Equity Assessment of Global Modelled Pathways in the IPCC Sixth Assessment Report

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Mathew 25:29 – (New King James Version)
For to everyone who has, more will be given, and he will have abundance; but from him who does not have, even what he has will be taken away.
(Pace Robert K. Merton)

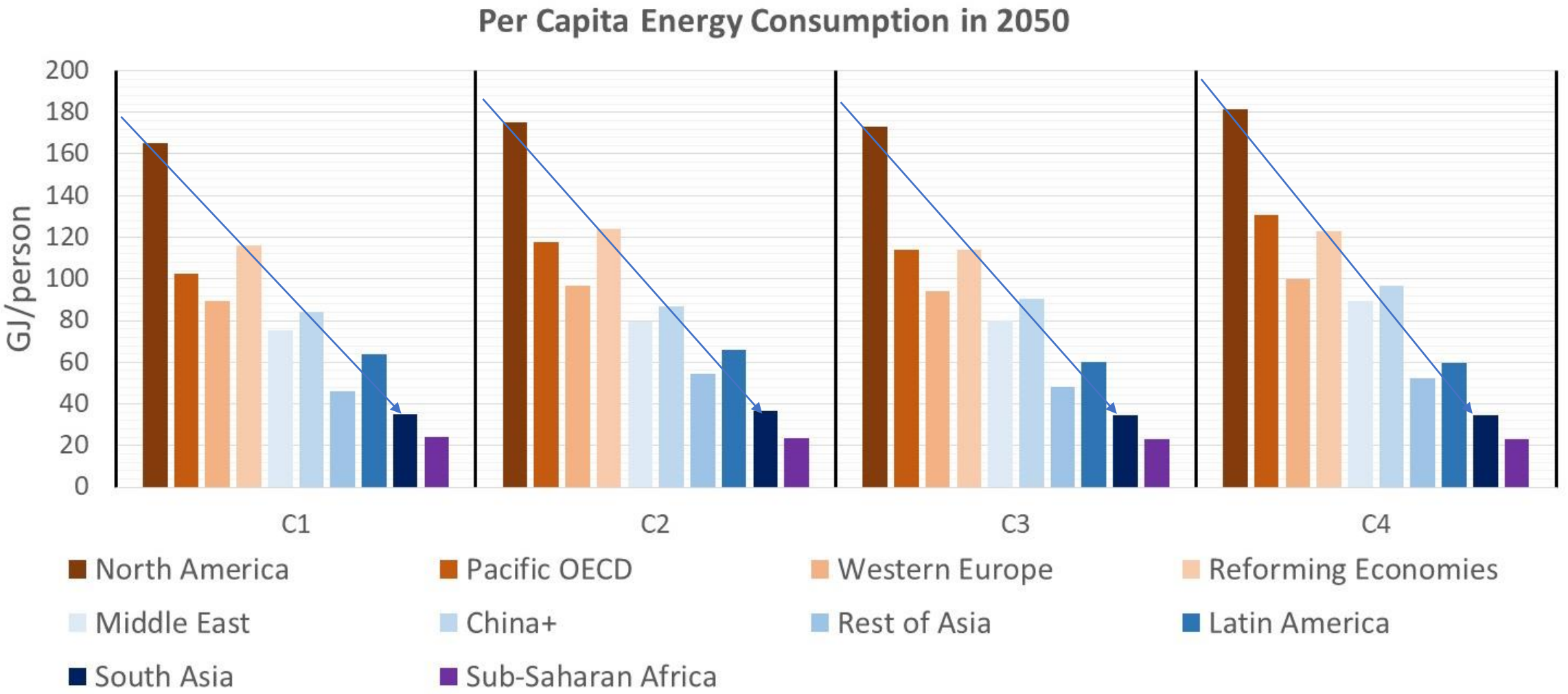
Kanitkar, T., Mythri, A., & Jayaraman, T. (2022). Equity Assessment of Global Mitigation Pathways in the IPCC Sixth Assessment Report. 10.31219/osf.io/p46ty

Our Assessment Findings (Purely Factual!!)

- Projections for variables from a subset of 556/496 IPCC AR6 WG3 scenarios with sufficient information on differentiation, show that the scenarios (not only the “median”):

1. Project a grossly inequitable future in all relevant variables – inequalities between developed and developing “regions”, with some developing “regions” faring significantly worse than others (SSA and SA).
2. Consistently extend current global inequalities in per capita GDP, per capita consumption of goods and services, per capita primary energy consumption, etc. to 2050.
3. Also, project inequalities in allocation of fossil fuel use by 2050, and quantum of carbon sequestration.
4. Mitigation burden is highly unequal not only in long-term but also for emissions reduction by 2030 – Developed countries essentially allowed their NDCs and LTS choices.
5. Increasing food insecurity and a significant increase in the number of people at risk of hunger under stringent mitigation pathways. (Hasegawa, 2018; Fujimori et al 2019; Jaiswal, Nagarajan, Mythri, 2023)

Primary energy consumption (not just fossil fuel) restricted in developing Countries → strong and continuing correlation between primary energy and GDP



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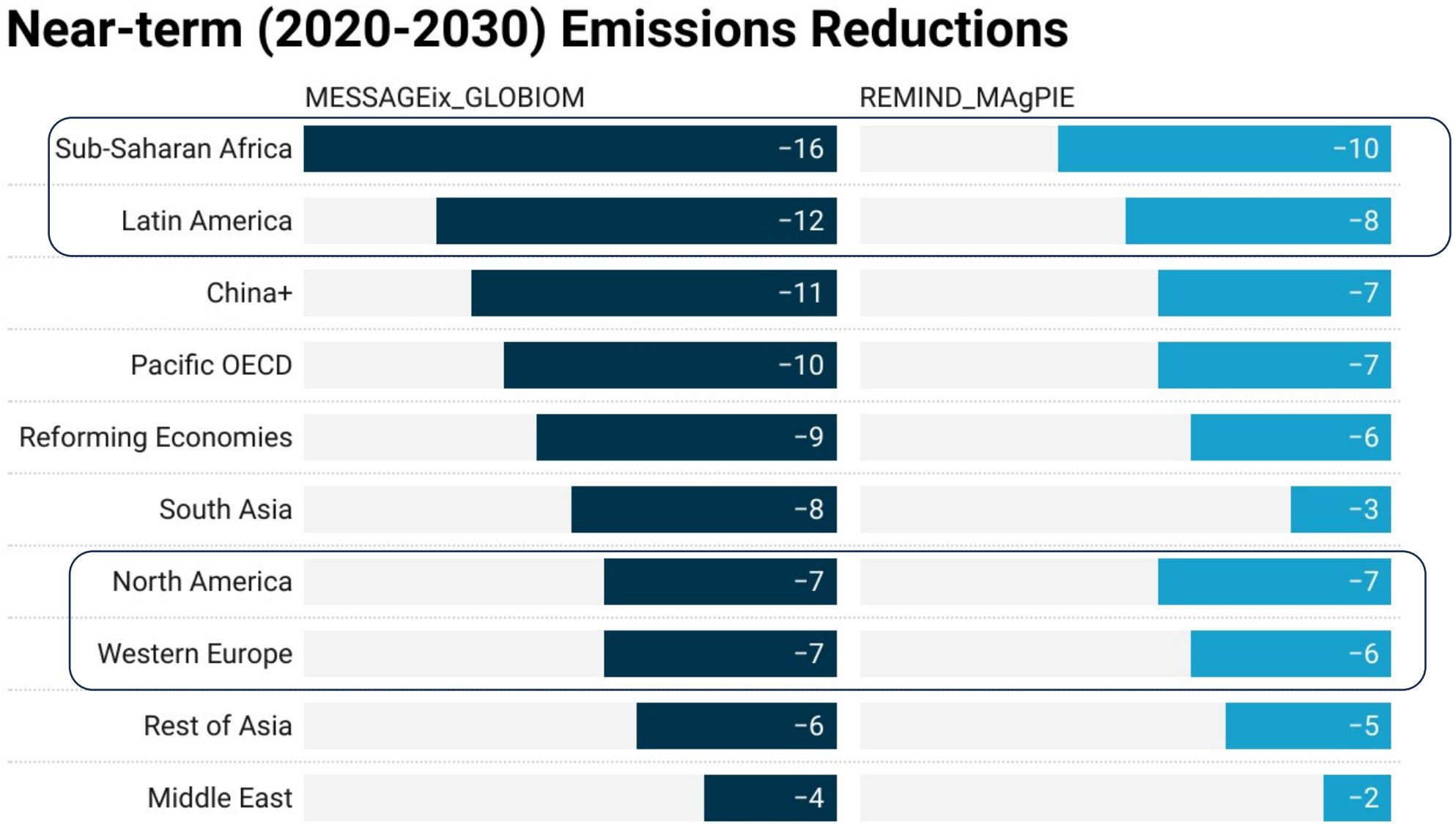
As a result, the mitigation burden is on developing countries



How does this uniform projection of inequality come about?

- Three basic “storylines” present in these scenarios – SSP2 (466); SSP1(19); SSP4 (most of the rest)
- SSP2 and SSP4 lay NO claim to pursue equality – explicitly reject it!! The SSP1 ”equality” storyline is no
- Lack of equity unsurprising – But does not justify use of the scenarios to promote a skewed global discourse!!
- Not just a question of waiting for “better scenarios”
- Multiple sources of inequality -- Not merely due to mitigation superposed on an unequal world – but exacerbation of inequality in mitigation.

Sources of inequality – Multiple Issues

- **Inherent in the structure of models:**
  - Look for Pareto-optimal solutions – directly preserves inequality
  - Use Negishi weights in multi-region optimization -- Disallows transfers between regions
  - Least-cost options in energy models shifts mitigation burden to global South

- **Inherent in the implicit discriminating strategy of meeting the carbon budget constraint:**
  - Assume massive CDR from the AFOLU sector – leave it to the global South (despite serious increase of those exposed to hunger and decline in food security)
  - In C3, C4 scenarios increased carbon budgets are allocated to the developed countries.

- **Energy-growth and energy-emissions assumptions:**
  - Assuming severe restriction of energy growth in developing countries
  - Untransparent model behavior of economy-energy-emissions linkages.