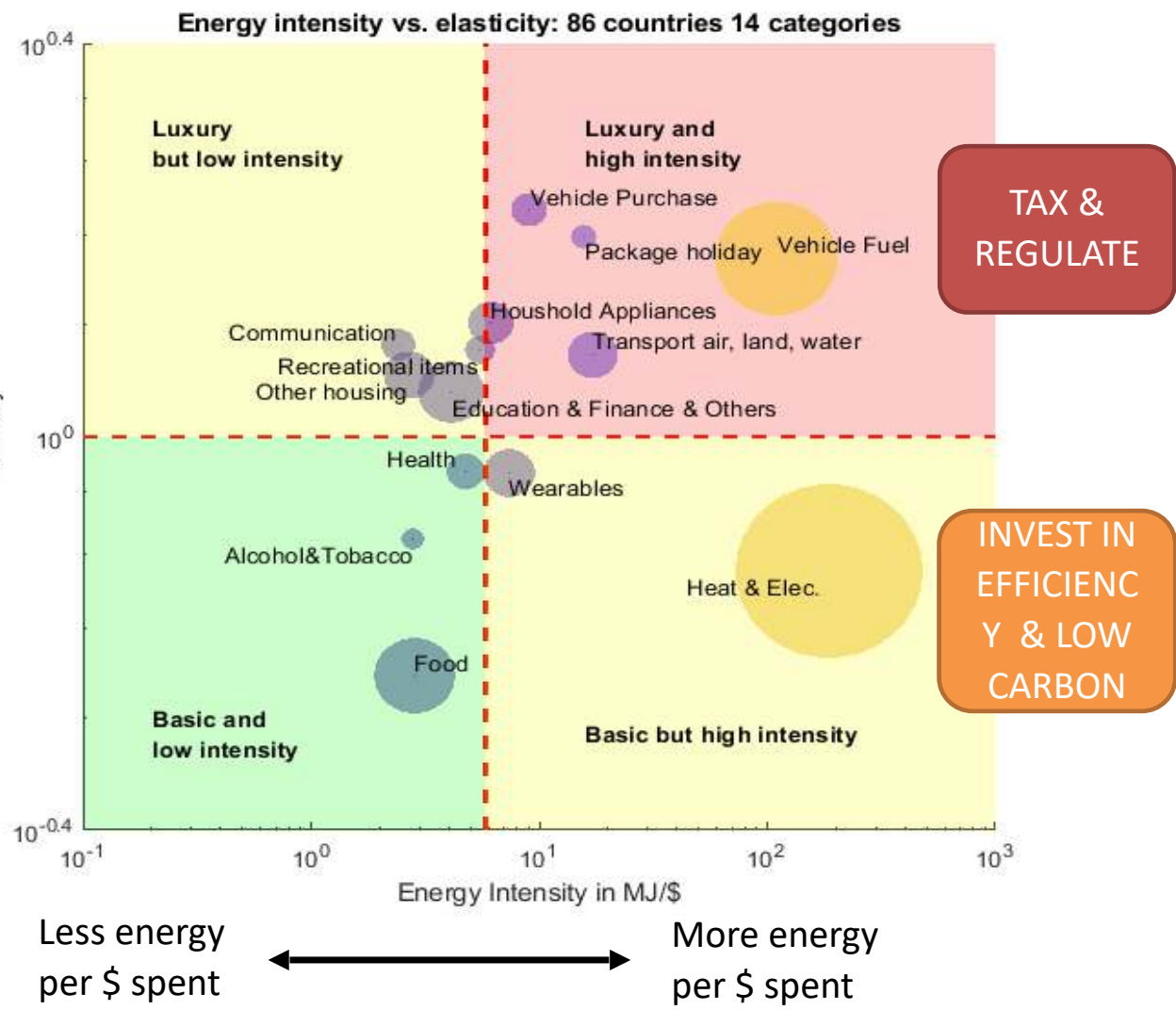


Mapping product categories

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

Yannick Oswald, Anne Owen and Julia K. Steinberger

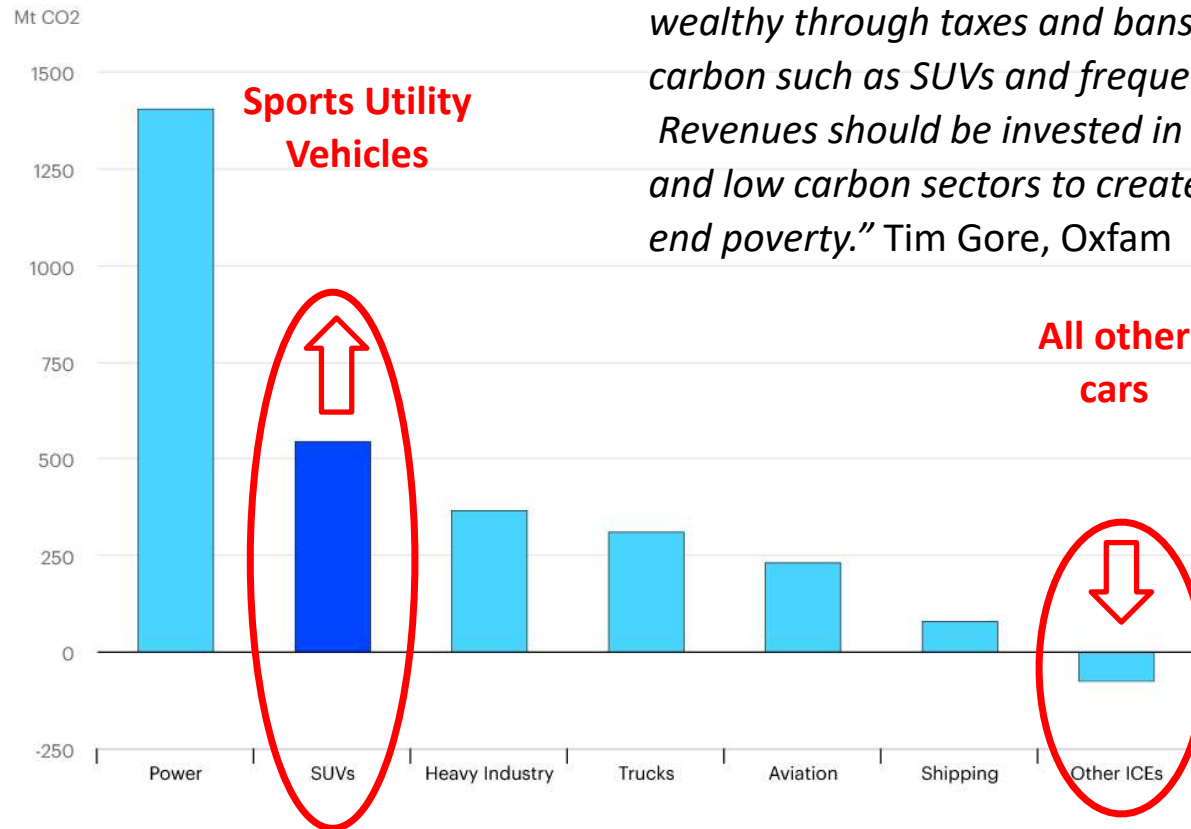
Consumed more by rich people
 ↑
 ↓
 Consumed more by poor people



Oswald, Owen & Steinberger, 2020, Nature Energy

Car transport increasingly drives climate breakdown

Change in global CO2 emissions by energy sector, 2010-2018



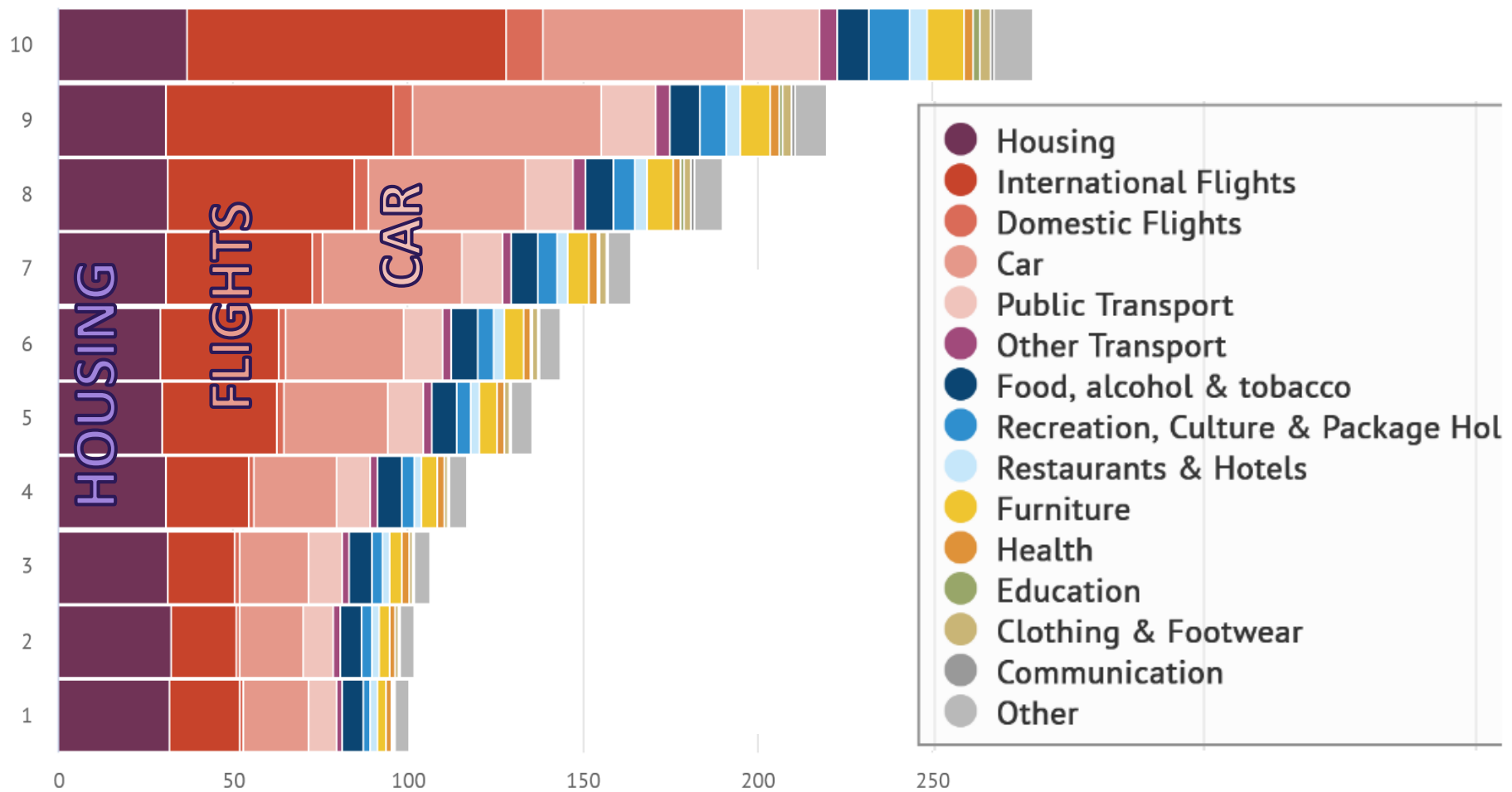
“Governments must curb the emissions of the wealthy through taxes and bans on luxury carbon such as SUVs and frequent flights. Revenues should be invested in in public services and low carbon sectors to create jobs, and help end poverty.” Tim Gore, Oxfam

Cozzi & Petropoulos, IEA, 2019

INEQUALITY IN TRANSPORT

Wealthy British people use far more **energy for transport**, but housing energy use remains similar across income brackets

Annual energy use per adult equivalent, GJ

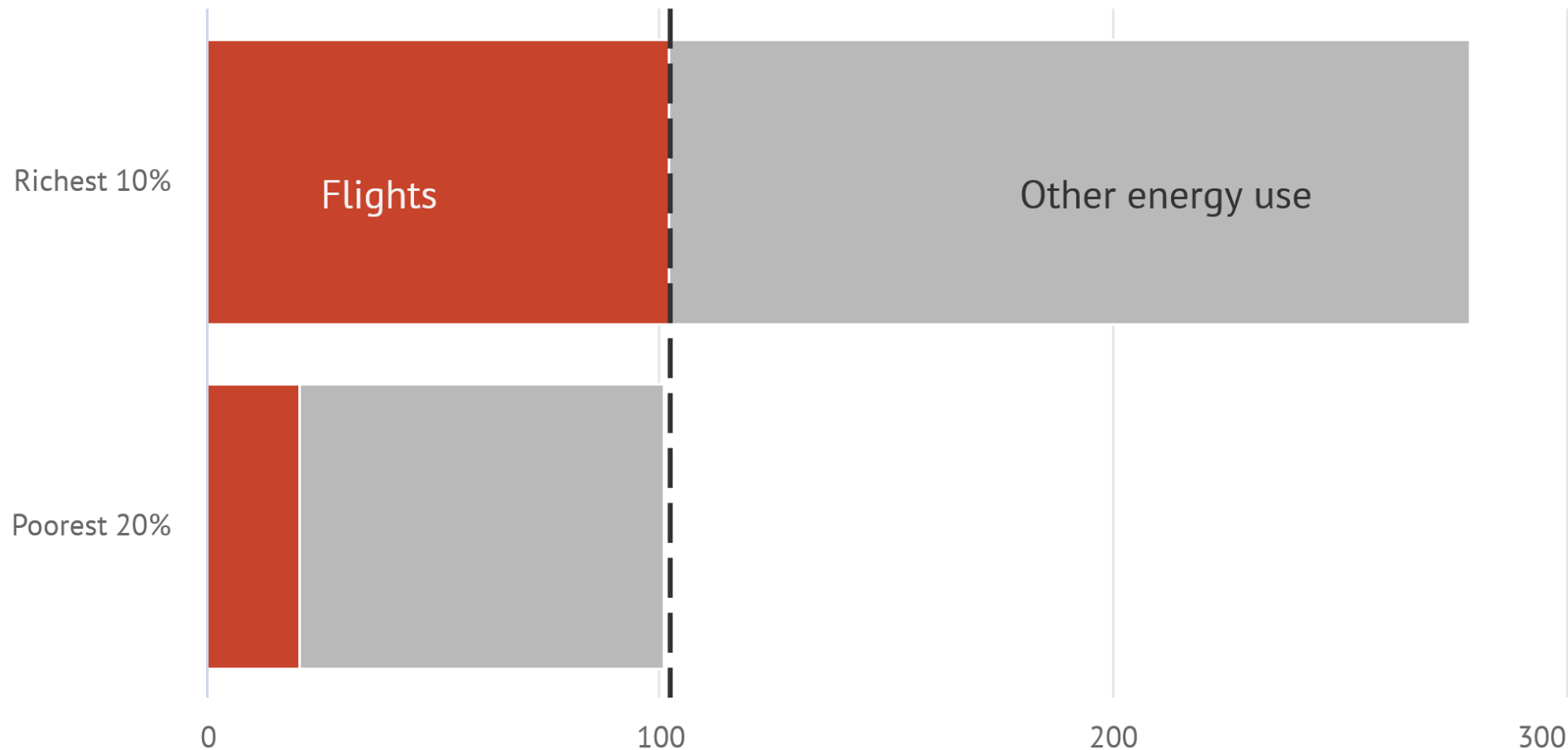


Baltruszewicz et al 2023, *Ecological Economics*

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



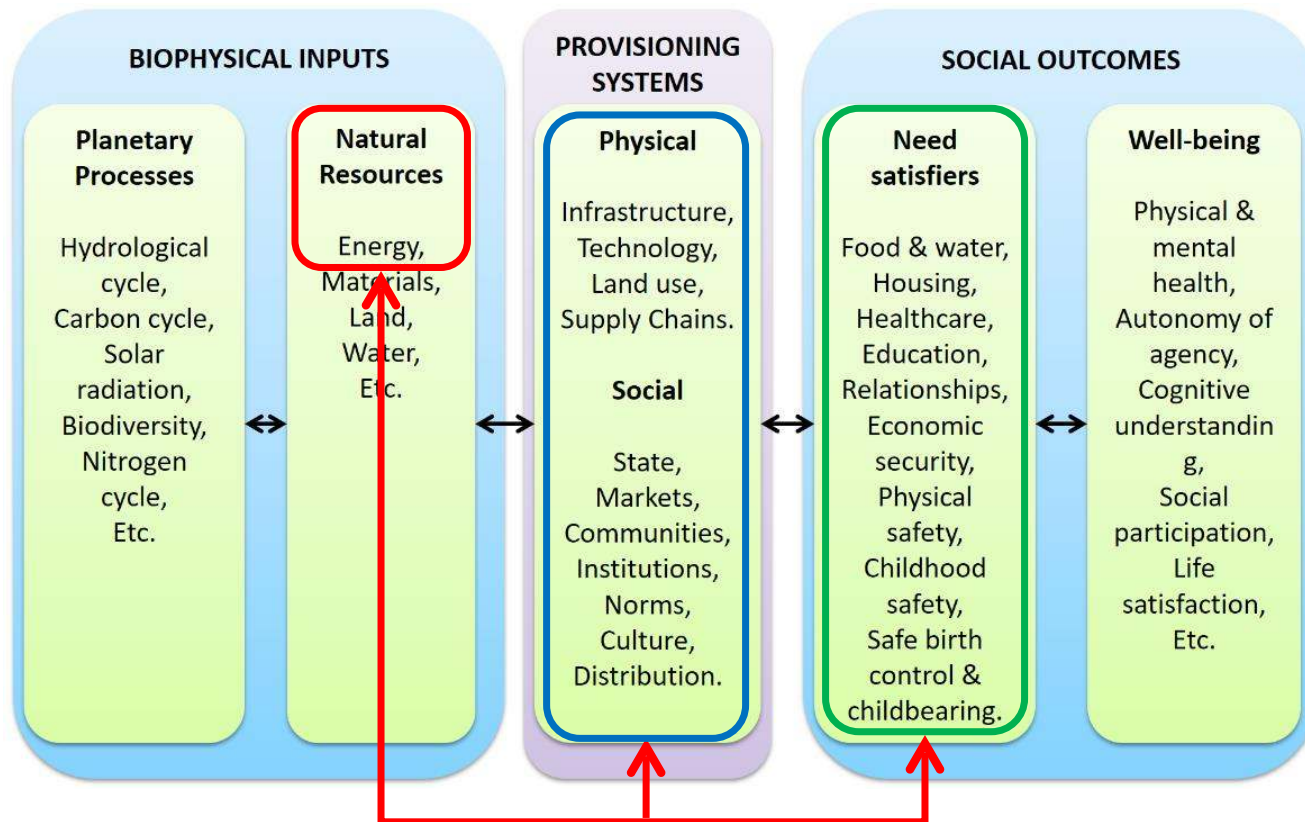
Baltruszewicz et al 2023

Carbon Brief <https://www.carbonbrief.org/richest-people-in-uk-use-more-energy-flying-than-poorest-do-overall/>



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

International energy demand vs well-being: what are mediating factors?



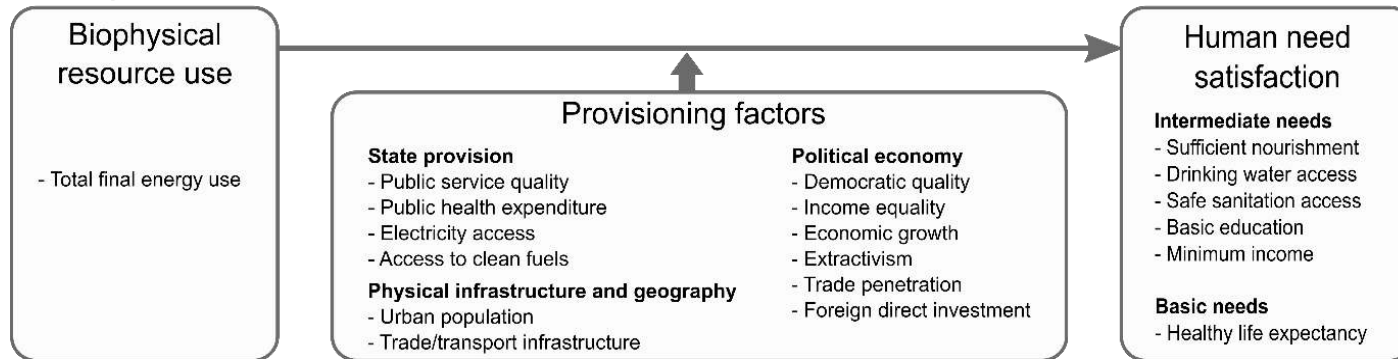
$$NS_{i,c} = a + b_1 ENU_{j,c}$$

Need
satisfaction

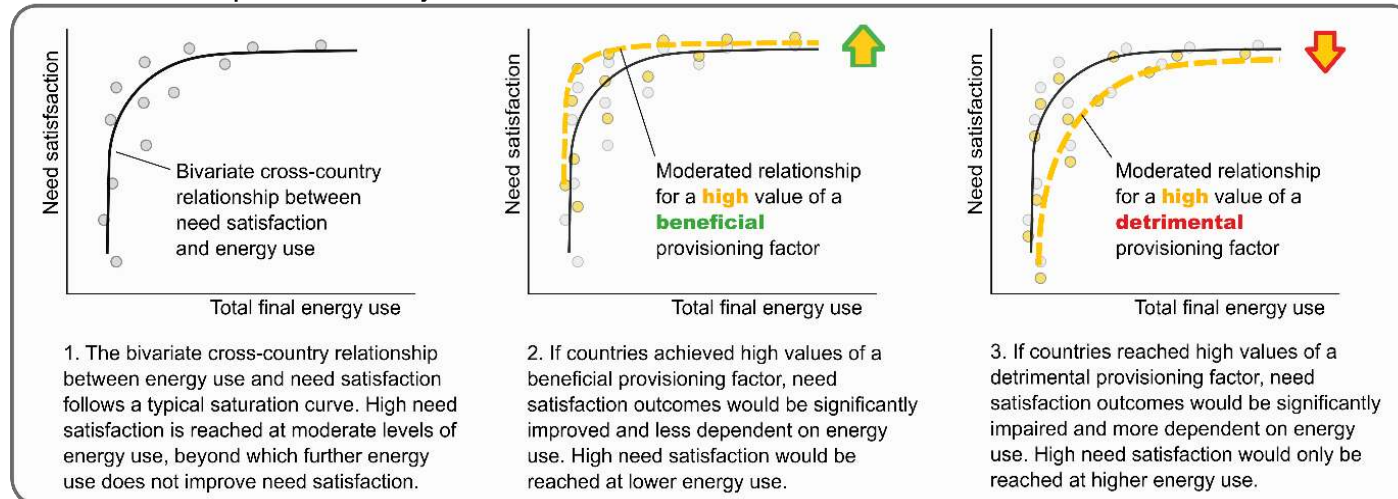
Energy
use

International energy demand vs well-being: what are mediating factors?

A. Analytical framework



B. Qualitative depiction of analysis



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

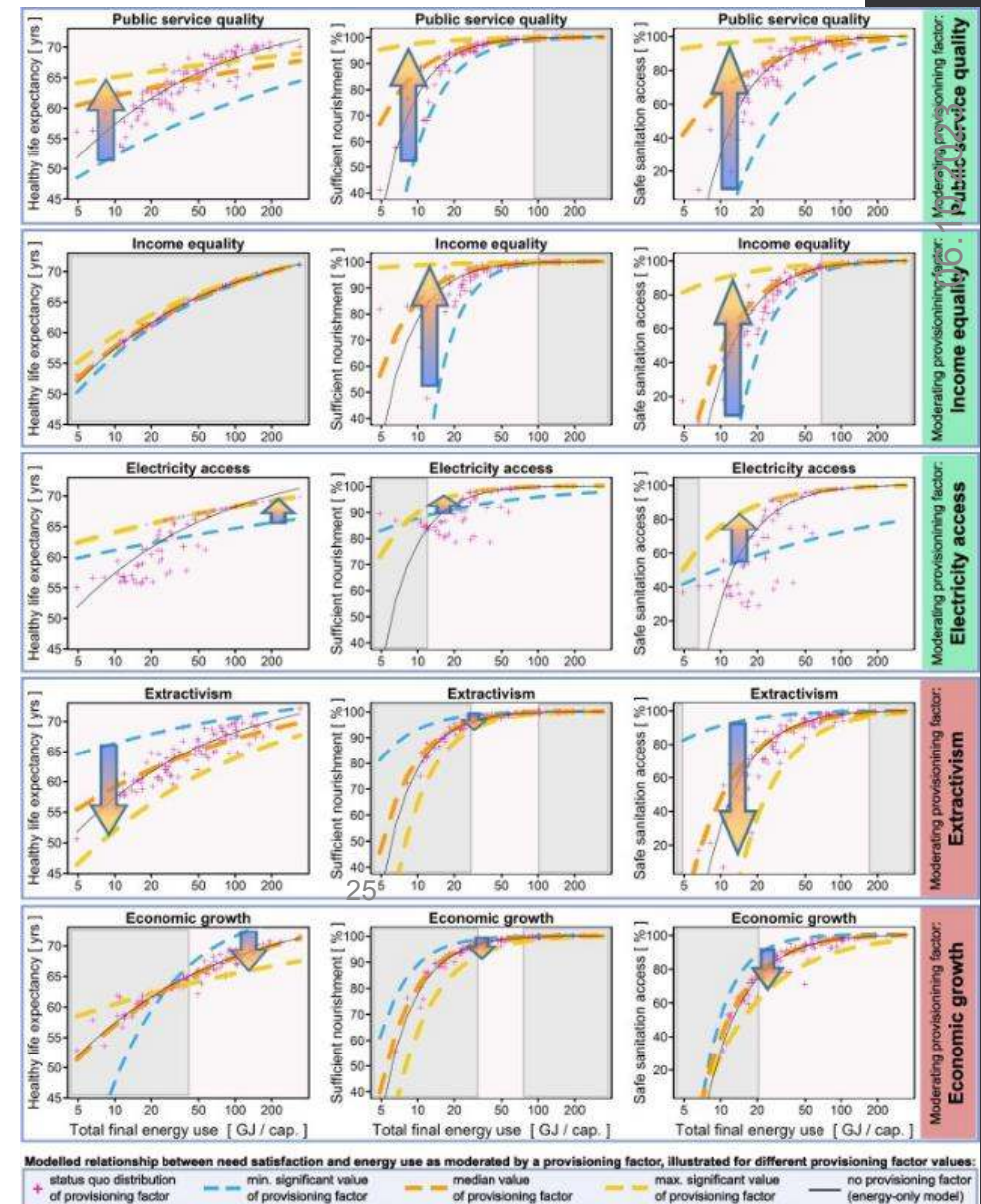
Positive factors

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

Negative factors:

- Extractivism
- Economic growth above a moderate income.

Vogel et al 2021

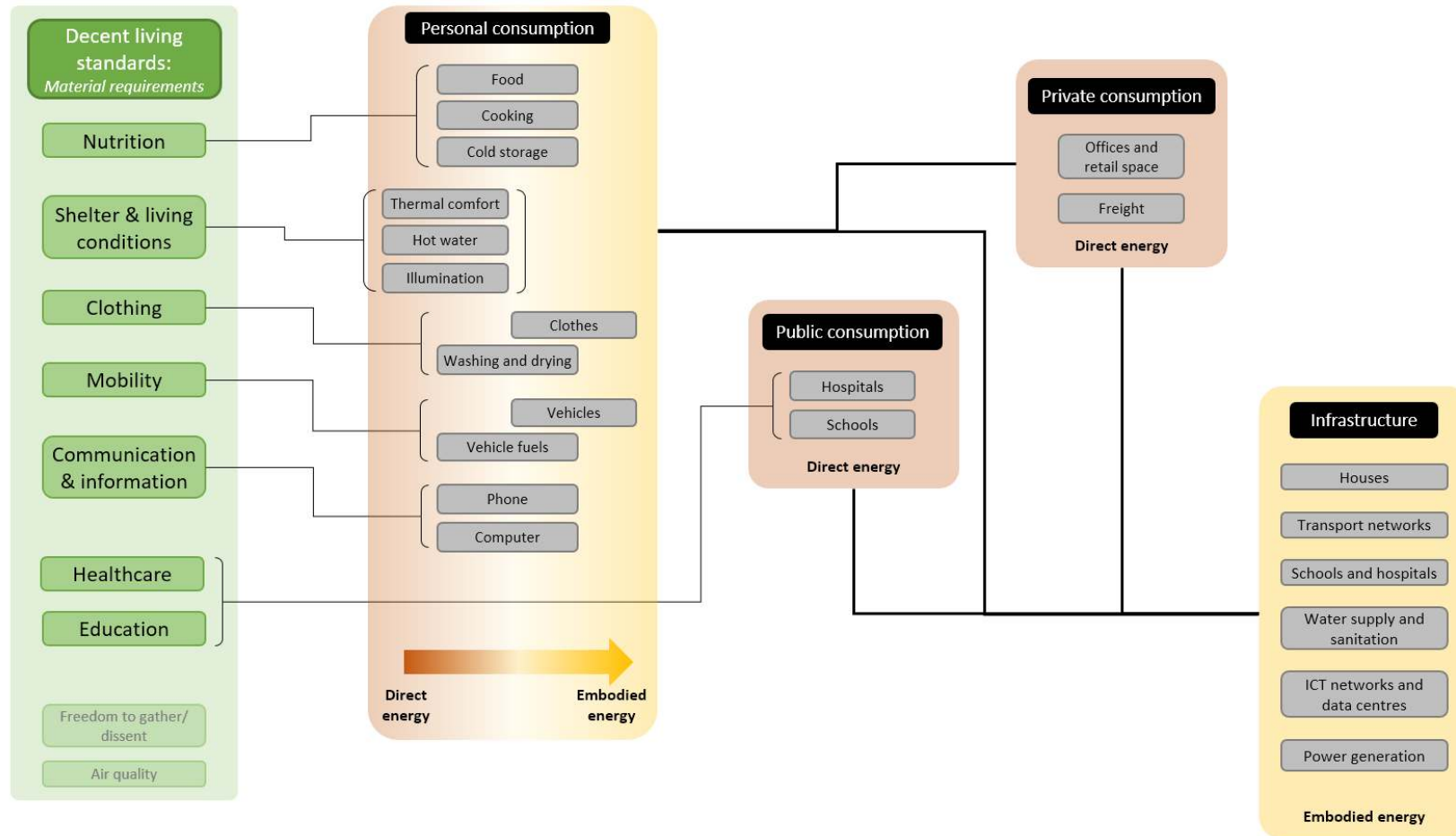




Can we model a different future?

- 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.

What the model looks like, and takes into account



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

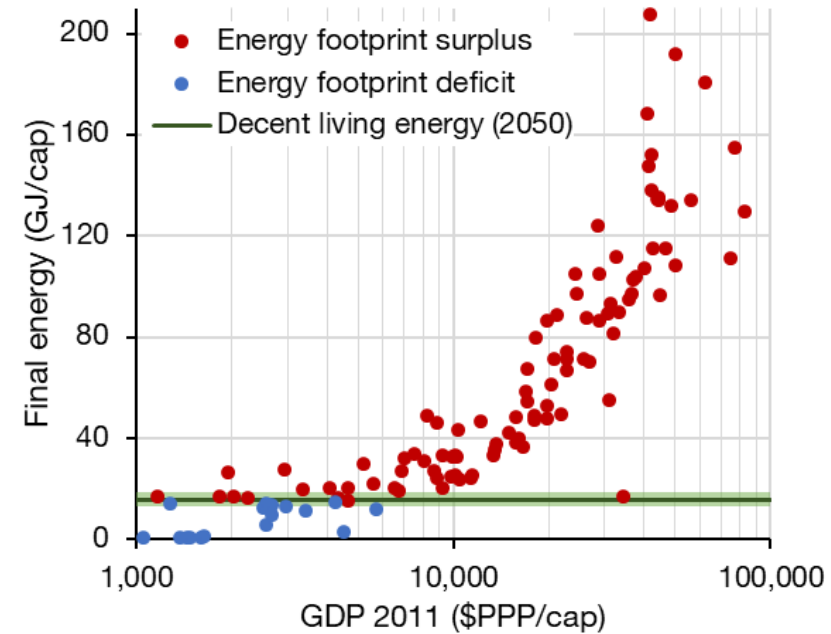
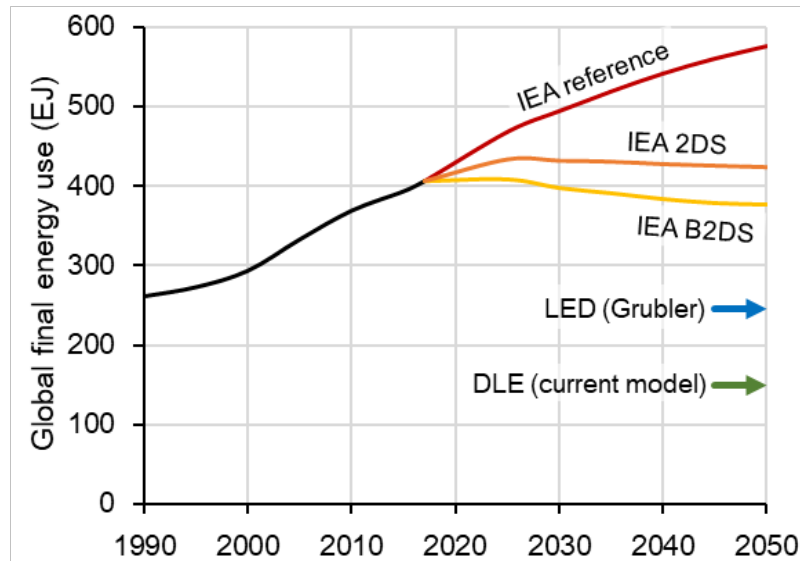
Decent Living Energy Services

Energy service	Level per person	Depends upon
Nutrition	2000–2150 kcal/day	Demography
Living space heated or cooled to 20 degrees year round	15 m ² 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



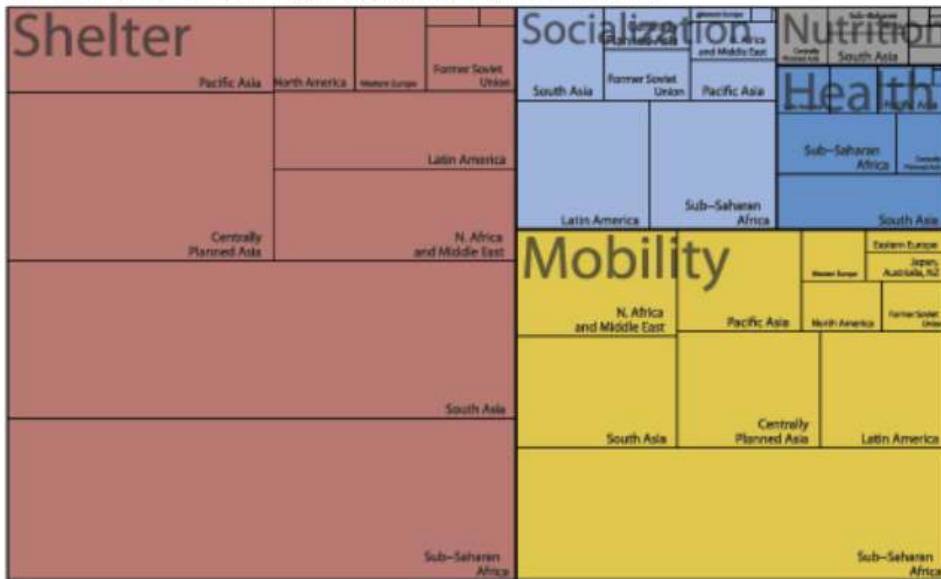
Decent Living Energy for all achievable at 40% of current energy use, despite population growth until 2050.

ENERGY FOR DECENT LIVING INFRASTRUCTURE VS. UTILISATION

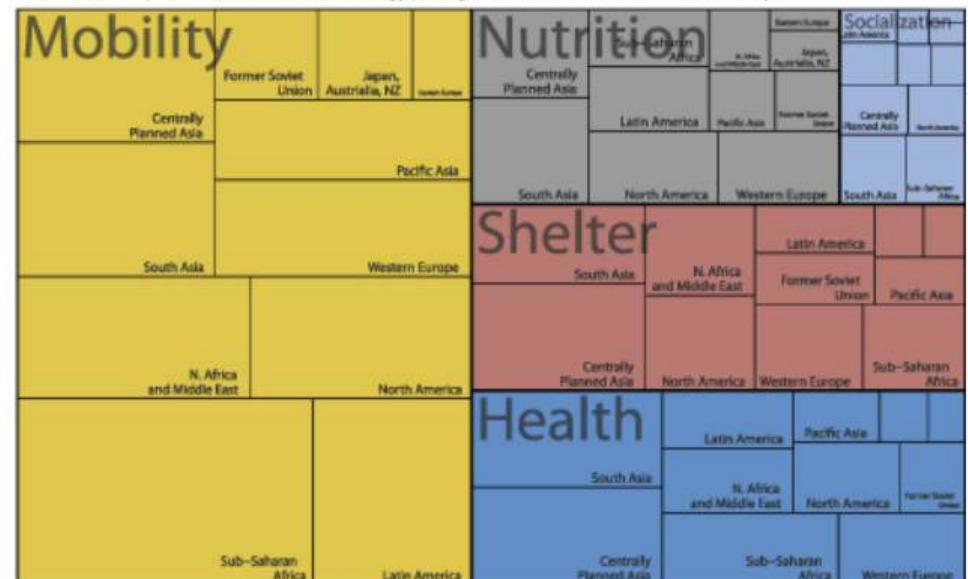
Investment in infrastructure: 290 EJ

Annual use after investment: 156 EJ

A Cumulative need from 2015 until 2040 for constructing new infrastructure for Decent Living
 Sizes based on new construction energy per region for SSP2. Total cumulative: 290 EJ.



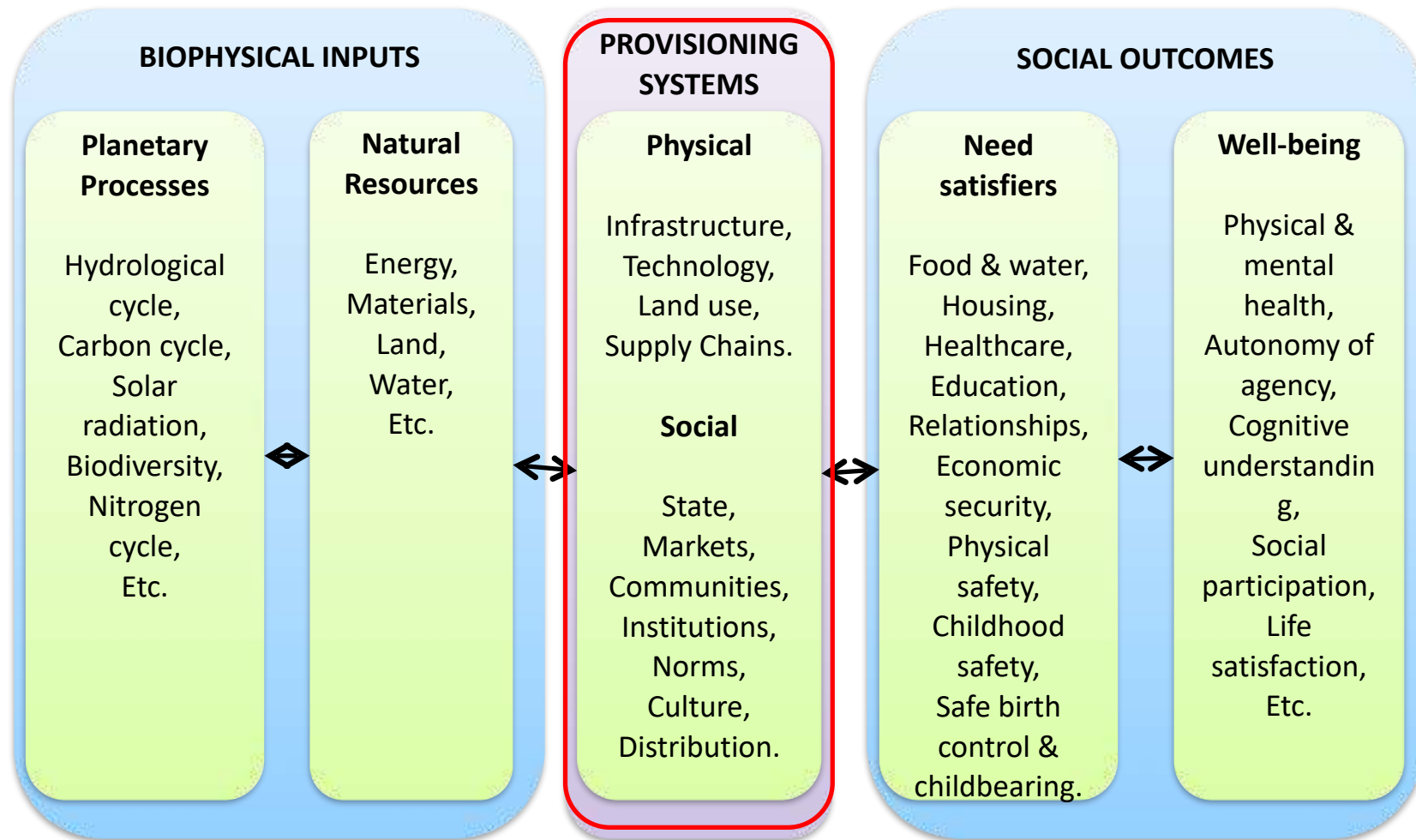
B Total yearly Decent Living Energy need
 Sizes based on operation and construction energy per region for SSP2. Total DLE in 2050: 156 EJ/yr.




A good life for all within planetary limits may be technically possible.

What is standing in our way?

Systems of provision focus



J. Steinberger, D. O'Neill & W. Lamb



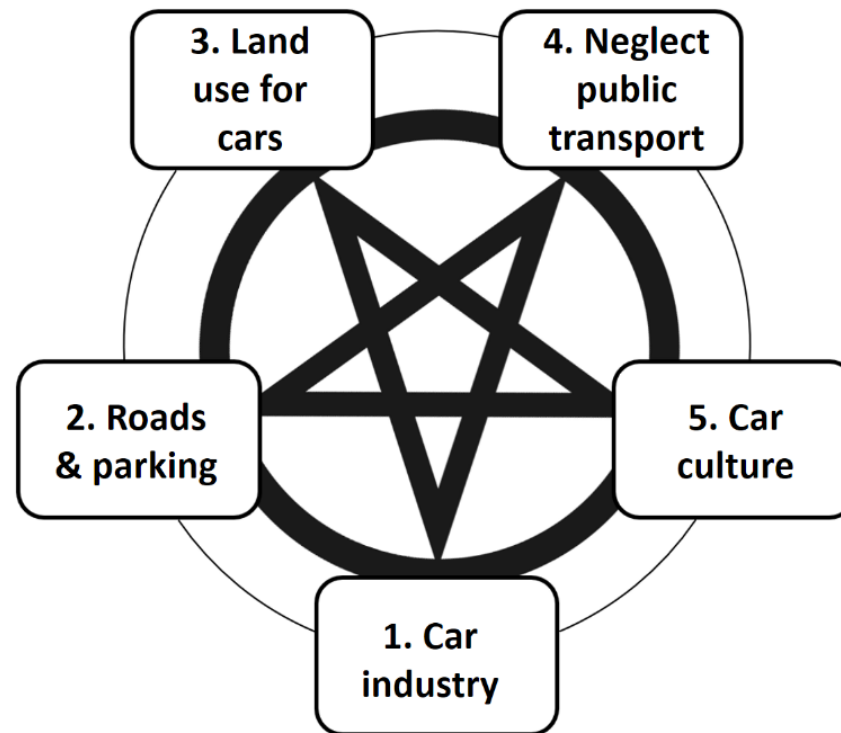
Provisioning systems could enable good lives at low resource use, but are often engineered to create resource dependency.

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

A political economy of car dependency

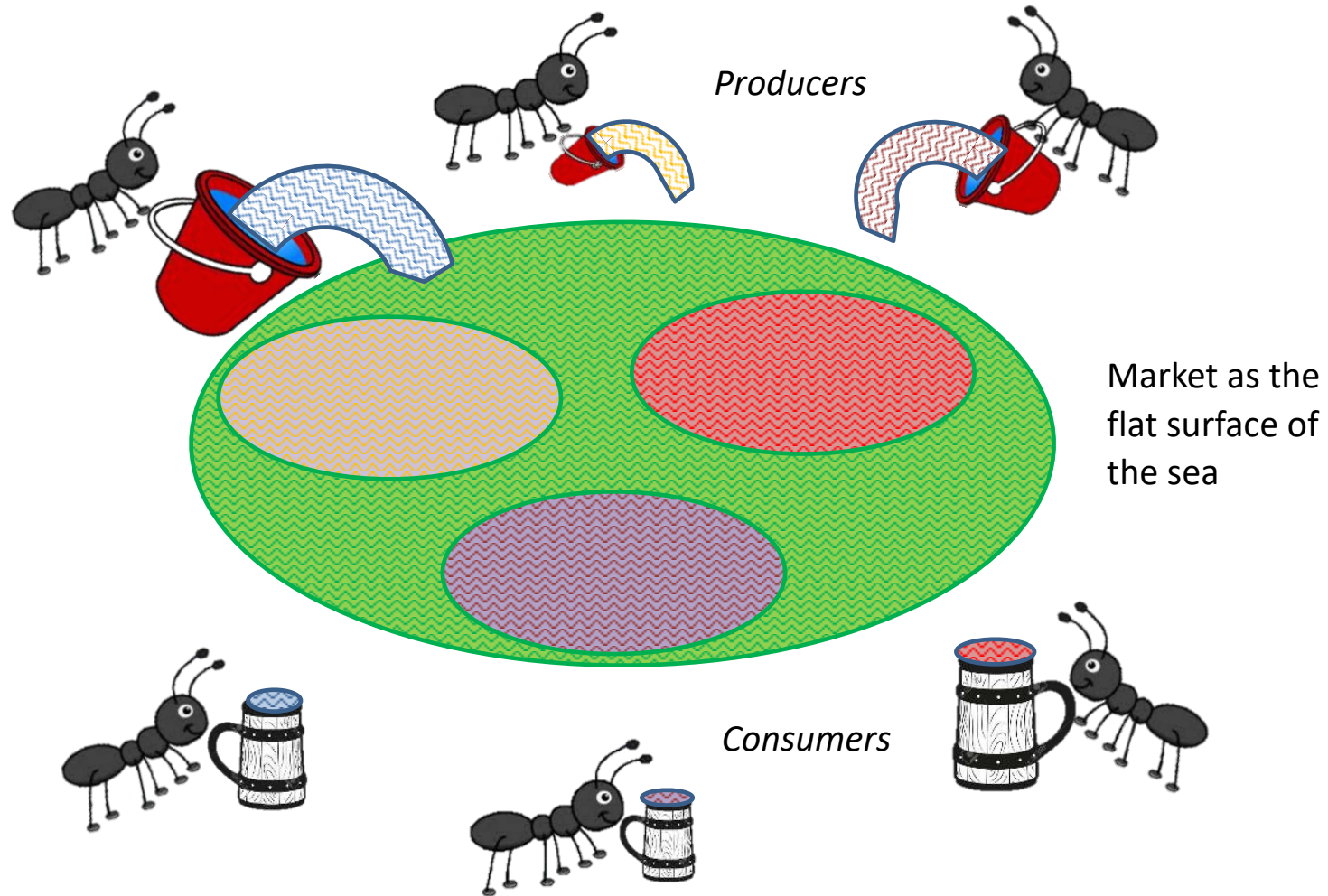
Systems of provision

approach to studying the creation & evolution of car dependency.

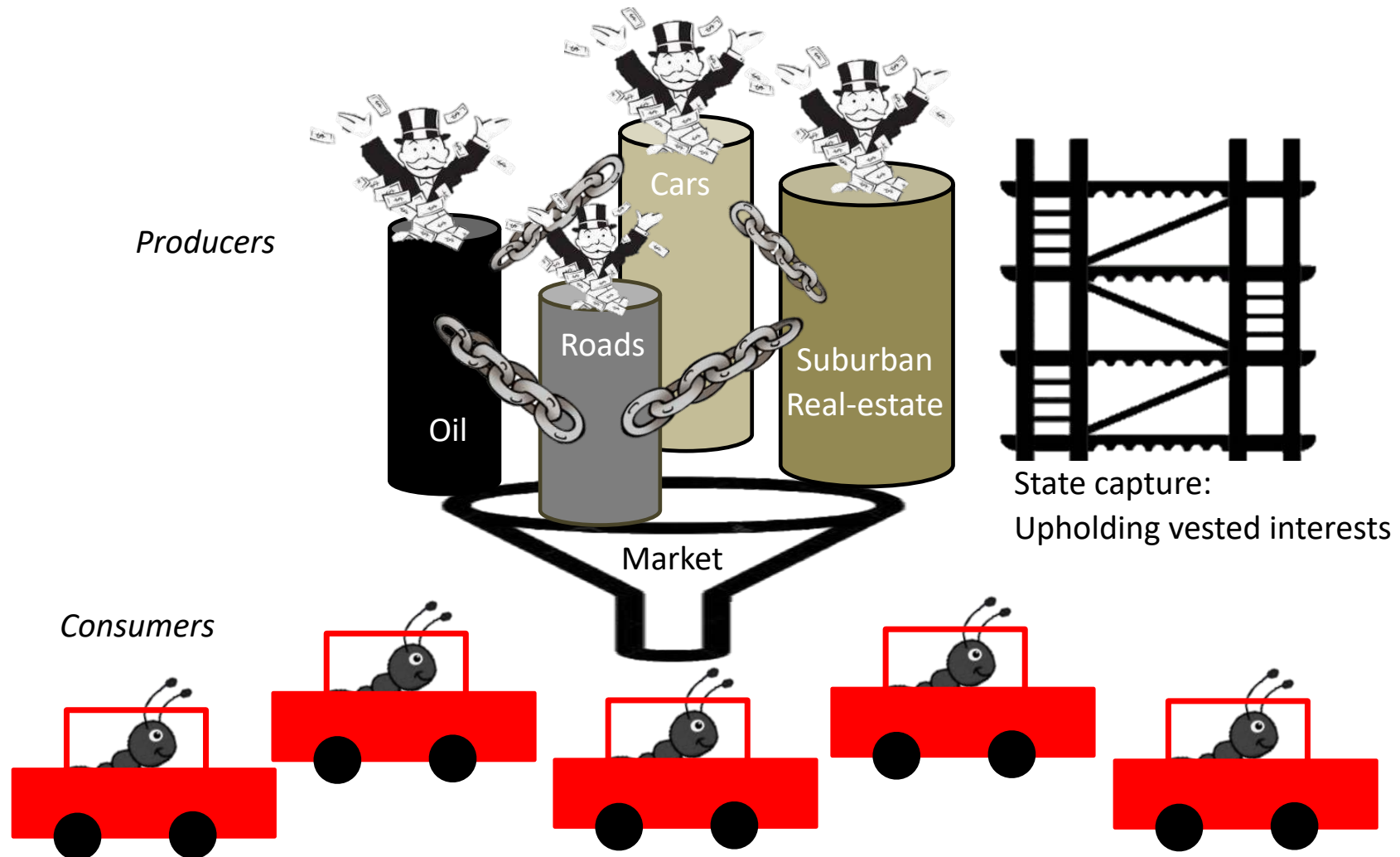


Mattioli, Roberts, Steinberger & Brown, 2020, Energy Research and Social Science

Cartoon version of the neoclassical (green) economy as a **horizontal** market

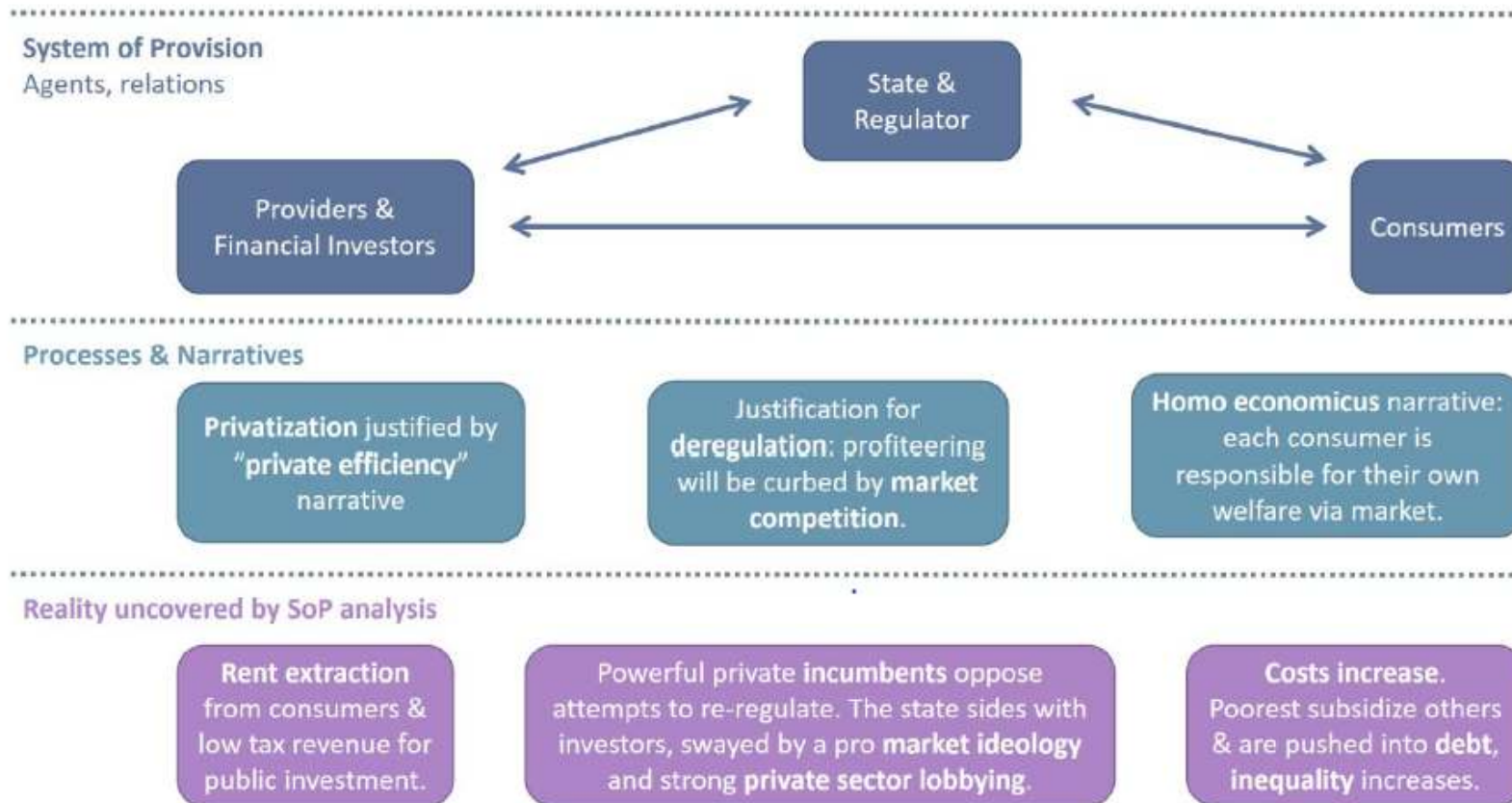


Cartoon version of real economy as **vertical** supply chains, connected through technology clusters



<i>Cause:</i> <i>Effect:</i>	1 Automotive Industry	2 Car Infrastructure	3 Land Use Patterns	4 (Undermining of) Public Transport	5 Car Culture
1 Automotive industry		Car infrastructure enables the sale of more cars, by providing space to accommodate them. The status of roads goes from shared public spaces to motorised flow spaces, literally driving other modes out, and enhancing the value of car ownership.	The need for cars to navigate urban sprawl creates an incentive for consumers to purchase more of them, thereby stabilising demand for automobiles. Suburban, car-dependent constituencies further strengthen the car industry's lobbying efforts.	Historically, the legacy of monopolistic public transport companies has strengthened the political hand of the car industry. Currently, deteriorating public transport forces more people to buy cars.	Car culture produces a continuous demand for vehicles that upholds the car industry. It also influences the cultural dynamics of the industry itself, locking in certain approaches and business models.
2 Car Infrastructure	The automotive industry plays a key role in lobbying coalitions which pressure government to invest public resources, and co-opt public space, to make room for cars.		The expansion of the suburbs demands high-capacity roads and highways to serve them, while also making it more challenging to travel by foot, bike, or public transport.	Public transport becomes dependent on car-dependent road infrastructure, bolstering car industry's lobbying efforts.	Car infrastructure has durable cultural associations with progress, modernity, ruralism, and competent governance, which improve its political viability.
3 Land Use Patterns	The car industry, working with other aligned industries, such as suburban real-estate developers, actively promotes urban sprawl. Historically, car companies promoted visions of an efficient, modern cityscapes and suburban areas.	The expansion of car infrastructure encourages suburban and single-purpose development, which become more viable and more desirable due to mass automobility.		Lack of public transport options leads to locational indifference of sprawl, with no reason to prioritize land use around public transport axes.	Suburban land use has a potent set of cultural imaginaries (for example, white picket fences in the USA), which encourage more people to move to the suburbs and own cars.
4 (Undermining of) Public Transport	The car industry deliberately attempts to undermine public transport, and is strengthened in its attempts to do so by the fact that the public costs it imposes are more hidden than those of public transport. During economic crises, public transport gets cut while the car industry gets bailed out. Meanwhile, the surplus capacity that the car industry builds into cars gives it a critical advantage over public transport in terms of range, marginal cost, and cargo capacity.	Infrastructure designed primarily for cars crowds out public transport road-based options such as buses, and pulls financial resources away from other alternatives, such as railways or tramways.	Lower population densities make it more challenging to effectively organise public transport networks, leading to more car dependence and settlements outside public transport networks, in a vicious cycle.		Public transport is portrayed as unattractive, burdensome, and for the poor, young, or infirm.
5 Car Culture	The car industry actively supports the development of car culture, both deliberately, through advertising and marketing, and tacitly, through the built-in redundancy in the vehicles they sell, and the effects this has on people's daily practices.	Car infrastructure creates practices, habits and cultural trends (e.g. it is normalised as a symbol in children's toys).	Land use patterns, both for residential and work developments, normalise car transport, ensuring that alternatives are portrayed as marginal.	Poor public transport networks encourage more people to adopt car-centric lifestyles.	

UNCOVERING THE REALITY BEHIND PRIVATISATION OF PUBLIC SERVICES



“Abandoning people to the private market in relation to services that affect every dimension of their basic well-being, without guaranteeing their access to minimum standards, is incompatible with human rights requirements.”

Philip Alston, UN Special Rapporteur on extreme poverty and human rights, UK visit report, 2019

<https://undocs.org/A/HRC/41/39/Add.1>

real

A POST GROWTH DEAL



Prof. Giorgos Kallis
Autonomous University of
Barcelona, Spain



Prof. Julia Steinberger
University of Lausanne,
Switzerland



Prof. Jason Hickel
LSE and Autonomous University
of Barcelona, Spain

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.



European Research Council
Established by the European Commission

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.



From analysis to rebellion

nature
ecology & evolution



Credit: Louise Gardner



Credit: Alfredo Romero-Muñoz

Scientists must act on our own warnings to humanity

We face interconnected planetary emergencies threatening our climate and ecosystems. Charlie J. Gardner and Claire F. R. Wordley argue that scientists should join civil disobedience movements to fight the unprecedented crises.

“The scientists who alerted the world to the climate and ecological crises have a moral duty to join the popular movements demanding political action.”

From Publications to Public Actions: The Role of Universities in Facilitating Academic Advocacy and Activism in the Climate and Ecological Emergency

Charlie J. Gardner^{1*}, Aaron Thierry², William Rowlandson³ and Julia K. Steinberger⁴

ENVIRONMENT OCTOBER 13, 2019 / 3:09 AM / 3 DAYS AGO

Scientists endorse mass civil disobedience to force climate action

Matthew Green 5 MIN READ [Twitter](#) [Facebook](#)

LONDON (Reuters) - Almost 400 scientists have endorsed a civil disobedience campaign aimed at forcing governments to take rapid action to tackle climate change, warning that failure could inflict “incalculable human suffering.”

[Check for updates](#) [comment](#)

Civil disobedience by scientists helps press for urgent climate action

Time is short to secure a liveable and sustainable future; yet, inaction from governments, industry and civil society is setting the course for 3.2 °C of warming, with all the cascading and catastrophic consequences that this implies. In this context, when does civil disobedience by scientists become justified?

Stuart Capstick, Aaron Thierry, Emily Cox, Oscar Berglund, Steve Westlake and Julia K. Steinberger

“No research on a dead planet”: preserving the socio-ecological conditions for academia

Aaron Thierry^{1*}, Laura Horn², Pauline von Hellermann³ and Charlie J. Gardner⁴

Environment protest being criminalised around world, say experts

More than 400 climate scientists sign letter that says activists are being targeted at pivotal time in fight against global heating

“It has become abundantly clear that governments don’t act on climate without pressure from civil society: threatening and silencing activists thus seems to be a new form of anti-democratic refusal to act on climate.”

Thanks! Any questions?

