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Taighde, Idirphlé, Comhairle
Research, Dialogue, Advice

NESC Energy Conference 2025:
Energising the Transition

Finding People in the Environment

Social Imperatives of climate change

Lewis Akenji, PhD

Hot or Cool Institute

Hot or Cool Institute

Putting people and science at the centre of the sustainability transition

Pushing the Overton window towards a more honest reflection of science in policy and practice sustainability

Reframing issues as solutions and supporting governments and international organisations

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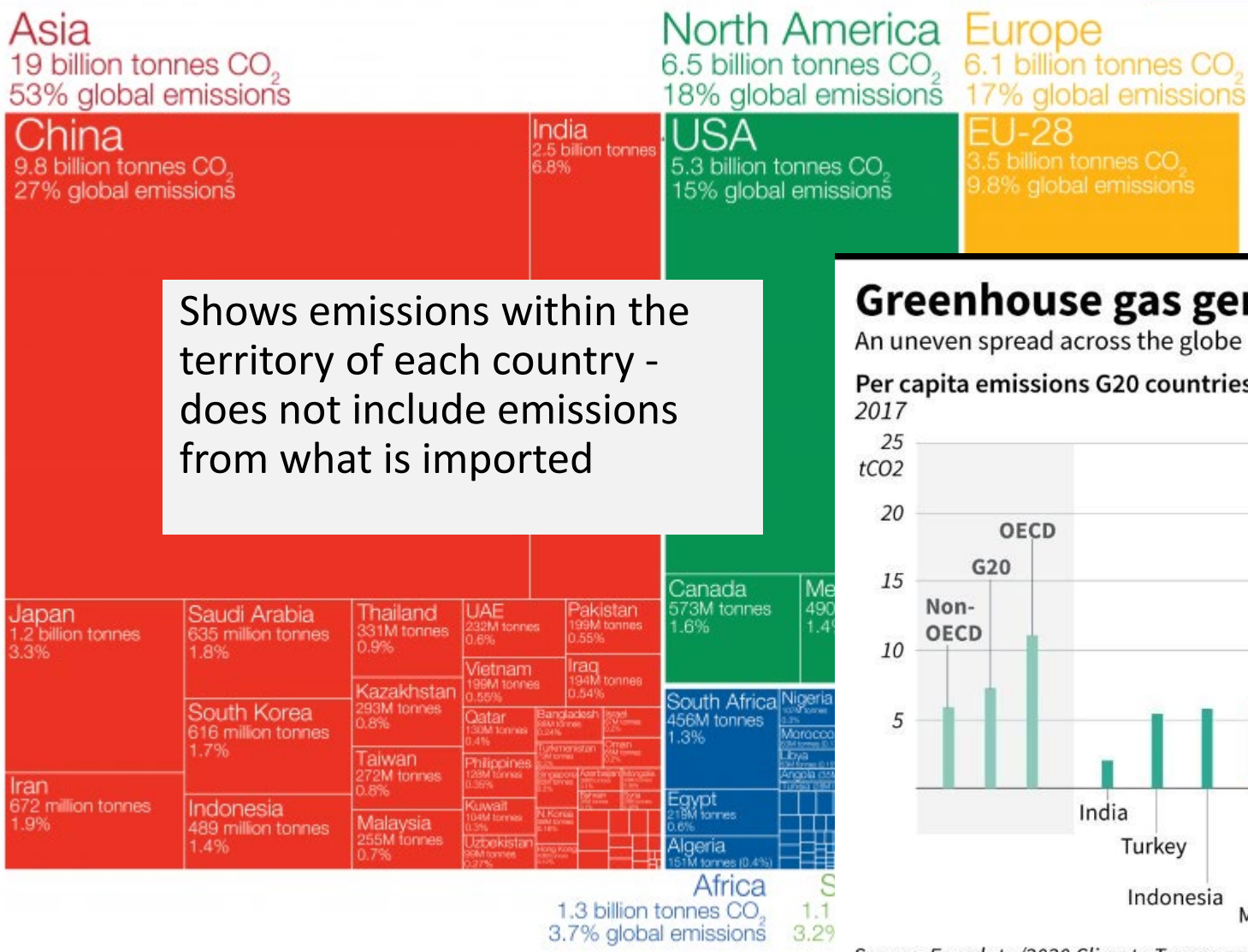
The magnitude of the challenge!

the environmental
is the social

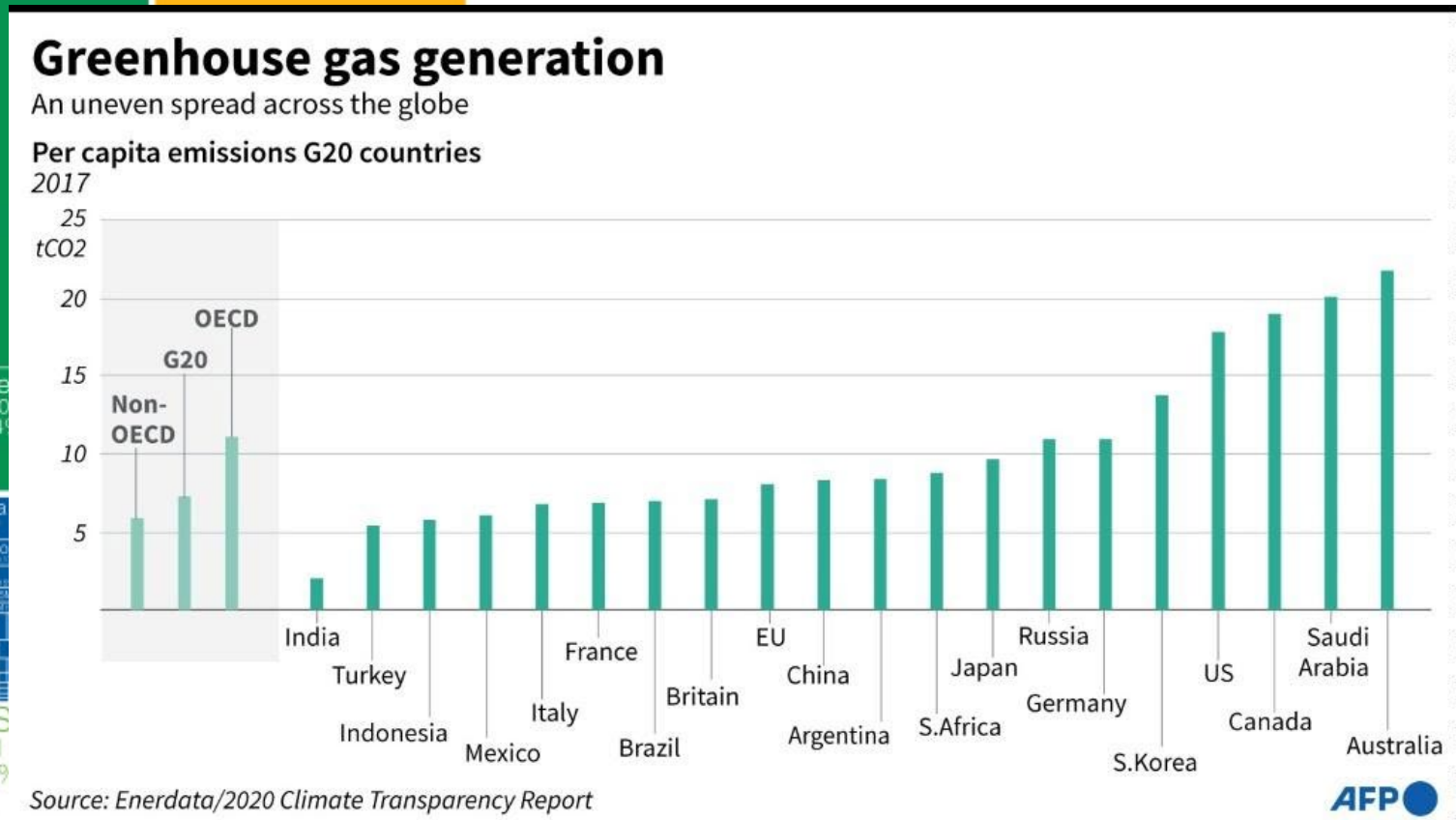
Who emits the most CO_2?

Global carbon dioxide (CO_2) emissions were 36.2 billion tonnes in 2017.

Our World in Data



Shows emissions within the territory of each country - does not include emissions from what is imported



Shown are national production-based emissions in 2017. Production-based emissions measure CO_2 produced domestically from fossil fuel combustion and cement, and do not adjust for emissions embedded in trade (i.e. consumption-based).

Figures for the 28 countries in the European Union have been grouped as the 'EU-28' since international targets and negotiations are typically set as a collaborative target between EU countries. Values may not sum to 100% due to rounding.

Data source: Global Carbon Project (GCP).

This is a visualization from OurWorldinData.org, where you find data and research on how the world is changing.

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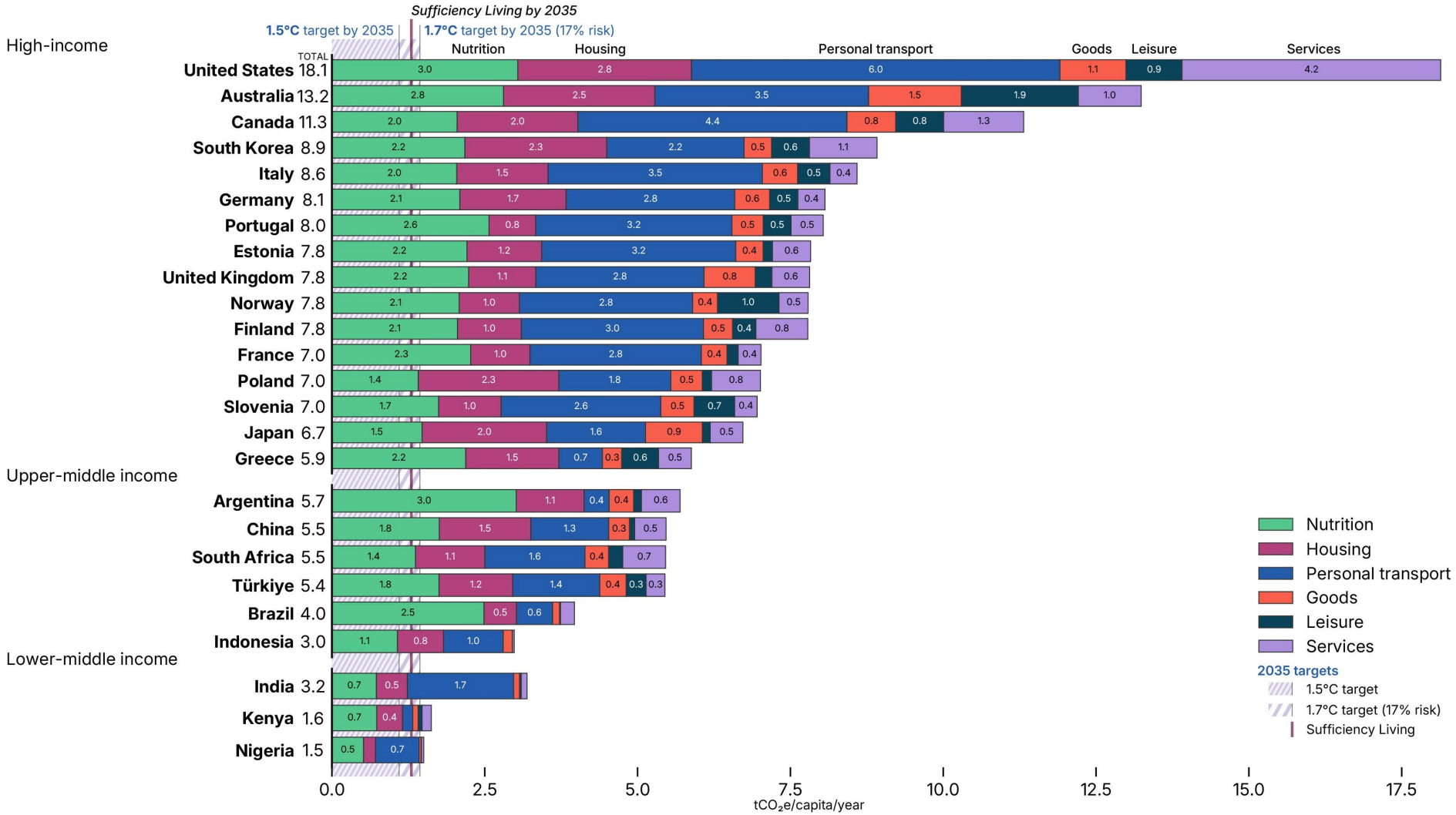
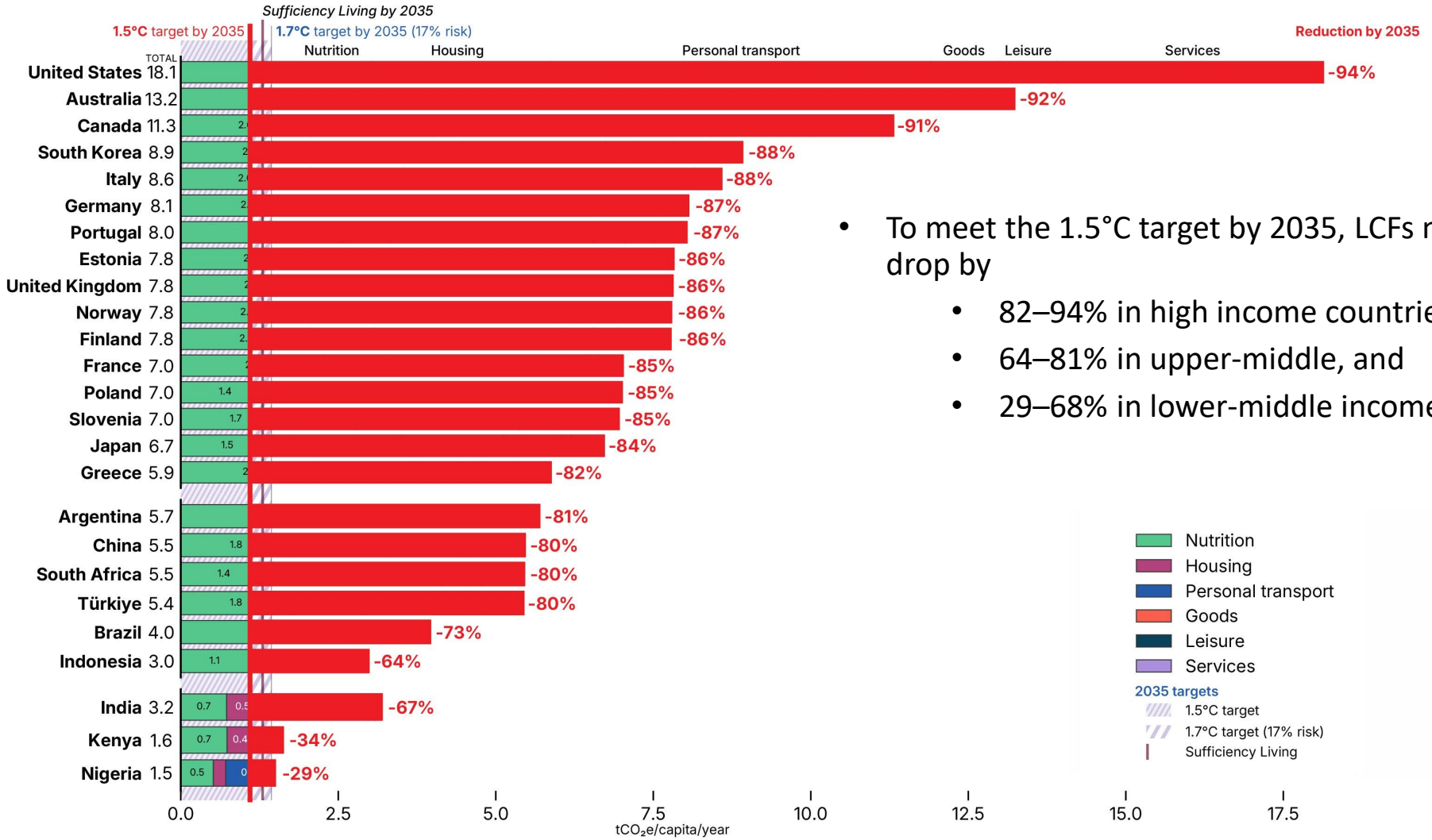
Current lifestyle carbon footprints (LCFs)



Required reductions by 2035 in lifestyle carbon footprints

Current average: 7.1 tCO_2e/capita.

(~7× the 1.5 °C-aligned target)



- To meet the 1.5°C target by 2035, LCFs needs to drop by
  - 82–94% in high income countries
  - 64–81% in upper-middle, and
  - 29–68% in lower-middle income countries

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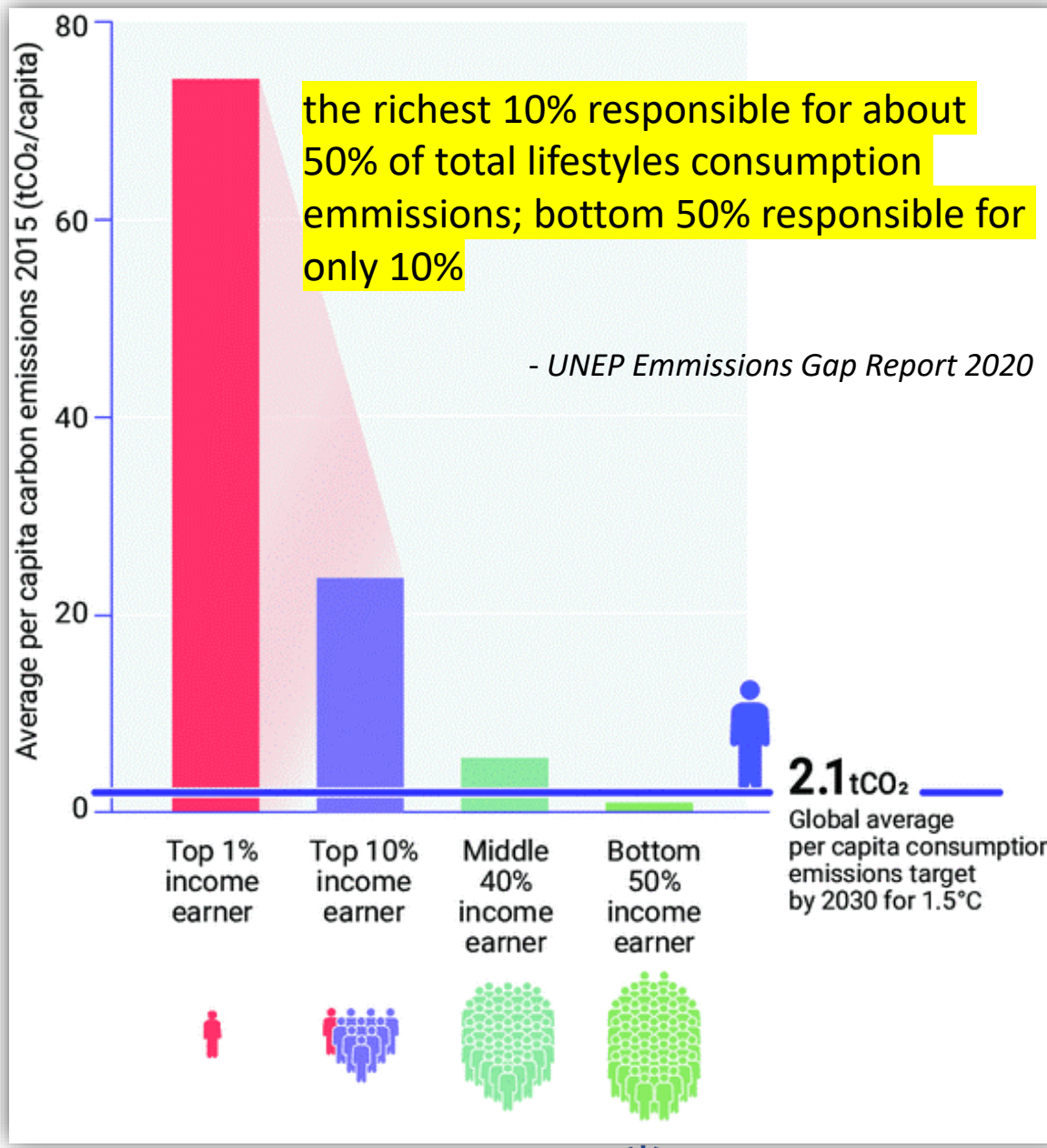
the richest 10% responsible for about 50% of total lifestyles consumption emmissions; bottom 50% responsible for only 10%

- UNEP Emmissions Gap Report 2020



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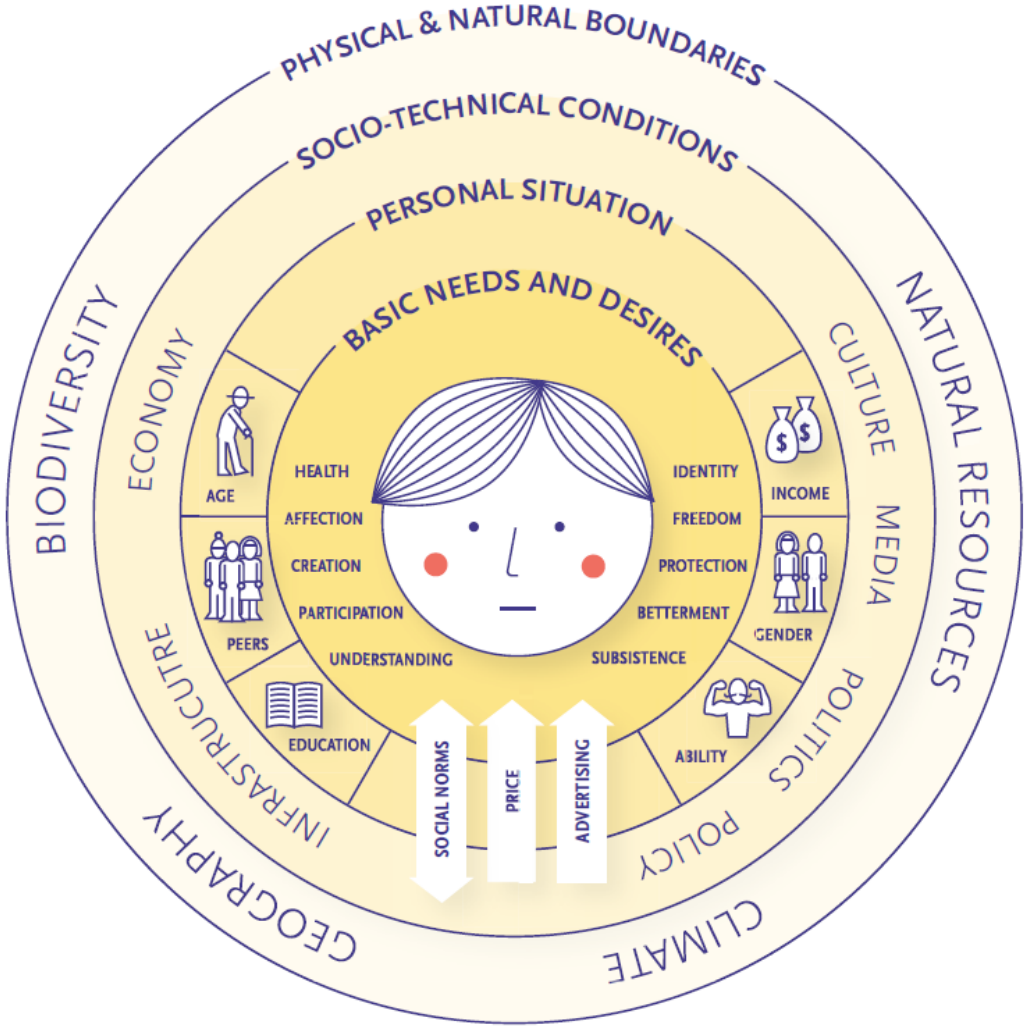
- People do not intentionally harm the environment;
- environmental impact is an unintended consequence of pursuing well-being!

Why do people consume or live the way they do?

- to meet essential needs
- to meet social expectations
- to satisfy personal desires
- because they are railroaded and urged to

The ring of lifestyles

The context of consumption and lifestyles



Akenji & Chen (2016) *A framework for shaping sustainable lifestyles: determinants and strategies*. UNEP

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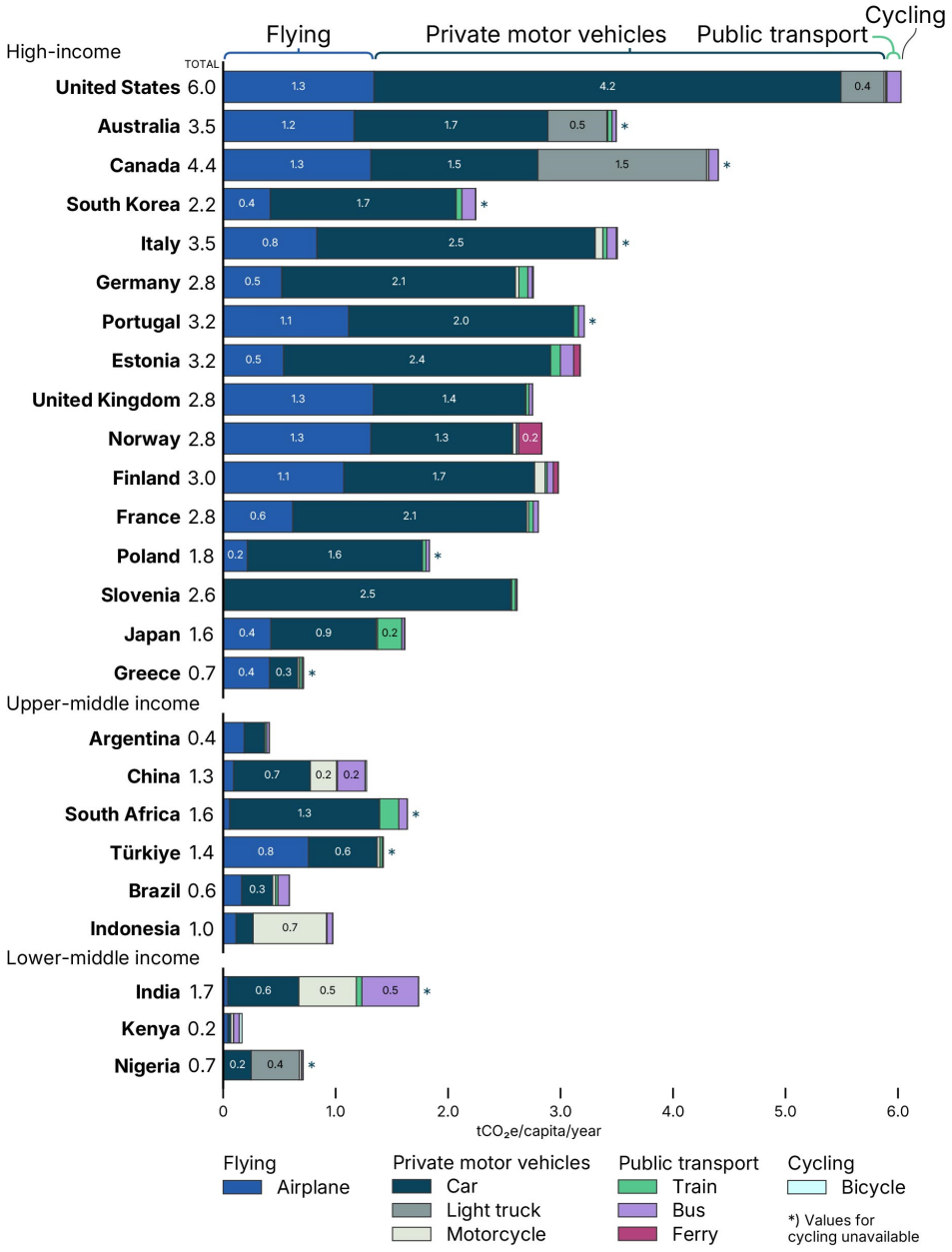
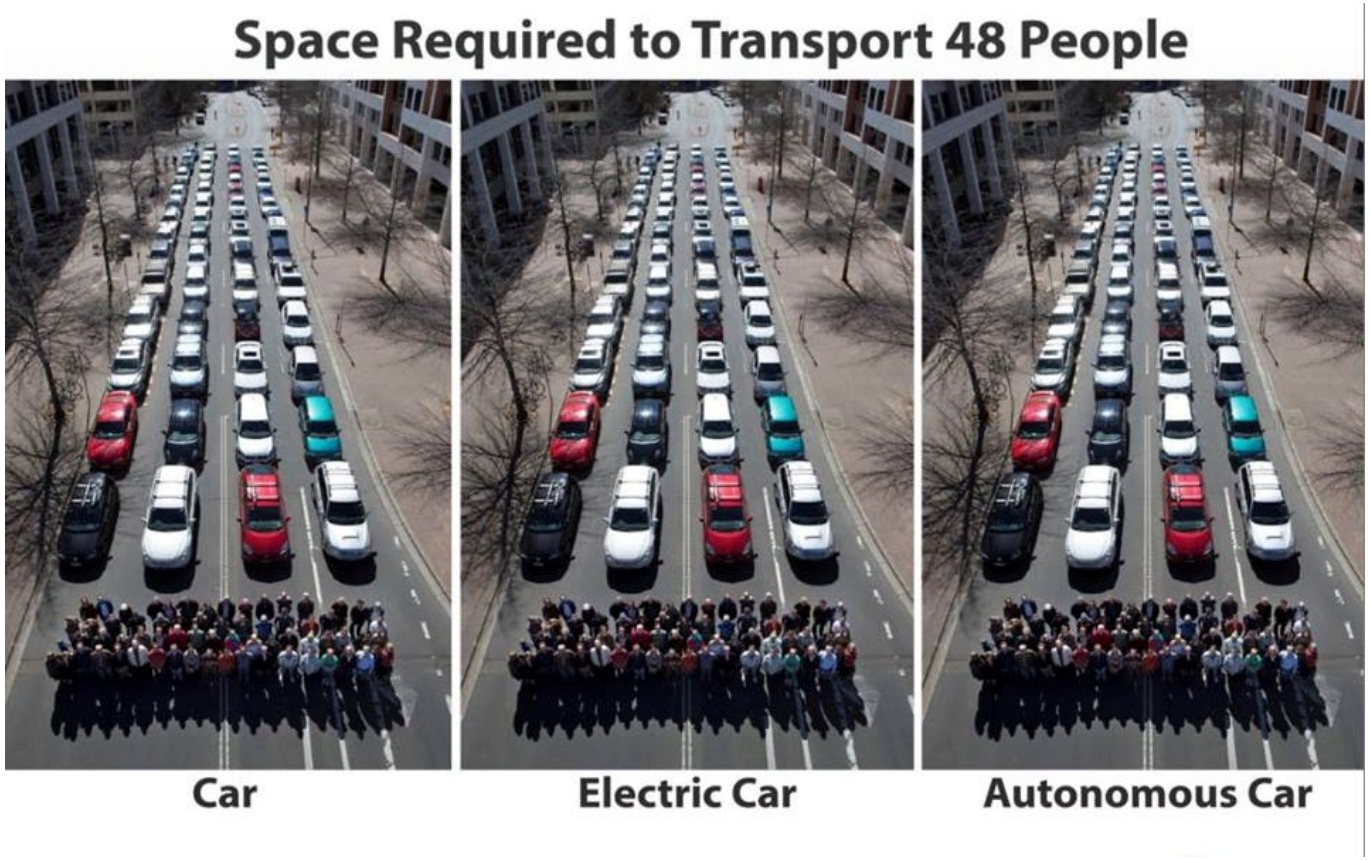
Some fallacies in the sustainability transition!

- *Lock-in effects*
- *Distancing*
- *Rebound effects*
- *Downcycling*
- *Behaviour gaps*

1. Lock-in effect: *new <> better*





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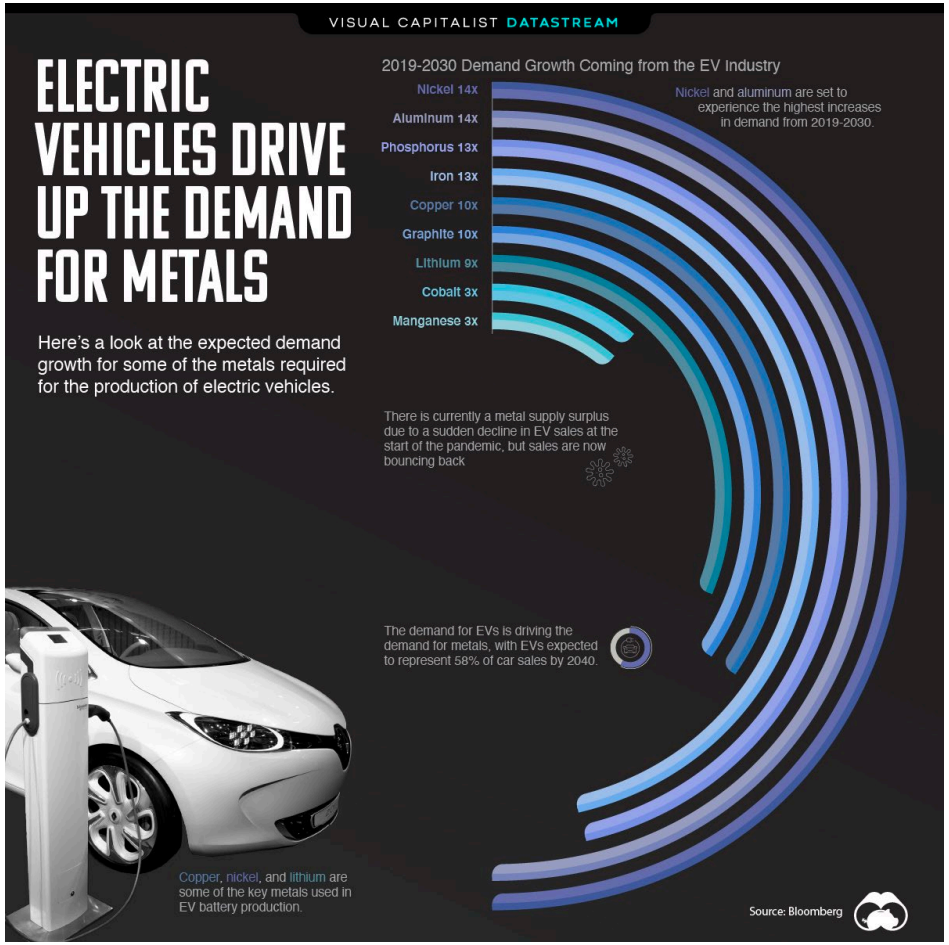
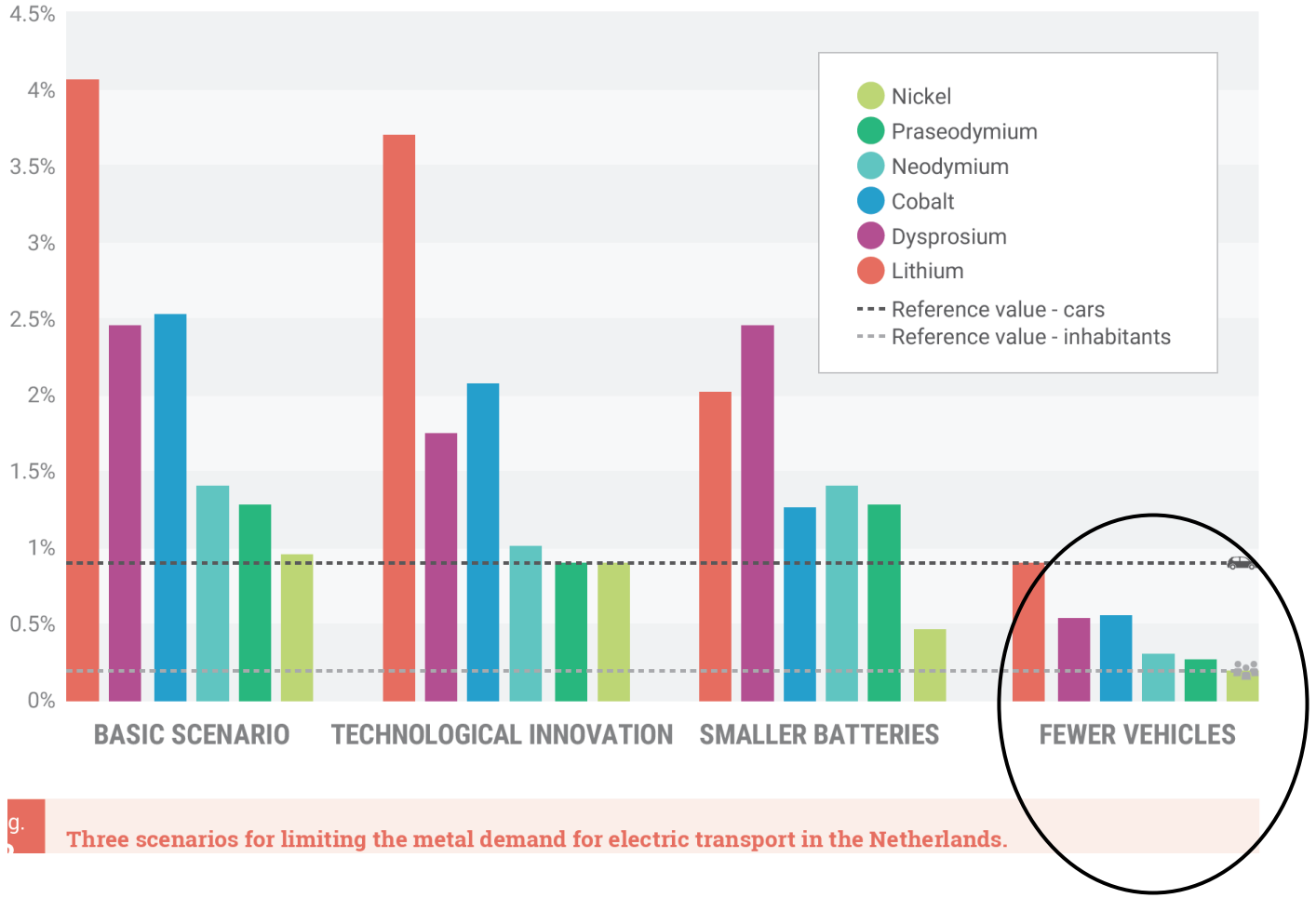
Three scenarios for limiting the metal demand for electric transport in the Netherlands.





g. **Three scenarios for limiting the metal demand for electric transport in the Netherlands.**

Sybren Bosch, Pieter van Exter, Dr. Benjamin Sprecher, Hendrik de Vries, Noortje Bonenkamp. *Metal Demand for Electric Vehicles: Recommendations for fair, resilient, and circular transport systems - Netherlands perspective*. https://www.metabolic.nl/publication/metal-demand-for-electronic-vehicles/

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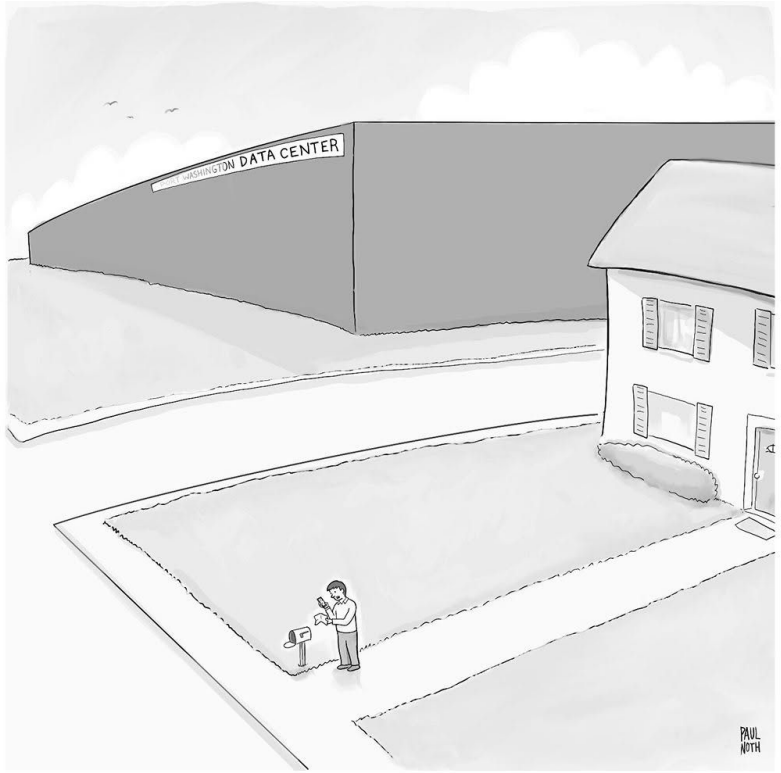
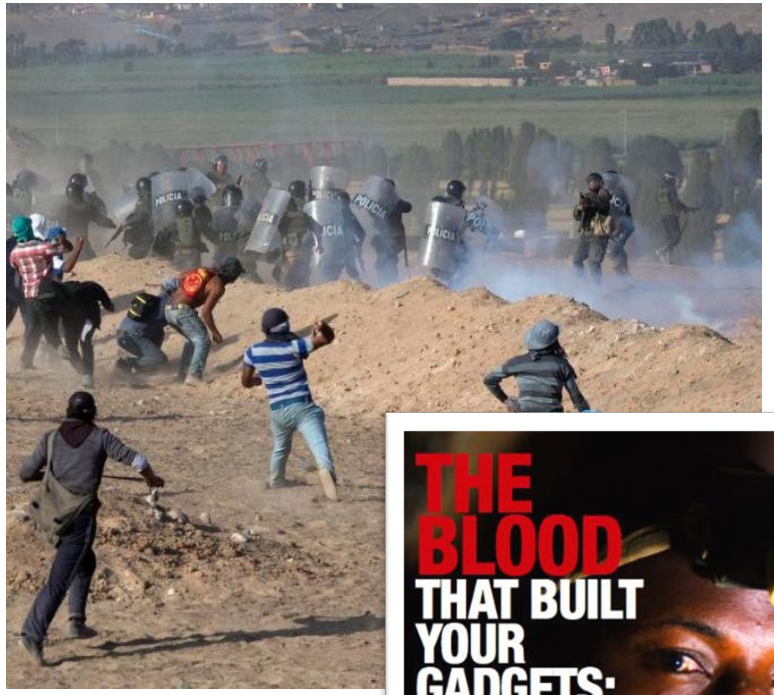
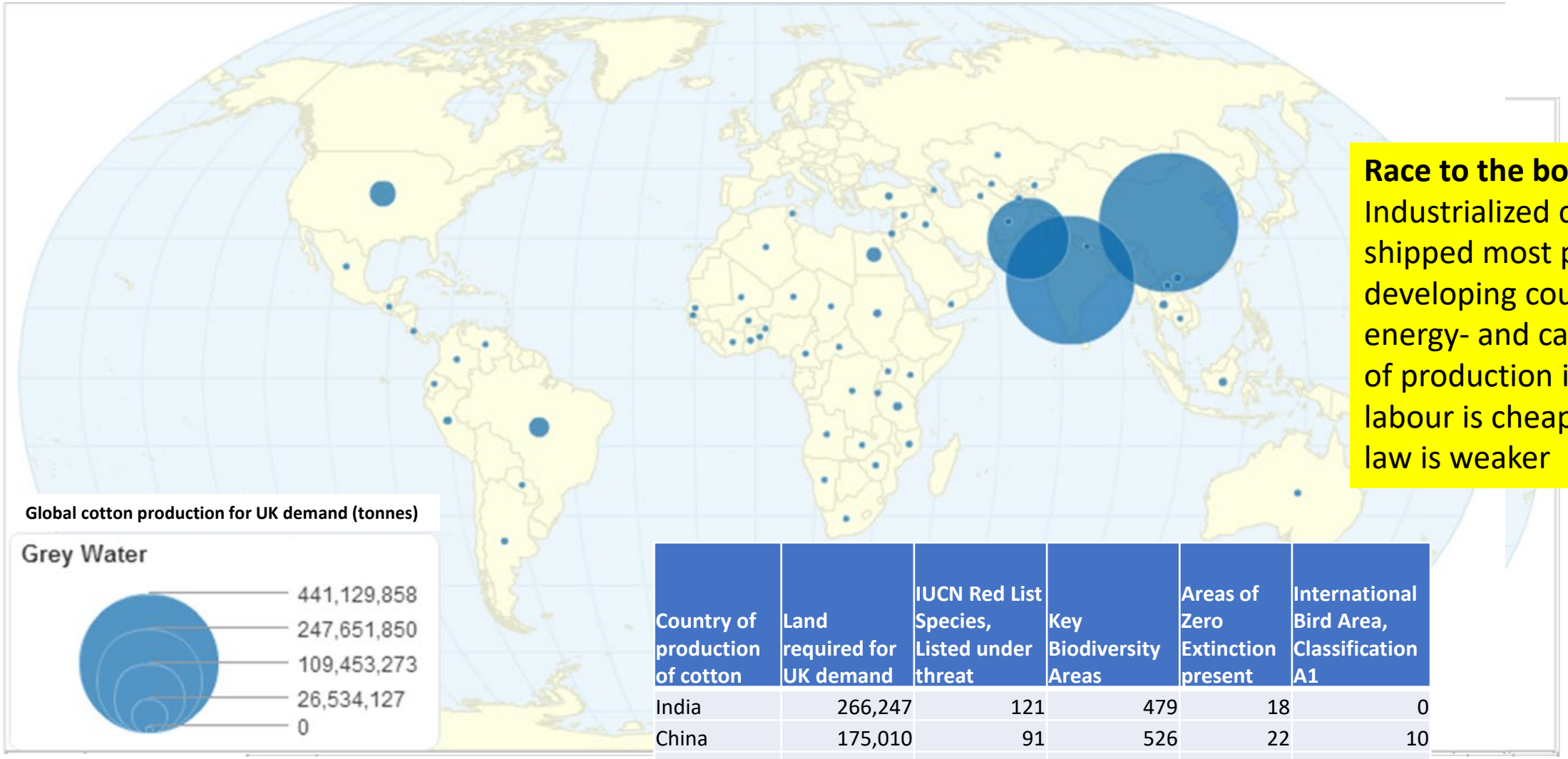
2. Distancing: *out of sight <> out of planet*



"ChatGPT, why is my electric bill so high?"



where is the production for UK demand happening?



Global cotton production for UK demand (tonnes)

Race to the bottom
Industrialized countries have shipped most production to developing countries – where energy- and carbon-intensity of production is higher, labour is cheap, and rule of law is weaker

Country of production of cotton	Land required for UK demand	IUCN Red List Species, Listed under threat	Key Biodiversity Areas	Areas of Zero Extinction present	International Bird Area, Classification A1
India	266,247	121	479	18	0
China	175,010	91	526	22	10
Pakistan	114,671	17	55	0	0
Tanzania	29,269	120	112	9	15
USA	28,496	56	244	15	2
Uzbekistan	13,060	11	51	0	33

www.chartsbin.com

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3. **Downcycling**: *recycling <> circular*

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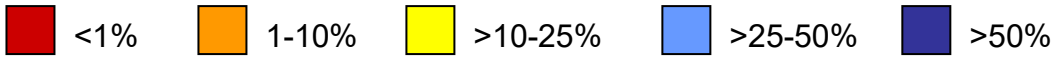
We are far from recycling enough!

End-of-life recycling rates for sixty-two metals

1 H																2 He
3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
55 Cs	56 Ba	*	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	**	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Uub	113 Uut	114 Uuq	115 Uup	116 Uuh	(117) (Uus)	118 Uuo

* Lanthanides	57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
** Actinides	89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr



T. Graedel et al. 2011. Recycling Rates of Metals, *UNEP IRP*

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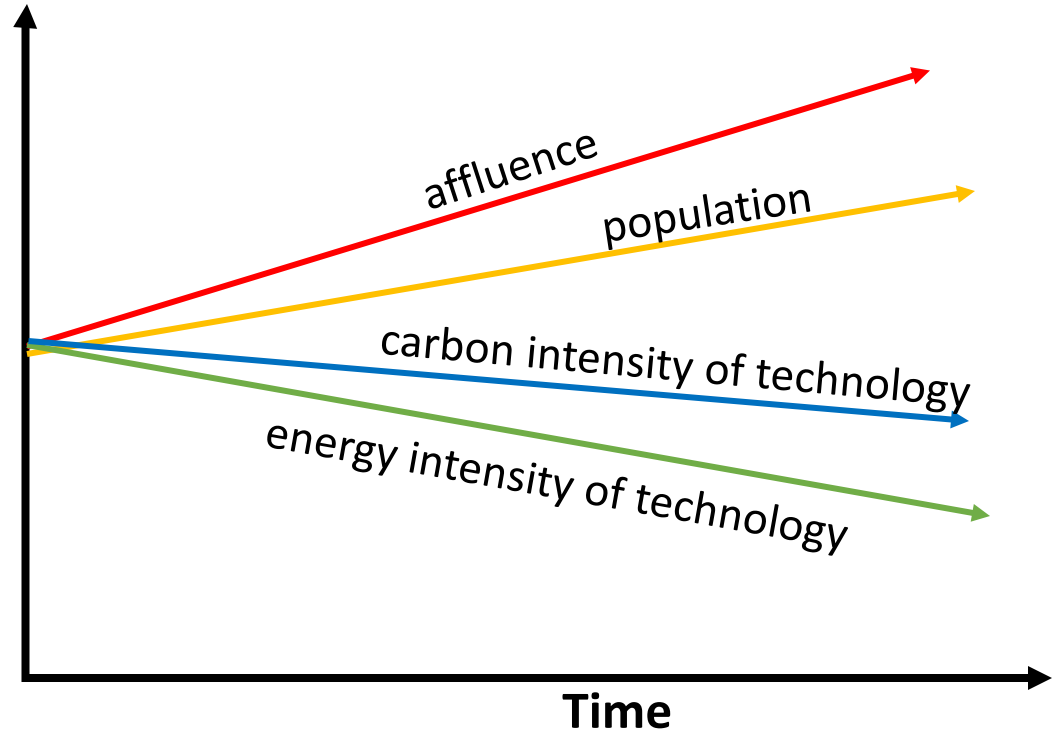
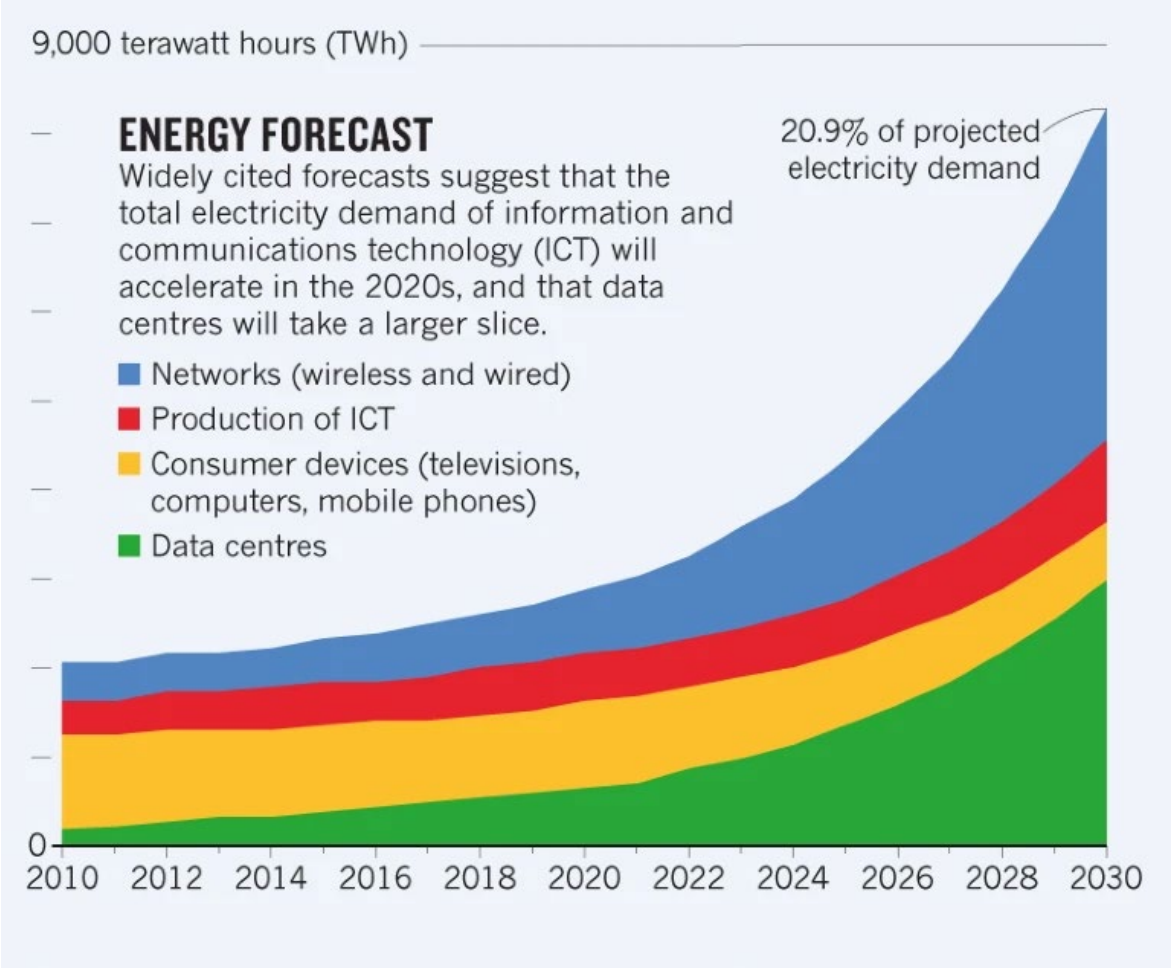
4. Rebound effects: *efficient <> sustainable*

CO2 footprint =
Pop. X Tech affluence X energy intensity X carbon intensity



Source: Bol D. et al., 2021. Moore's Law and ICT Innovation in the Anthropocene



Jones, N. 2018. How to stop data centres from gobbling up the world's electricity. Nature

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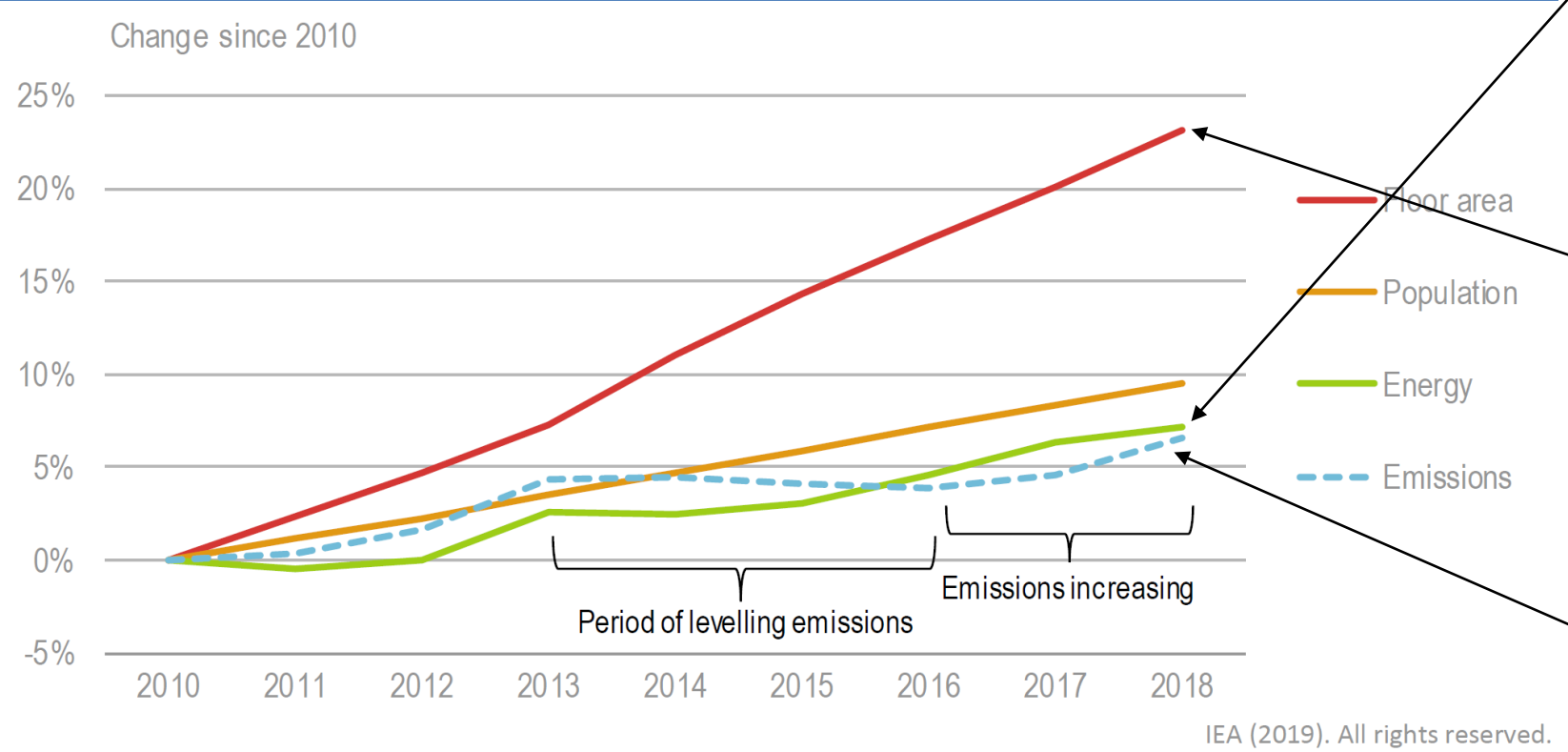
Rebound effects II: e.g. *housing*

Figure 1 • Changes in floor area, population, buildings sector energy use and energy-related emissions globally, 2010-18



Source: Derived from IEA (2019a), *World Energy Statistics and Balances 2019*, www.iea.org/statistics and IEA (2019b) *Energy Technology Perspectives*, buildings model, www.iea.org/buildings.

We are getting more efficient in energy and resource use, but…

…efficiency is outpaced by home sizes - floor area has grown worldwide by 23% since 2010, and by 3% since 2017…

…so, overall, emissions from housing are going up

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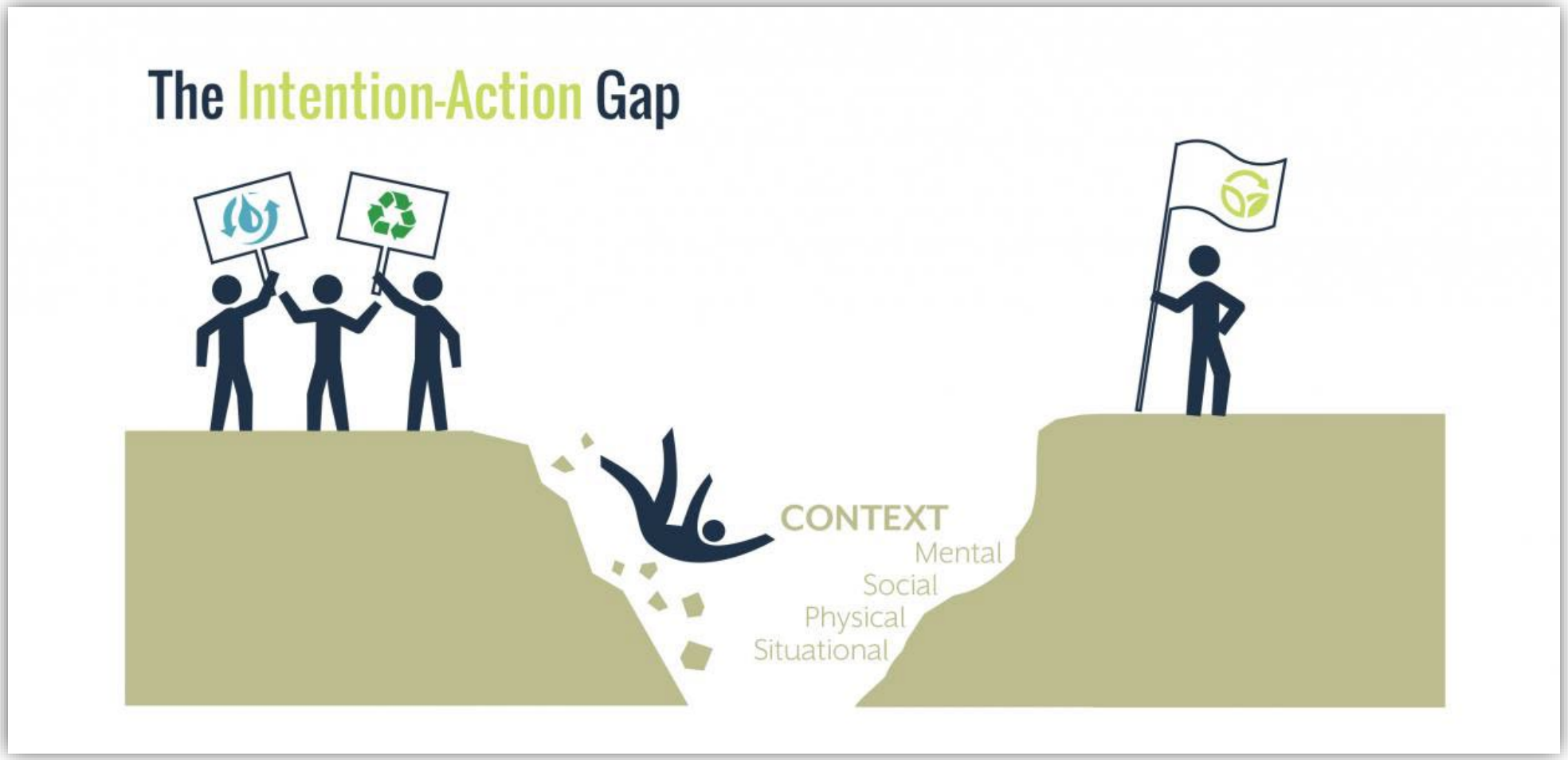
5. Behaviour gaps: *awareness <> action*



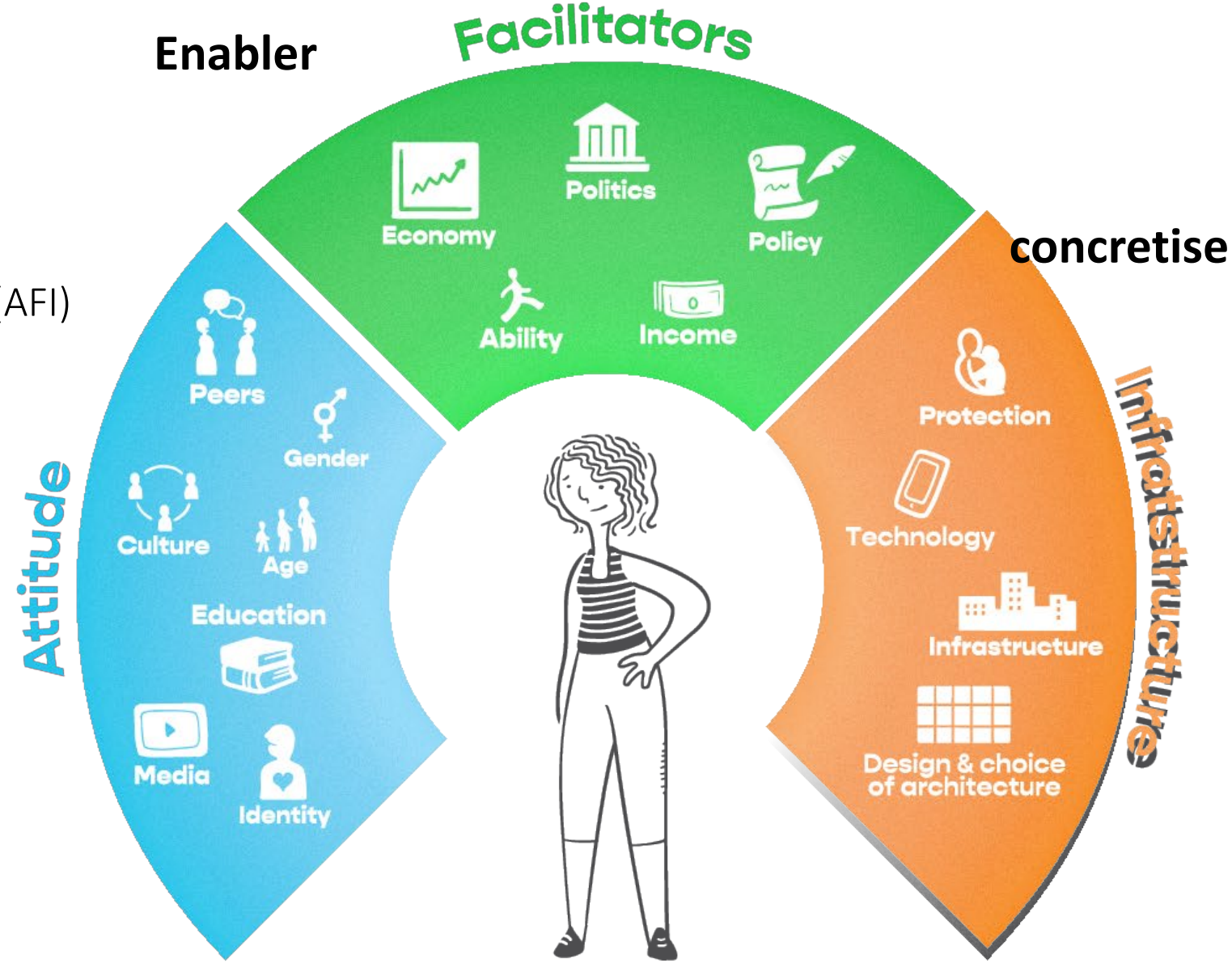
UNEP. 2017. Consuming Differently, Consuming Sustainably: Behavioural Insights for Policymaking


Can green consumerism buy our way out of this...?
GREEN OPTIONS
SG Living
OPPORTUNITY green
being green and being profitable
clickgreener.com
babycenter store
ENN ENVIRONMENTAL NEWS NETWORK
Ecological Footprint
ftc
eco in the market
ECO BIND
Green
Green Party of Aotearoa New Zealand
eco depo
millionTrees NYC
A PLANYC INITIATIVE WITH NYC PARKS AND NEW YORK RESTORATION PROJECT
LocalHarvest
real food. real farmers. real community
PLENTY
IT'S EASY BEING GREEN
gllgreen
THINK ACT PROTECT
greenleaves vitamins
GREENFUEL TECHNOLOGIES CORPORATION
ENVIROFIT
PLAN IT GREEN PRINTING
ECO BAGS!
BUY NOW
whole earth
GREENPEOPLE
ENVIRONMENTAL CHOICE
CHOIX ENVIRONNEMENTAL
BAY AREA
GREEN BUSINESS PROGRAM
eco-t
justgreen
ecogeek
enviro ENTREPRENEUR
ECO TOWELS!
BUY NOW
Simple Steps to Non-Toxic
ECO BOTTLES!
BUY NOW
ECO CLOTHES!
BUY NOW
ECO CUPS!
BUY NOW
ECO STRAWS!
Crispy Green
naturalpath MEDIA
BUY NOW
GoingGreen
planetECO
the ecovillage AT CURRUMBIN
ideal bite
GAIAM
green BUSINESS
GREEN LIGHT PROJECT
ECO LINE
basil
heatofgreen
thedailygreen.com
green rewards
CLEAN & SIMPLE
ECO CERTIFIED
Environmental graffiti
BRIGHTER PLANET

Key Determinants:
The Attitude-Facilitators-Infrastructure (AFI) Framework

Awareness

Enabler



concretise

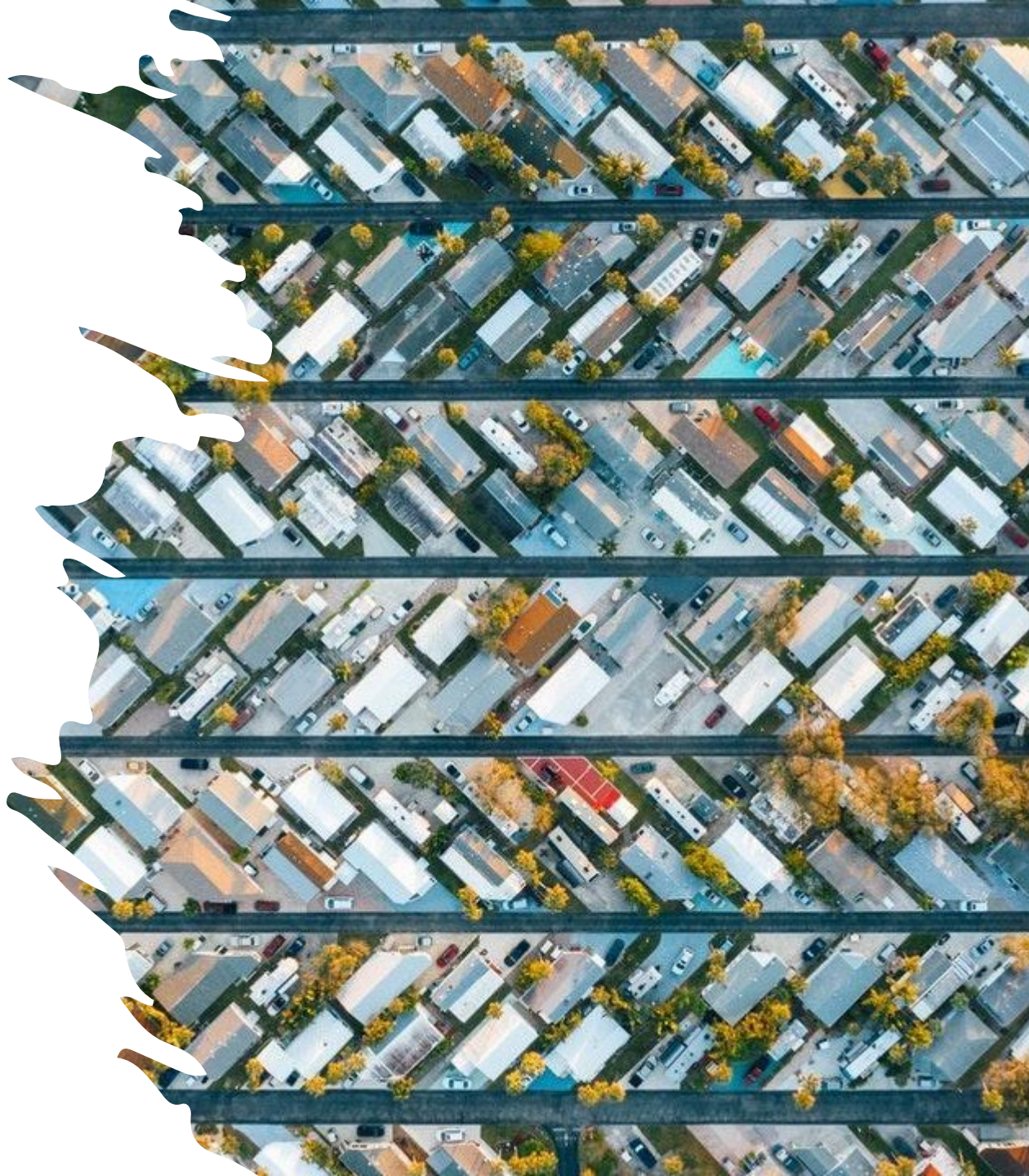
Source: Akenji & Chen (2016) A framework for shaping sustainable lifestyles: determinants and strategies. UNEP

Enabling shared prosperity in the sustainability transition

- *Re-zoning*
- *Public luxury*
- *Universal provisioning*
- *Wellbeing*
- *Social floor*

1. Rethink urban zoning

- From strict-use purpose to Live-play-work zones and multipurpose buildings
- Strengthened neighborhood scale (tools libraries, district heating…)
- Revise codes for new buildings and renovation with mandatory requirements reflecting sufficiency & efficiency parameters – see passive housing
- Widen the commons – more shared and community spaces



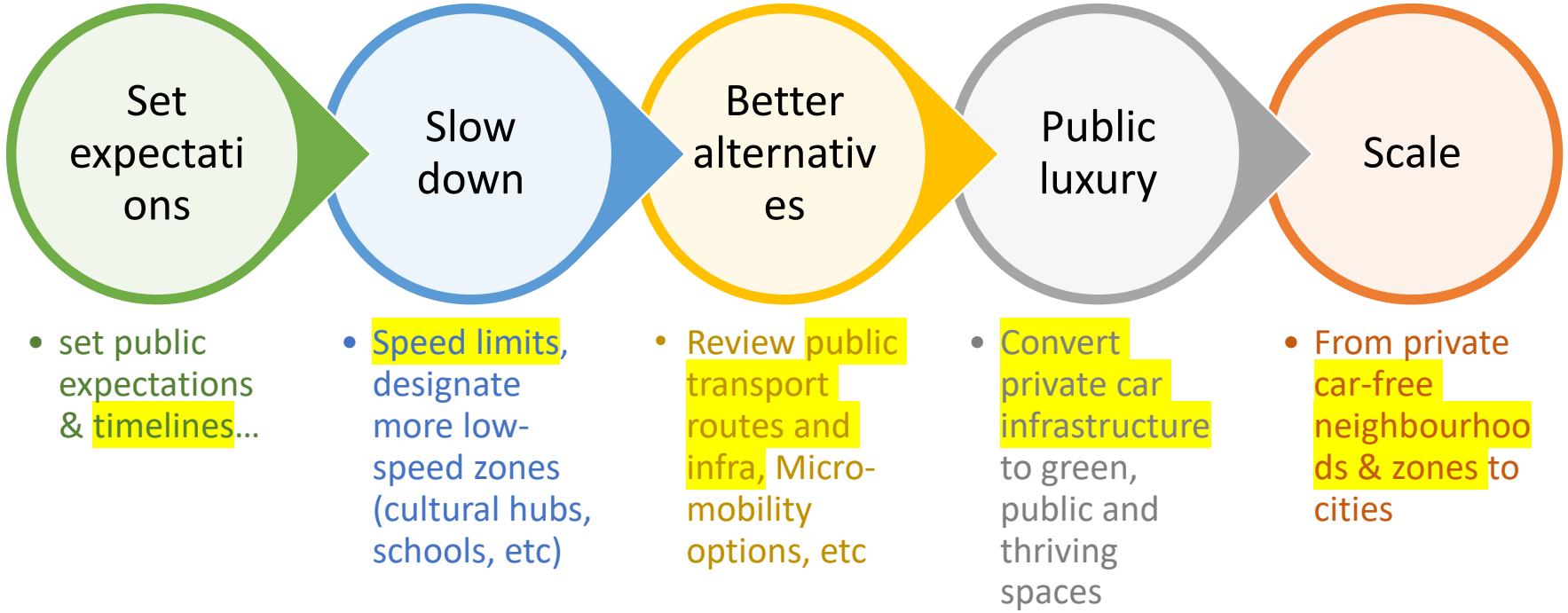
2. Create public luxury

Most cities will have car-free city centres by 2035 and be completely private car-free by 2050.

Car culture and housing are biggest visual markers of social disparity

They fragment cities, take up disproportionate resources, space and finances

Create infrastructure lock-ins



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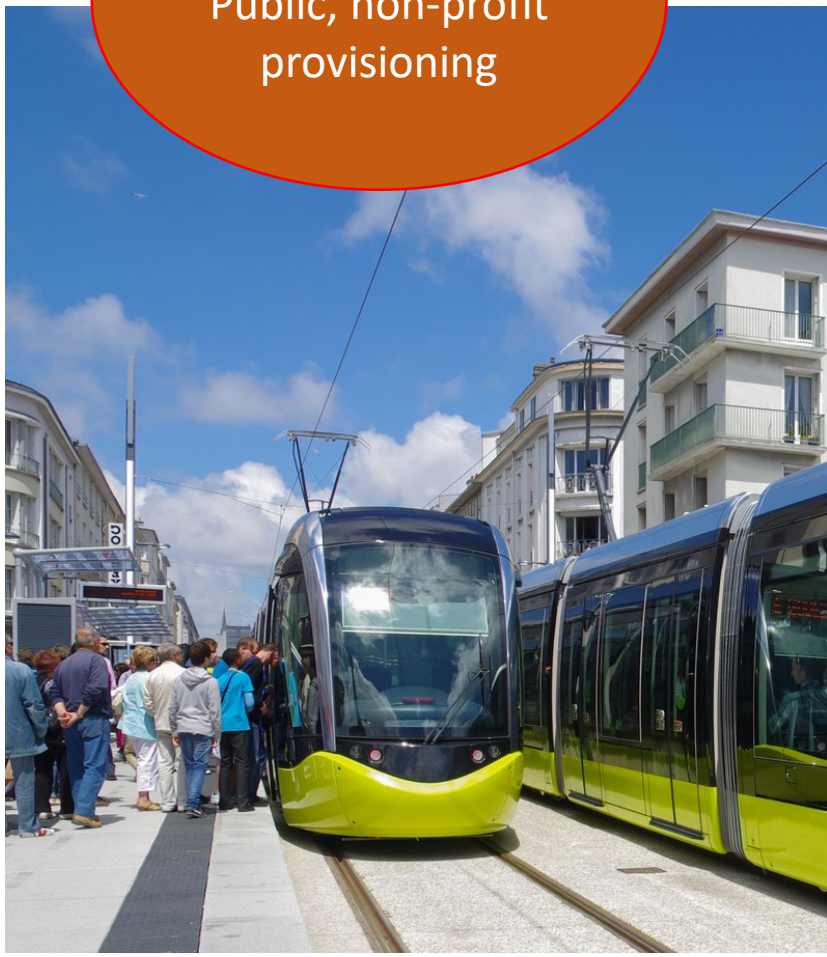
3. Universal Provisioning

Housing:
no speculative financial investment!

Food:
non-profit provisioning for basic meals

Transportation:
Public, non-profit provisioning



Dwell.com

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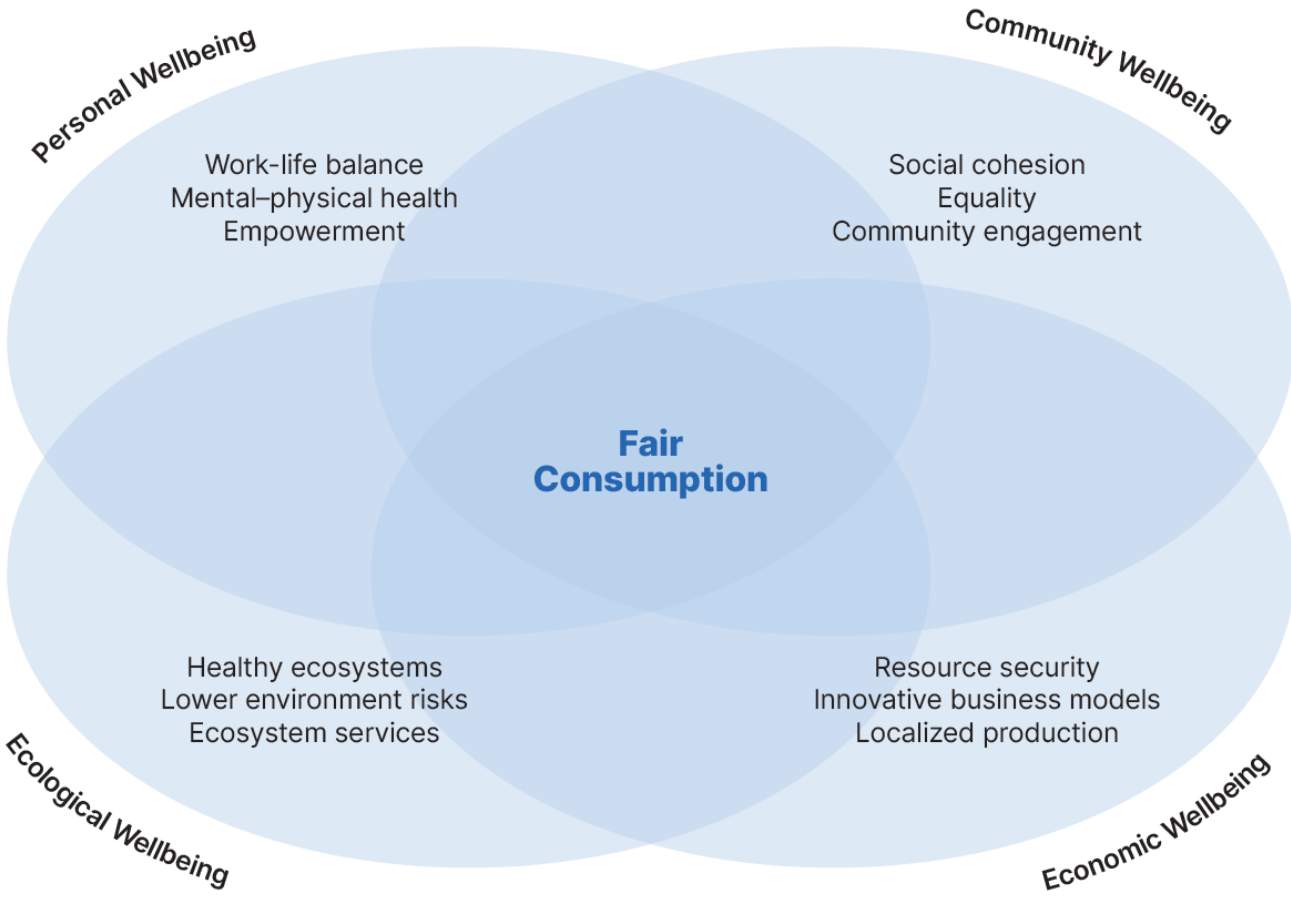
4. Put wellbeing at the centre

- New progress indicators that intersect climate change and social issues
  - Urban Wellbeing Index
  - A social tension Index
- Conduct future-proof audits for municipal budgets and public infrastructure investments (for sustainable and social responsible)

Multiple Co-benefits

Figure E.1. Co-benefits of adopting 1.5-Degree Lifestyles



Achieving a fair consumption space could bring about a number of co-benefits in terms of increased personal, community, ecological, and economic wellbeing.

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5. Choice editing

Edit in:

Alternative and more sustainable ways to satisfy needs

- "top-runner" approach for business/social innovation
- Public transportation
- Non-animal based diets!

Sustainable society

- Equitable access
- Within planetary boundaries
- Wellbeing

Edit out:

Harmful and carbon intensive consumption options from the market

- privatised benefits and distributed burden sharing: private jets, mega yachts,
- incentives for increased consumerism: frequent flier rewards, luxury hotel loyalty programs, advertising
- E.g. speculative financial "investments" from basic needs - e.g. housing, food

- Extremes of poverty and wealth (e.g. over 40% of national wealth cannot be held by top 10% of population)
- E.g. Convert private car infra to public/green spaces

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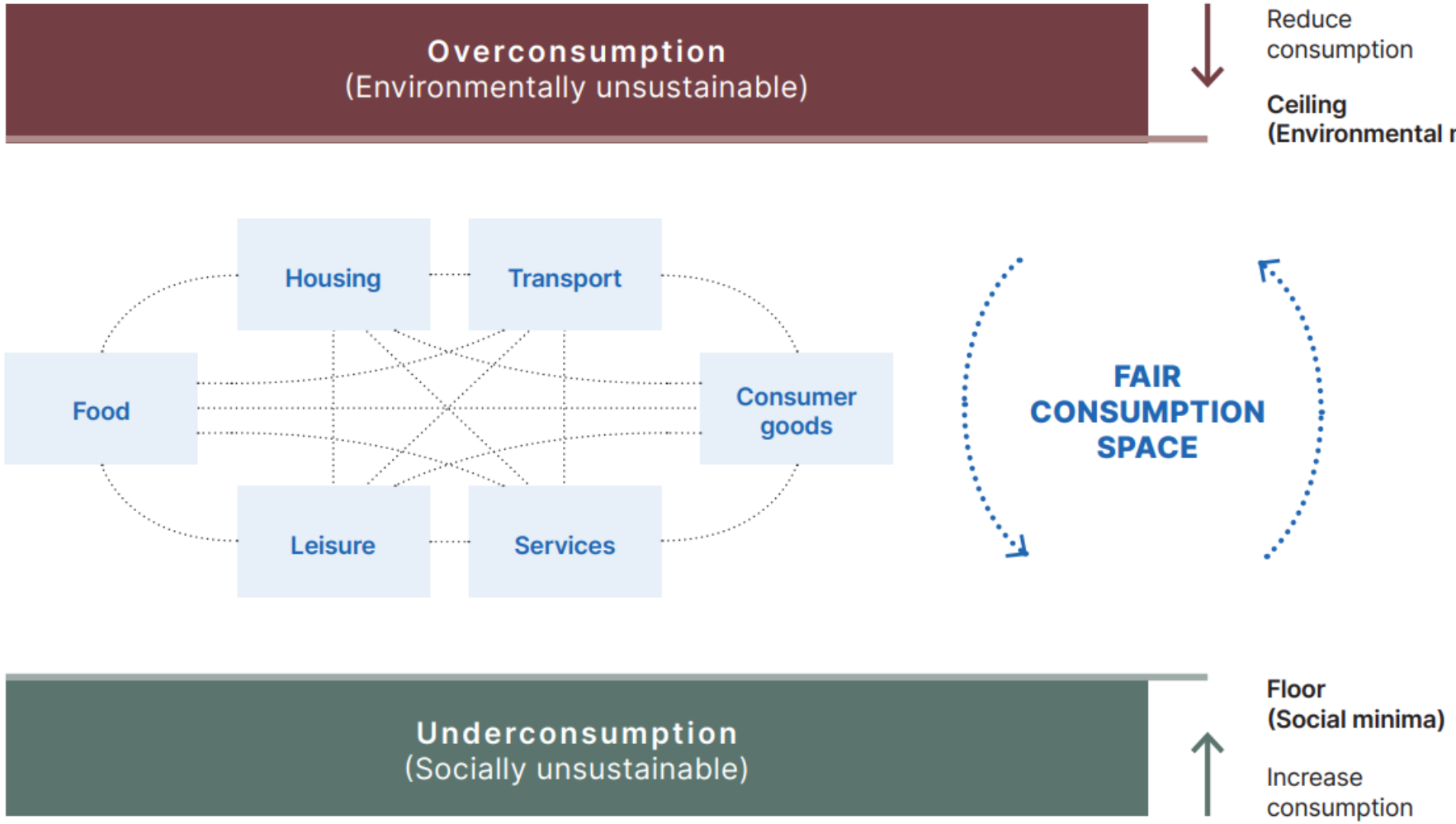
Build a social floor



In a climate emergency…
… coupled with vast inequalities…
…how do we allocate the limited fast-shrinking carbon budget …
…in a manner that is fair…
… within a limited timeframe

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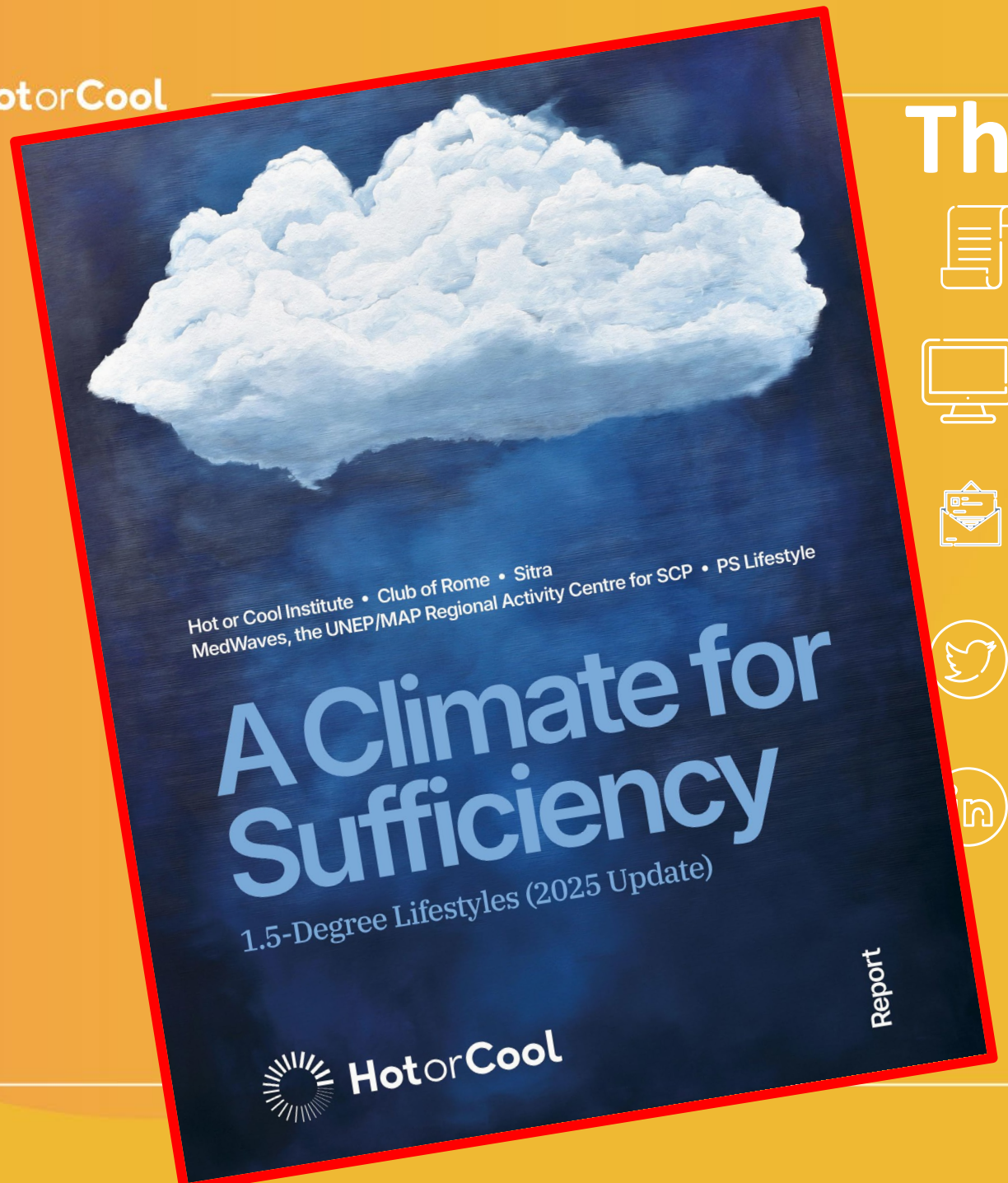

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