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Multidisciplinary Applied Research Network
on Transforming Societies of Global South

Understanding the Multi-dimensional Challenges for sustainability transitions

Joyashree Roy
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Vicious cycle of multiple challenges and unfinished agenda

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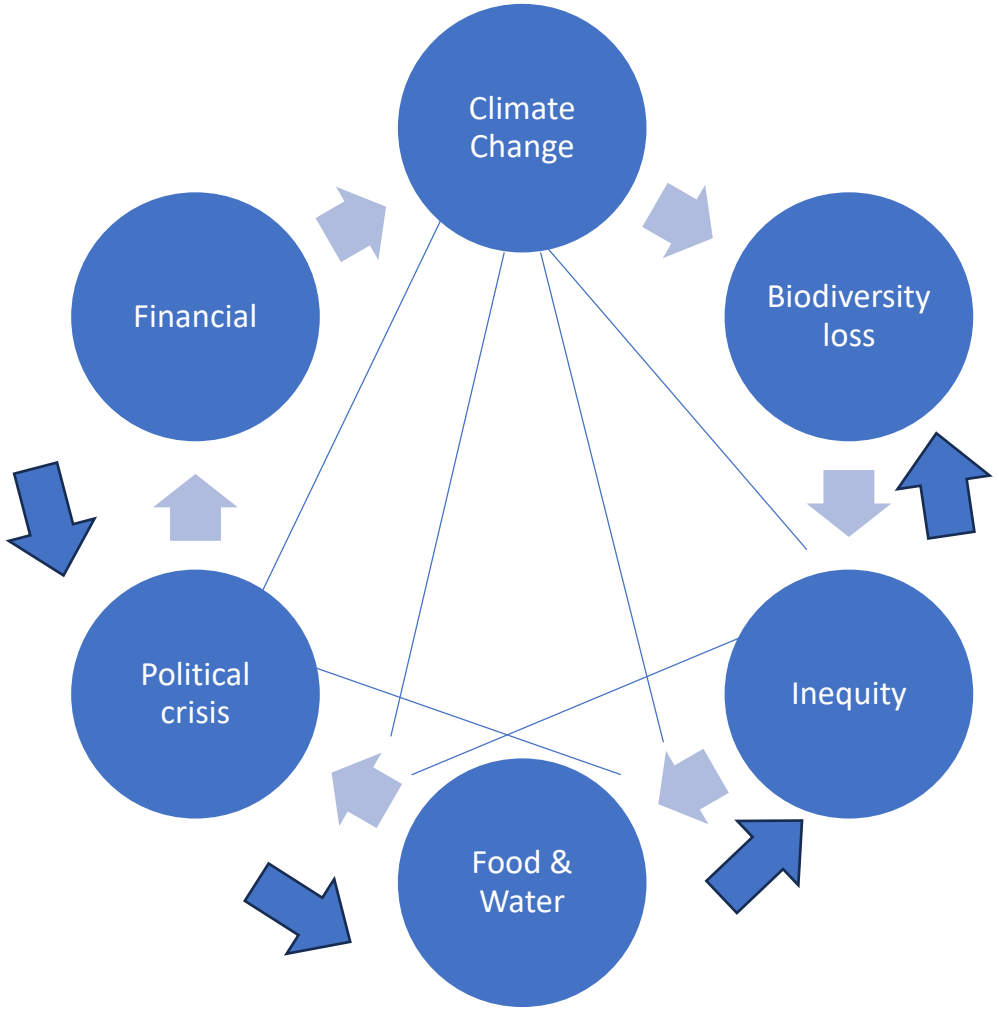

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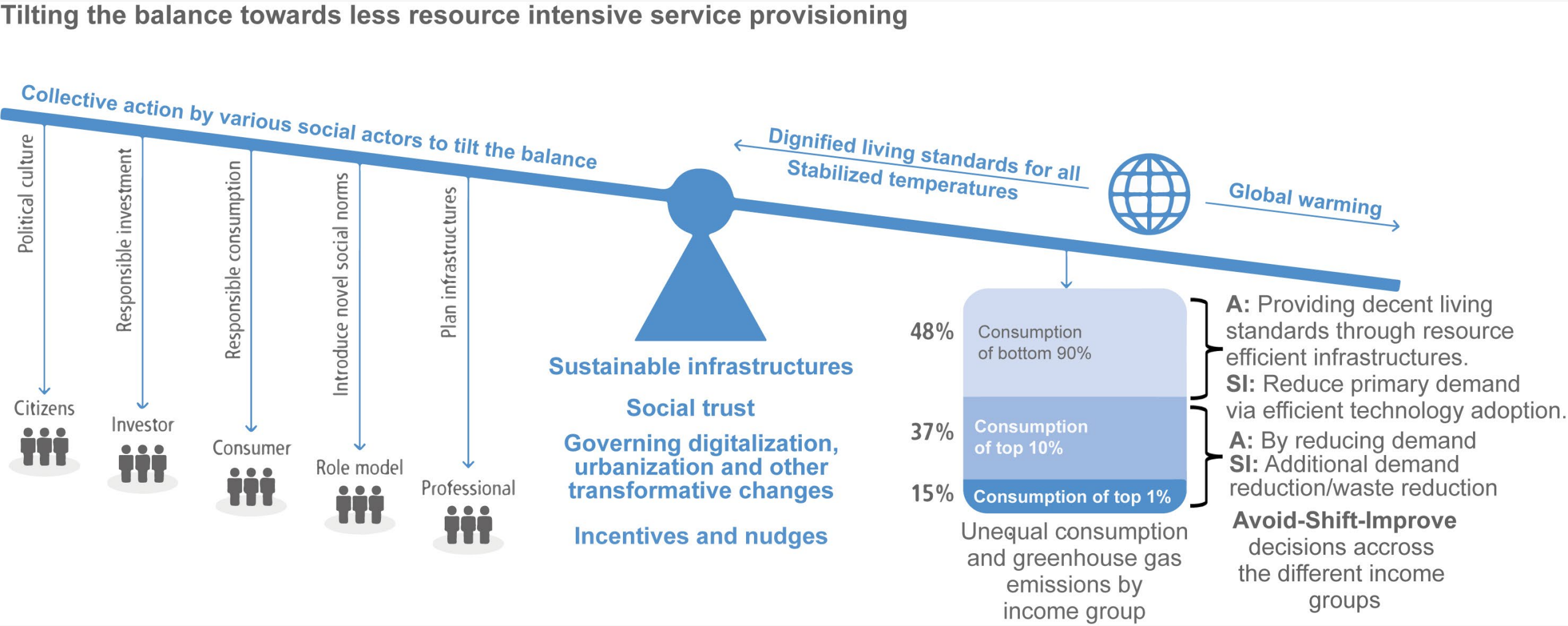
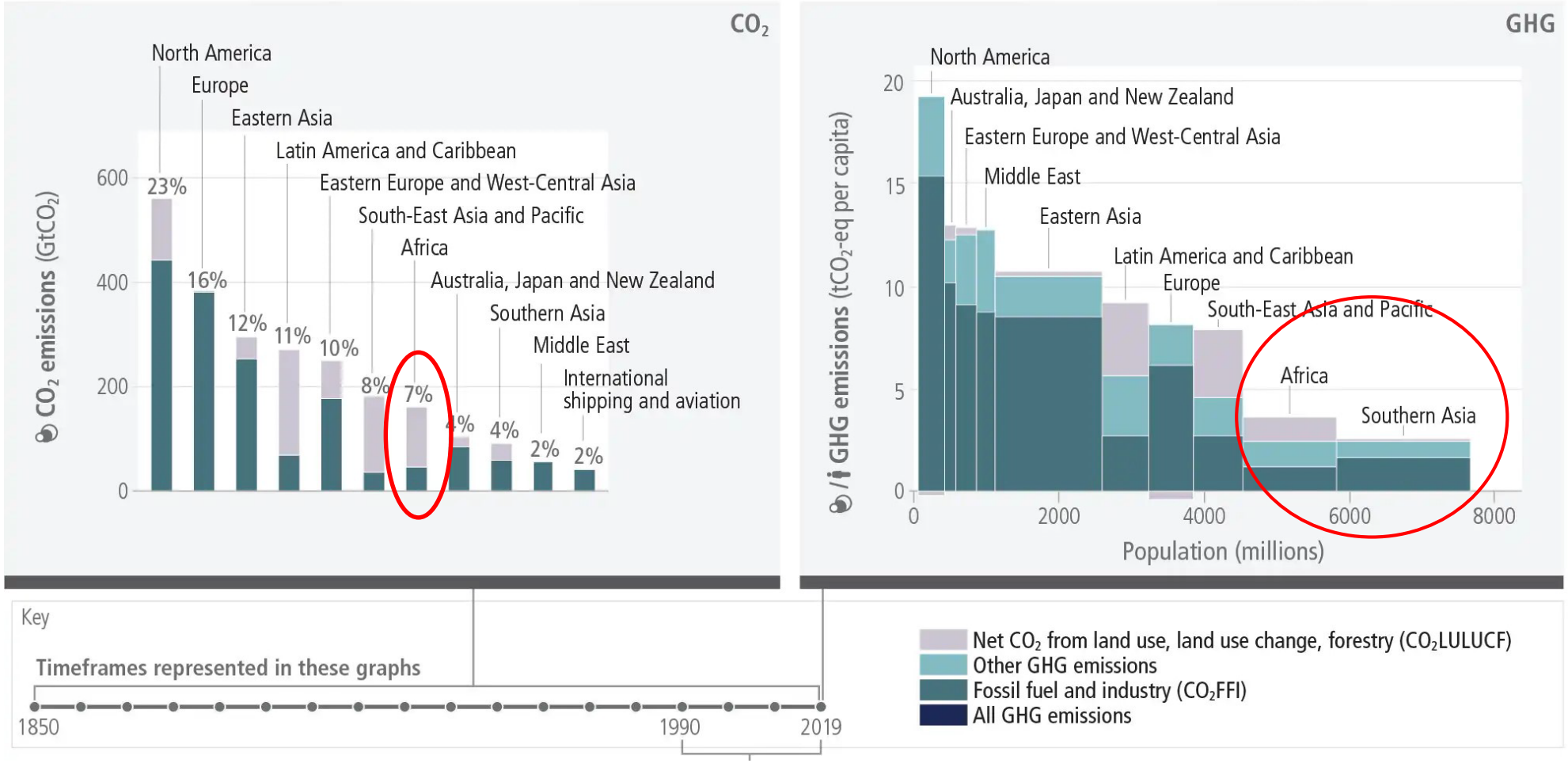
Human agency matters: Inequity in consumption



Emissions have grown in most regions but are distributed unevenly, both in the present day and cumulatively since 1850

a) **Historical cumulative net anthropogenic CO_2 emissions per region (1850–2019)**

b) **Net anthropogenic GHG emissions per capita and for total population, per region (2019)**



Intergenerational inequality
Regional diversity in challenges

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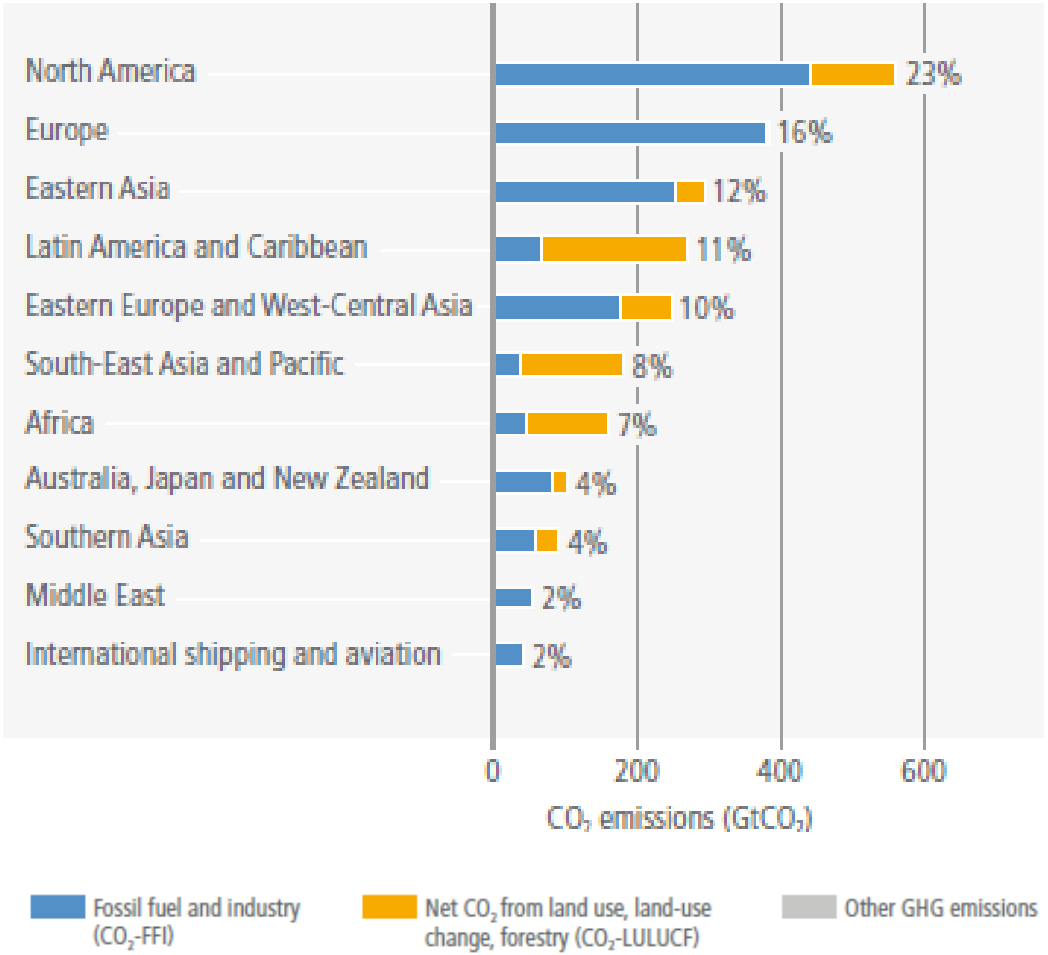
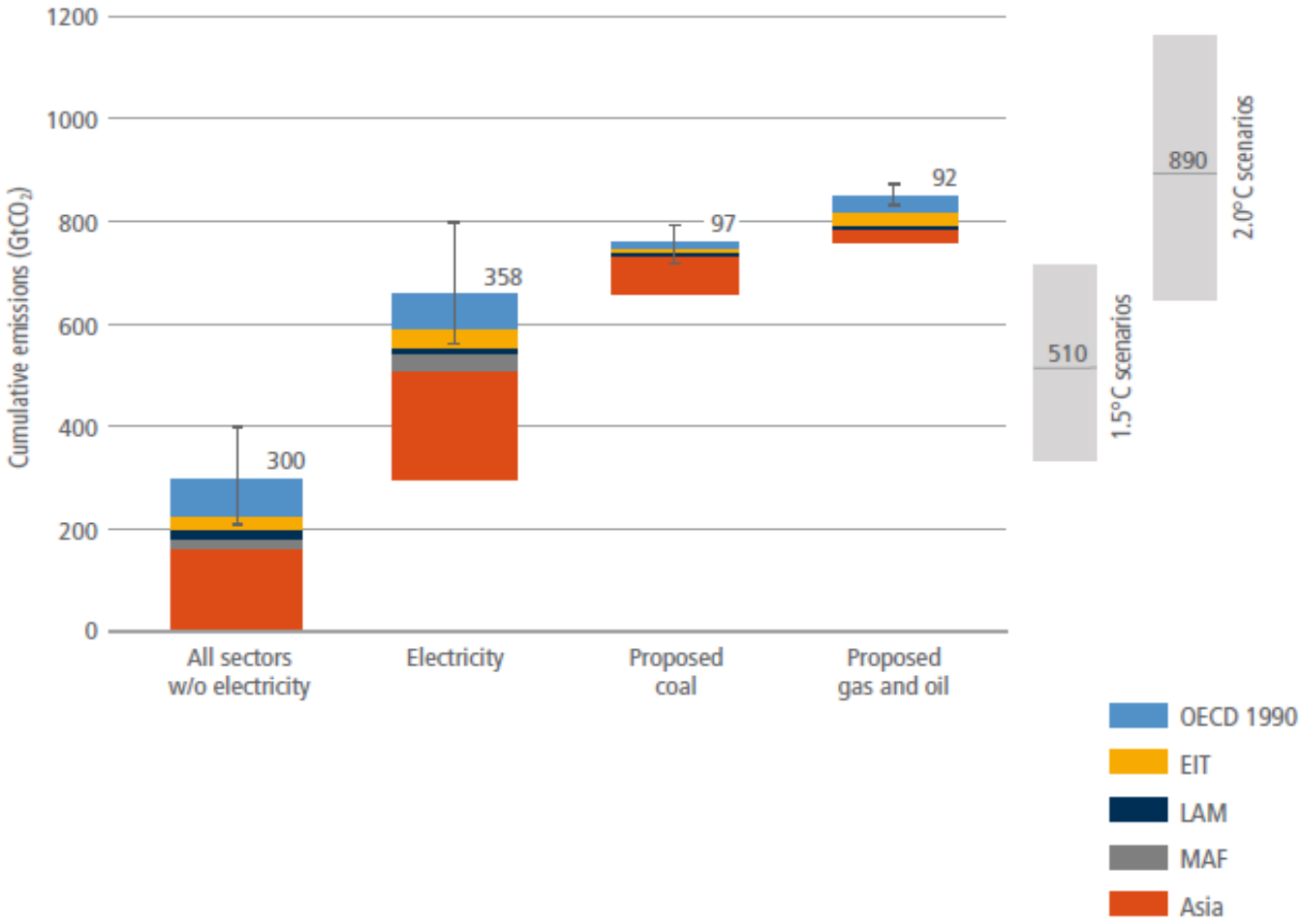
(a) Historical cumulative net anthropogenic CO_2 emissions per region (1850–2019)



Future CO2 emissions from existing and currently planned fossil fuel infrastructure in the context of the Paris Agreement carbon budgets in GtCO2



Avoiding end of pipe solutions

Lower energy demand enables 40-70% emission reductions by 2050 with lower reliance on CDR methods

Some CDR will be unavoidable to counterbalance hard-to-abate residual emissions

Large scale deployment of CDR will face major sustainability and feasibility challenges.

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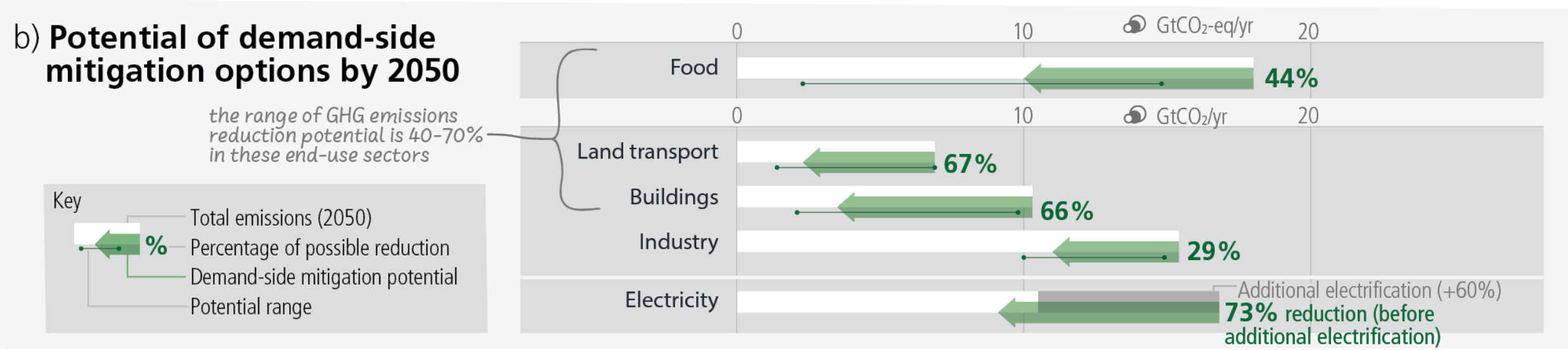
More opportunities:
Demand-side measures can reduce burden of supply side decarbonisation need
Through infrastructure design, technology access, behavior change



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Policies

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1. Current demand side policies are too fragmented, piecemeal and weak to deliver the untapped potential

2. Policy space so far focused mostly on facilitating **incremental changes/improve**: e.g., building codes, policies to promote electric car, efficient appliance standard etc., retrofit, recycle, repair, feed in tariff, subsidy to RE, heatpump. Which need to continue and be strengthened but will not be enough. Need policy mix, policy sequencing

3. Policies **beyond improve options** are necessary so that

   demand can shift (e.g., automobility to active transport)
   demand can be reduced /avoided (e.g.,WFH, sharing economy)

4. Administrative capacity as well as technical and financial support for developing and less developed countries will be necessary

Policies:
to help avoid product, service demand

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1. **Avoid food waste**: strengthening national nutritional and health safety guidelines, education to reduce/avoid food waste, policies to avoid food labelling, to increase food-shelf life, portion size in restaurants

2. **Reduce dwelling size, material use**: progressive tax with dwelling size, progressive taxation on high status consumption

3. **Avoid over heating, cooling and Lighting**: temperature set point norm, expanding building codes to encourage day light, solar passive houses, architectural design changes to reduce energy use, dress code

4. **Avoid product demand**: **More service per product**, subsidy for sharing service in EVs, reduce digital divide, Efficiency, RE and reducing status consumption, multifamily housing, compact human settlement design, long life industrial product design

Policies:
to help shift demand

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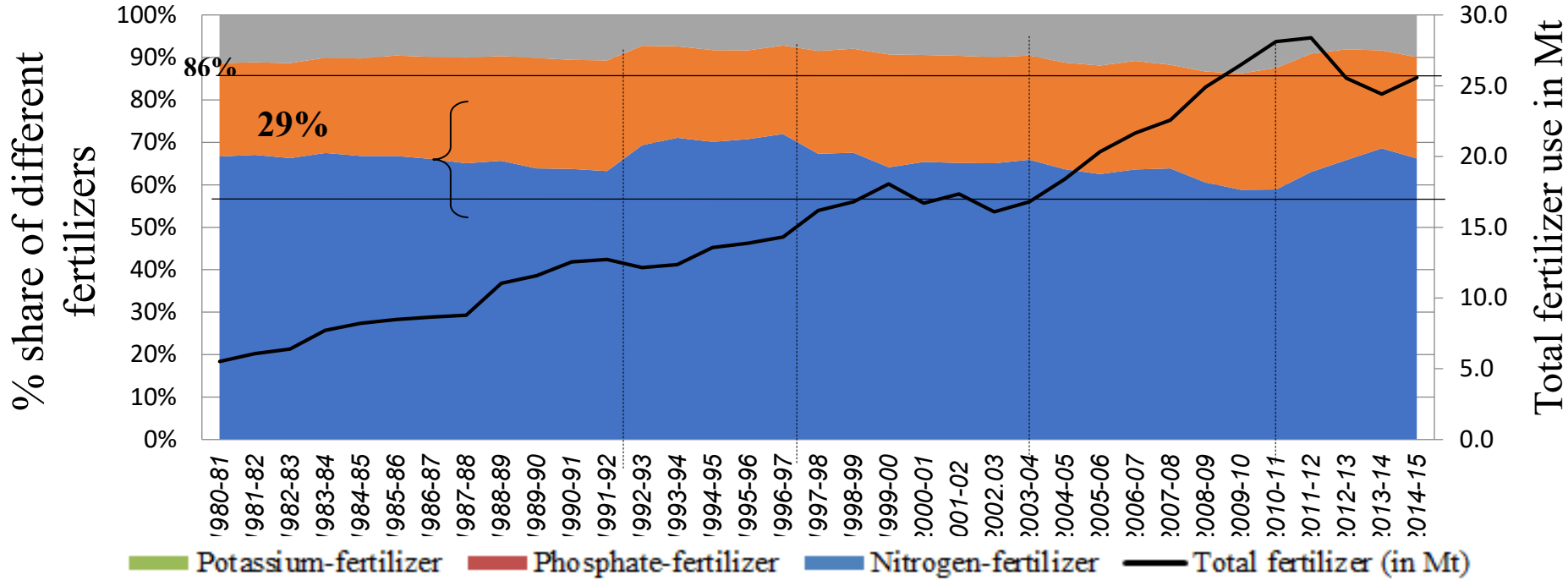
1. **Shift to active mobility, less car, air travel**: walking, biking infrastructure, Public transport- train coordination, congestion charges
Reduce/avoid food waste, policies to avoid food labelling, to increase food-shelf life
2. Multifamily housing: zoning away from single family housing, tax
3. **Shift to plant based nutritious, sustainable dietary choice**: National dietary laws, tax, education
3. **Material efficient design**: building standards, product standards with material embodied, embodied carbon standards, packaging standards
4. **Architectural design:** density standard for human settlements, shading, education

Perverse policy impact



As against the ideal ratio of 4:2:1 (approximately 57% of N, 29% of P and 14% of K) the actual ratio has always been distorted
This imbalance between the ideal and actual ratio has some policy induced effect

1977
Retention Price cum Subsidy scheme (RPS) on all fertilizers
NPK ratio: **6.3:2.4:1**

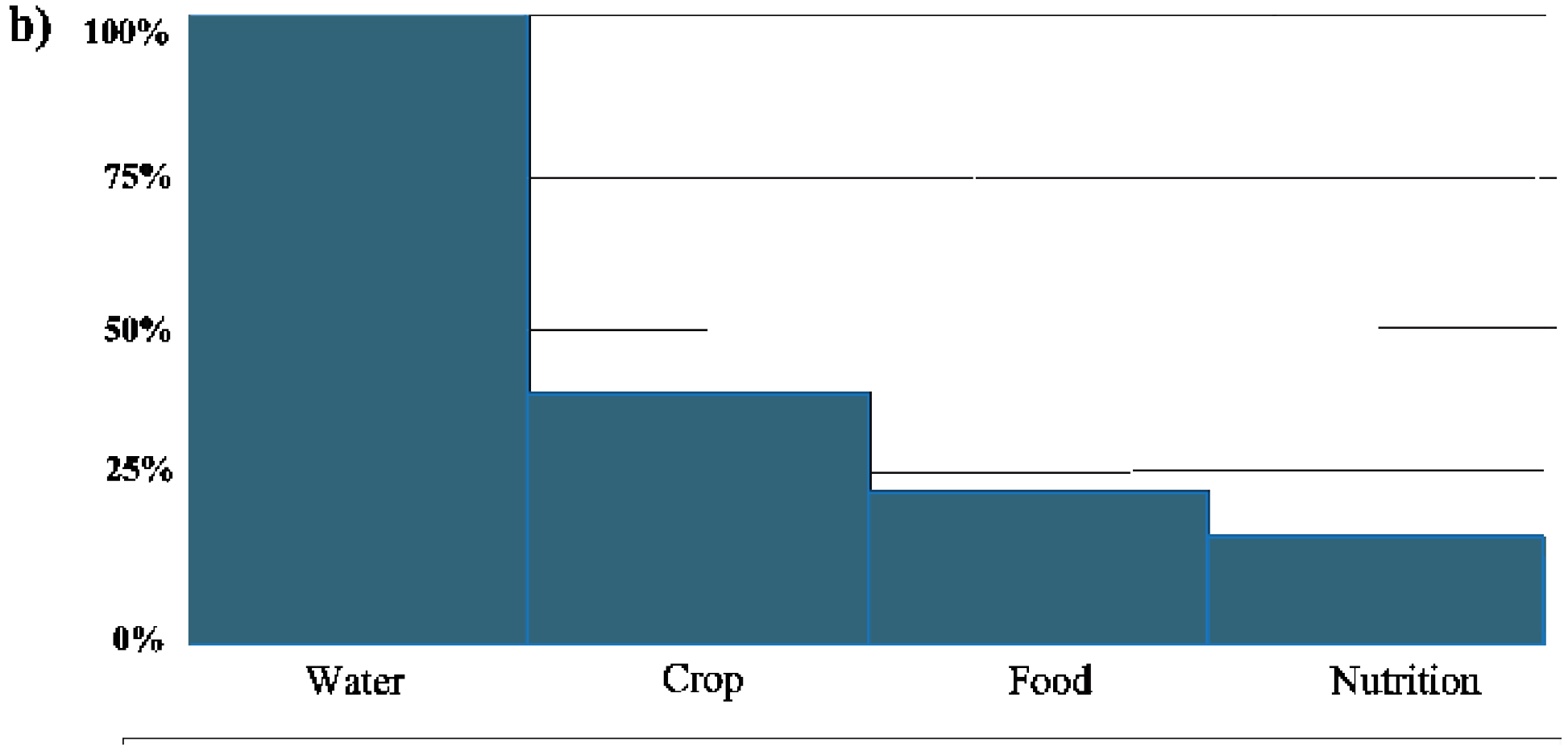
1992
Abolished RPS on P and K fertilizers only
NPK ratio: **9.2:3.2:1**

1997
GoI fixed maximum retail price (MRP) of all fertilizers
NPK ratio: **7.9:2.9:1**

2003
Phased decontrol of N fertilizer (urea)
NPK ratio: **5.2:2.2:1**

2010
Nutrient based subsidy scheme -Subsidy given based on the nutrient content of the fertilizer
-MRP on P and K fertilizers were decontrolled
NPK ratio: **8.2:3.2:1**

Service delivery model?



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Are we measuring and managing our progress holistically?

changeframing.space

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How to measure progress?
GDP or human wellbeing/welfare

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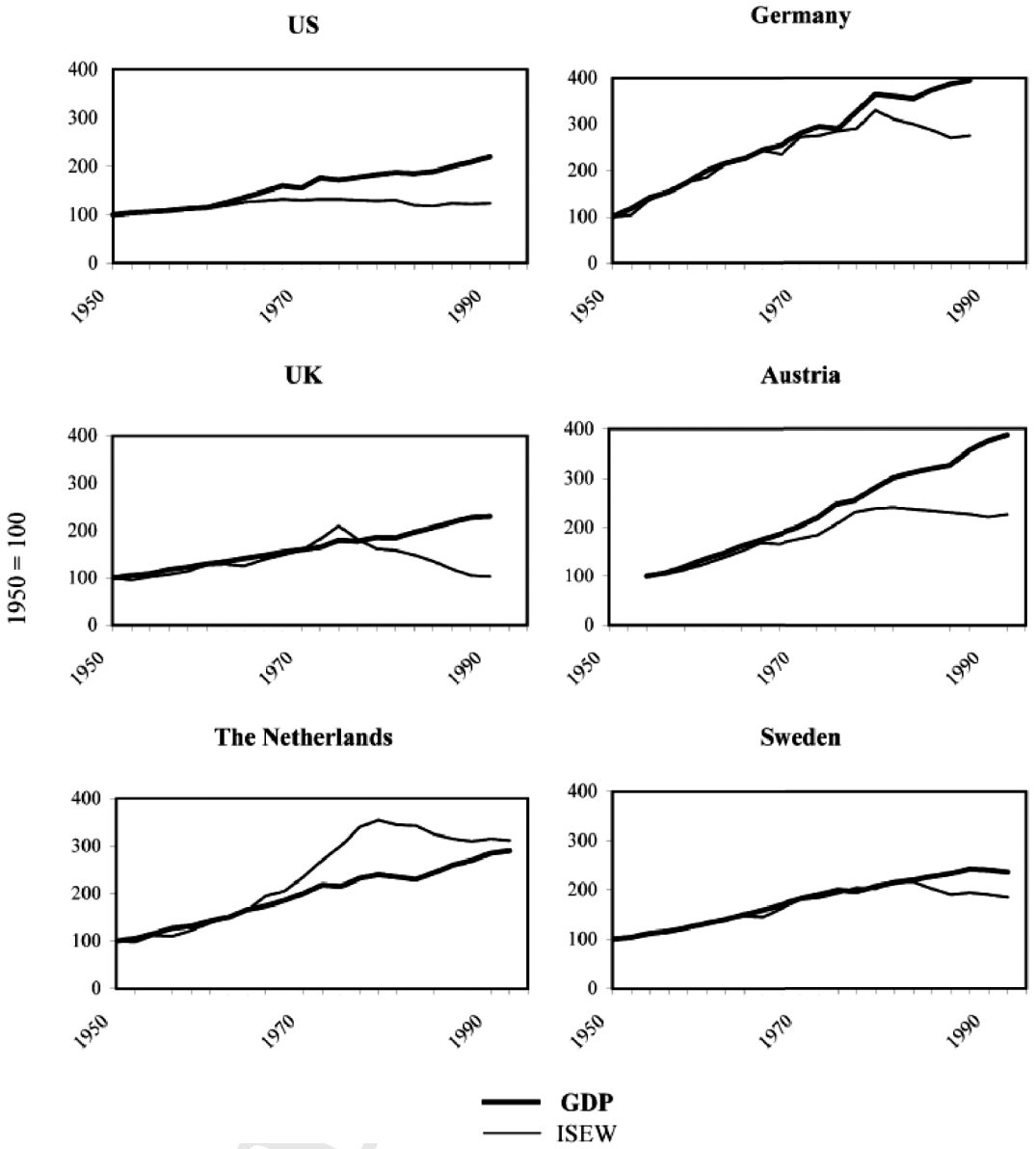

Figure 21.7 | Comparison of macro indicator: GDP and ISEW for the United States, Germany, United Kingdom, Austria, the Netherlands, and Sweden. Source: Lawn 2003.

GEA 2012 showed how GDP and Well being Indicators diverge for high income countries

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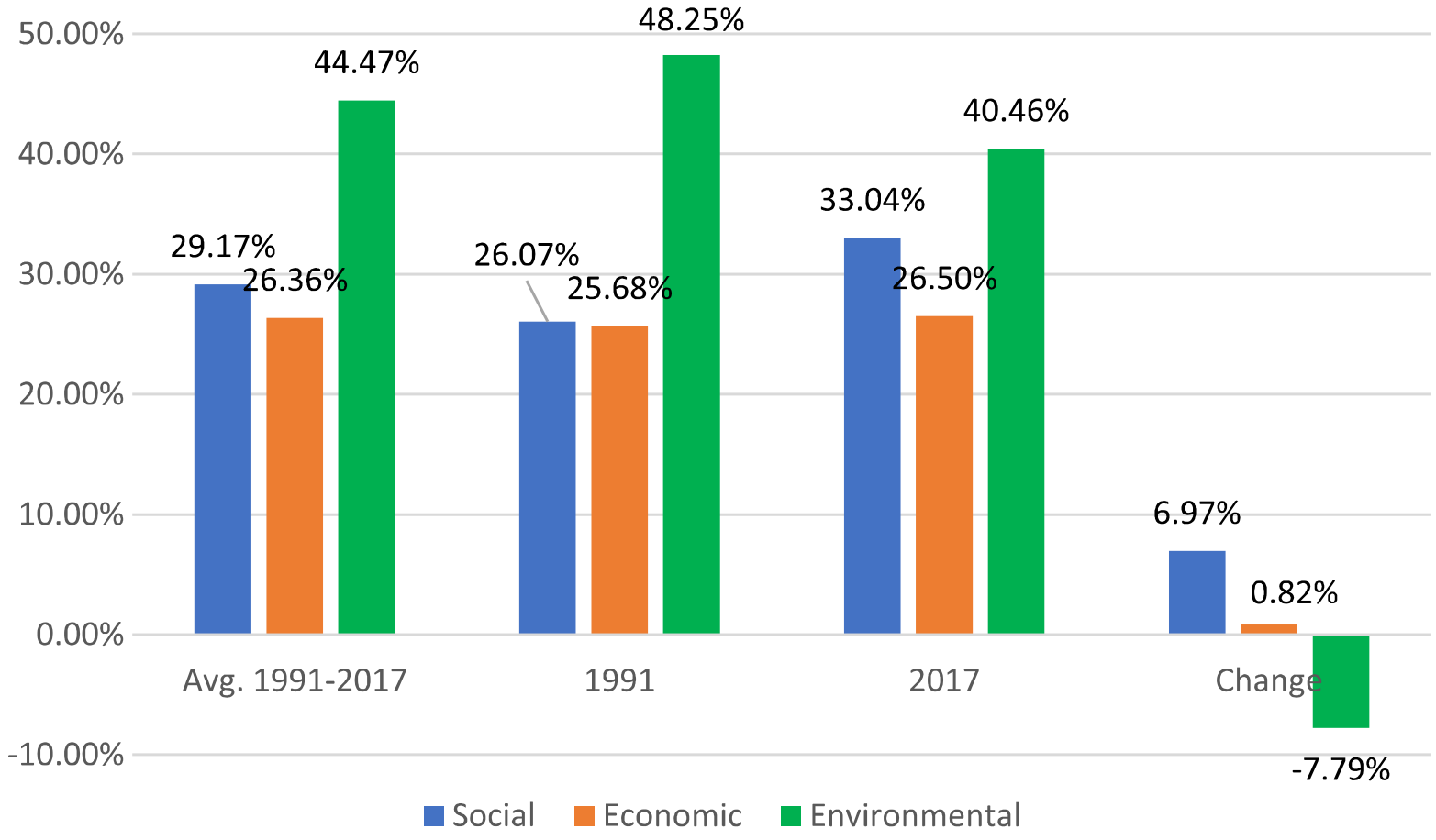
Example from Bangladesh



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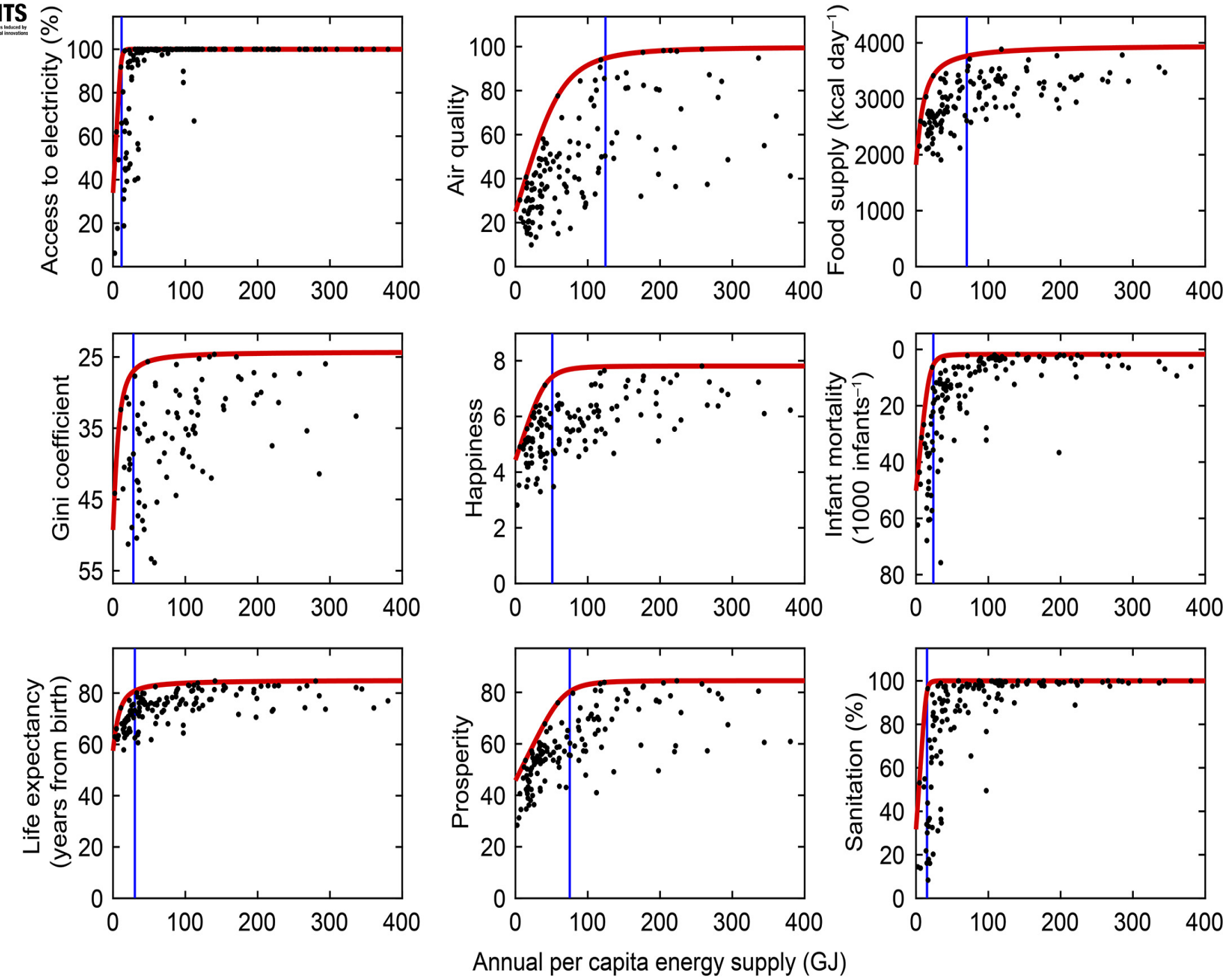

Human well - being and per capita energy use

Blue line = 95% threshold value

Quantitle regression parameter for redline

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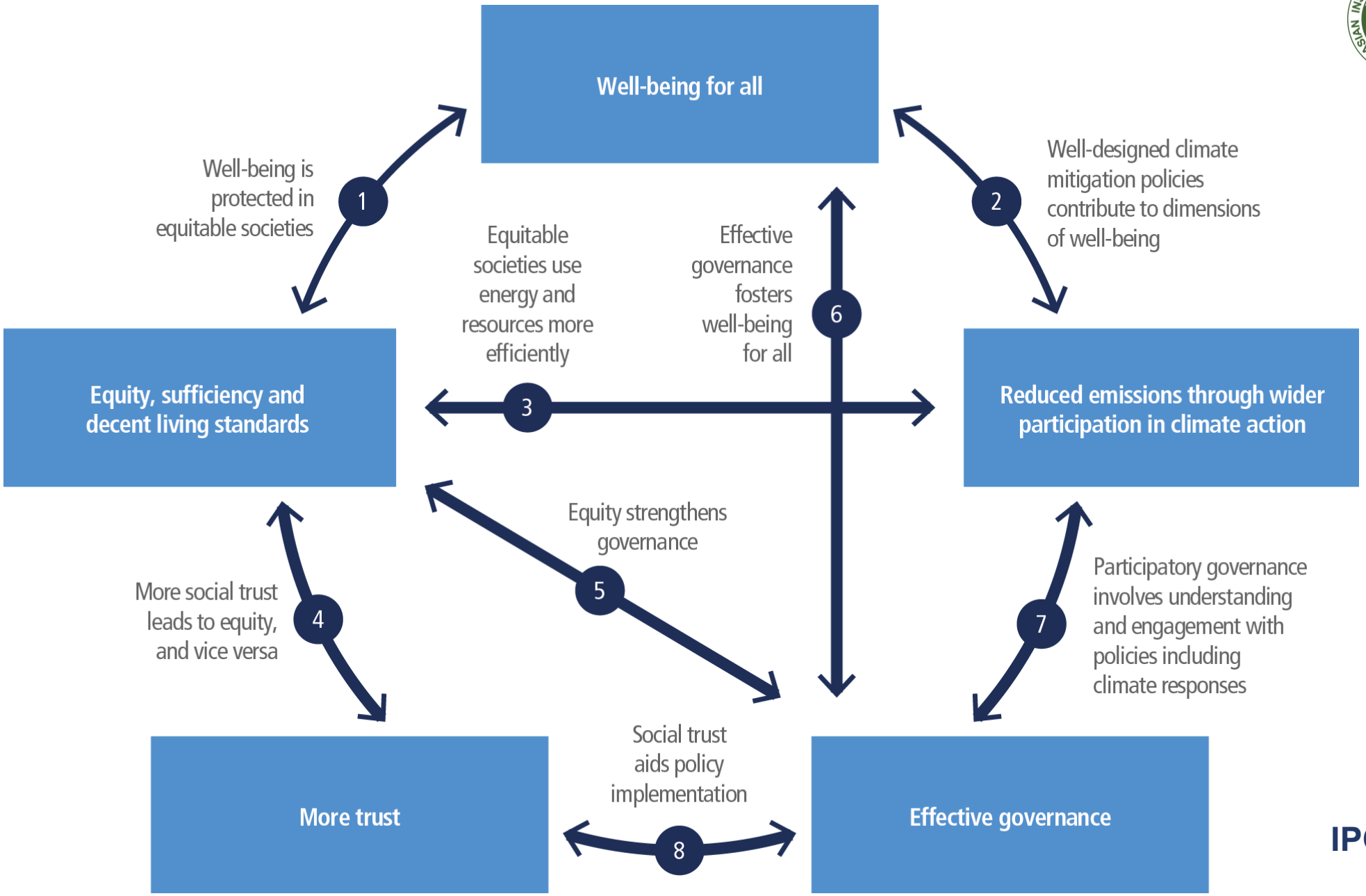
Well-being for all
Well-being is protected in equitable societies
1
Well-designed climate mitigation policies contribute to dimensions of well-being
2
Equitable societies use energy and resources more efficiently
Effective governance fosters well-being for all
6
Equity, sufficiency and decent living standards
3
Reduced emissions through wider participation in climate action
Equity strengthens governance
5
More social trust leads to equity, and vice versa
4
Participatory governance involves understanding and engagement with policies including climate responses
7
Social trust aids policy implementation
8
More trust
Effective governance

IPCC AR6 Ch 5

Thank you for your attention