



Georg-August-Universität
Göttingen

Courant Research Centre
Poverty, Equity, and Growth in Developing
and Transition Countries

Inequality and Greenhouse Gas Emissions

Stephan Klasen
University of Göttingen

EIB, March 29, 2017

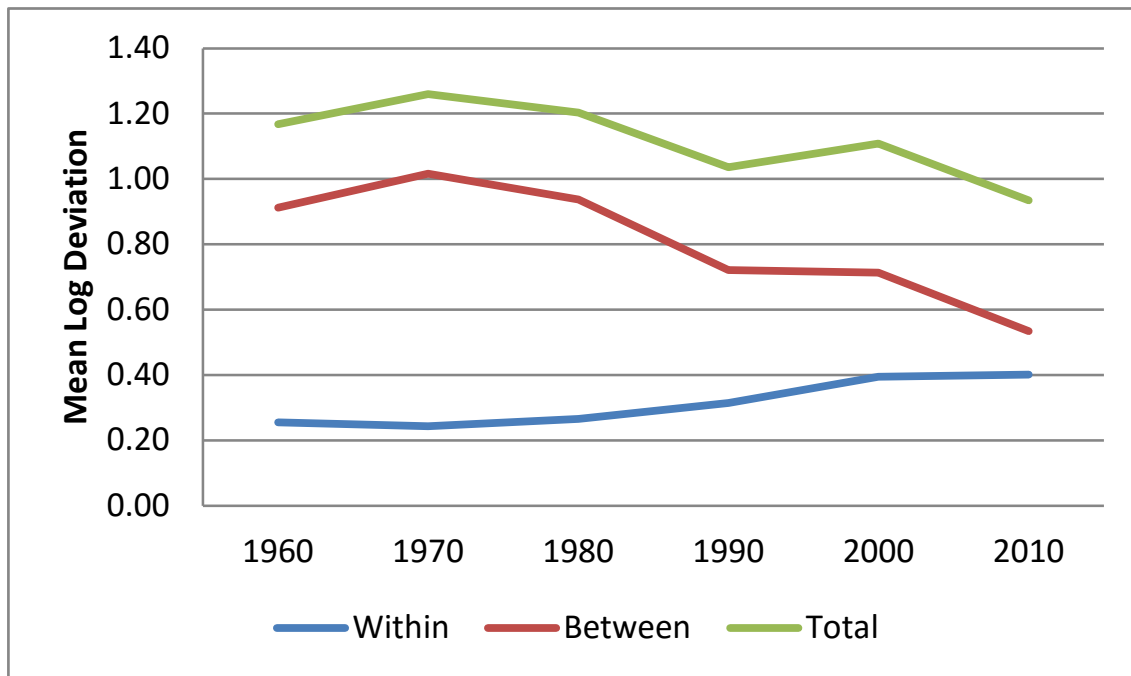
3 Topics

- Global inequality and GHG Emissions;
- National inequality and carbon emissions;
- Economics and climate policy;

1. Global Inequality and Carbon Emissions

- Global inequality falling (slightly) since 1970s;
- Driven by falling between-country inequality;
 - Effect of China (since 1980s);
 - Effect of India and Africa since around 1995;
- Good for global poverty reduction;
- Bad for GHG emissions:
 - Growth in global South responsible for most GHG increase since 1990;
 - Carbon-intensive development paths;

Figure 4: Within and Between Country Inequality Components of Global Inequality



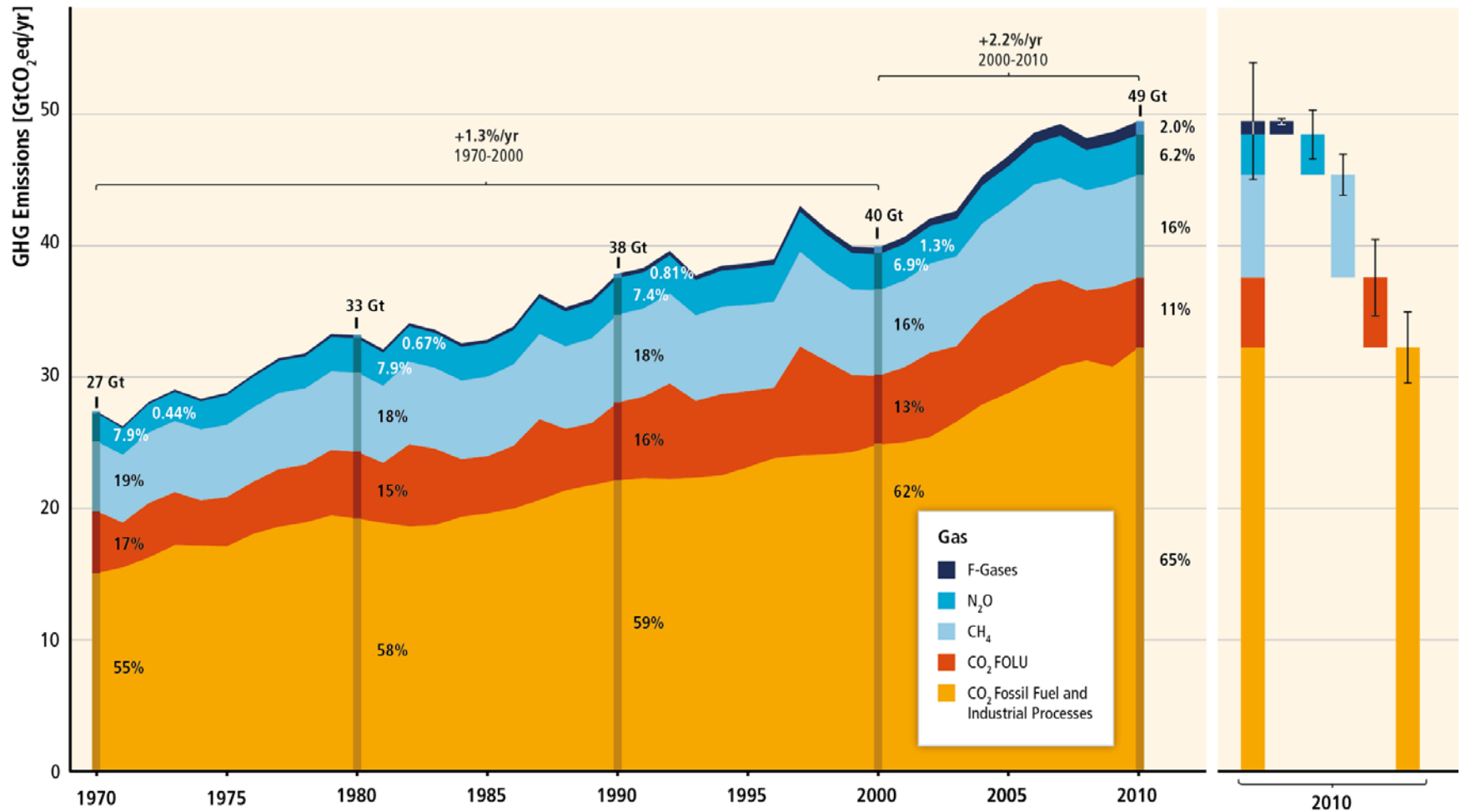
Source: Global Income and Consumption Database.

TABLE O.1 Global poverty is assessed with the re-estimated poverty line

Region	Historical			Headline	Projection
	1990	1999	2011	2012	2015 ^a
<i>Share of population below \$1.90 a day (2011 PPP) (%)</i>					
East Asia and Pacific	60.6	37.5	8.5	7.2	4.1
Europe and Central Asia	1.9	7.8	2.4	2.1	1.7
Latin America and the Caribbean	17.8	13.9	5.9	5.6	5.6
Middle East and North Africa ^b	—	—	—	—	—
South Asia	50.6	41.8	22.2	18.8	13.5
Sub-Saharan Africa	56.8	58.0	44.4	42.7	35.2
Developing world	44.4	34.3	16.5	14.9	11.9
World	37.1	29.1	14.1	12.7	9.6
<i>Millions of people below \$1.90 a day (2011 PPP)</i>					
East Asia and Pacific	995.5	689.4	173.1	147.2	82.6
Europe and Central Asia	8.8	36.8	11.4	10.1	4.4
Latin America and the Caribbean	78.2	71.1	35.3	33.7	29.7
Middle East and North Africa ^b	—	—	—	—	—
South Asia	574.6	568.0	361.7	309.2	231.3
Sub-Saharan Africa	287.6	374.6	393.6	388.8	347.1
World	1,958.6	1,751.5	983.3	896.7	702.1

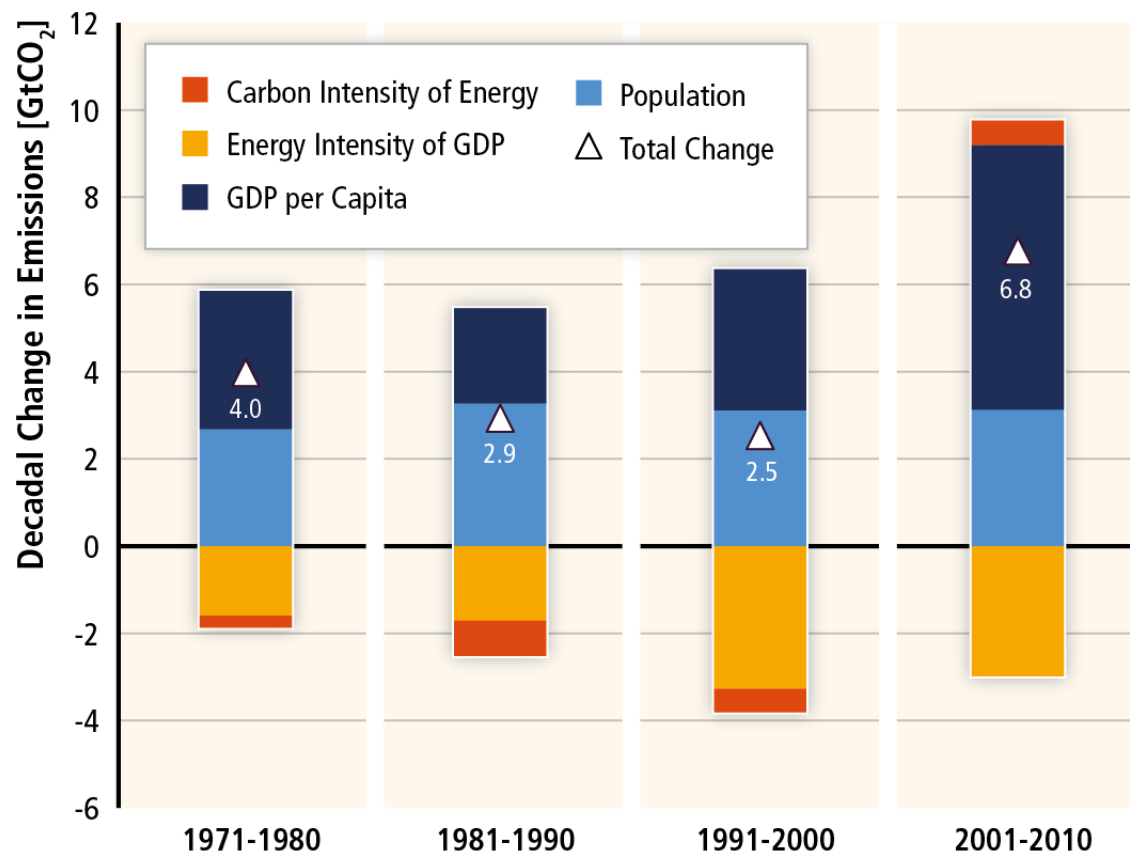
Source: PovcalNet 2015.

Total Annual Anthropogenic GHG Emissions by Groups of Gases 1970-2010



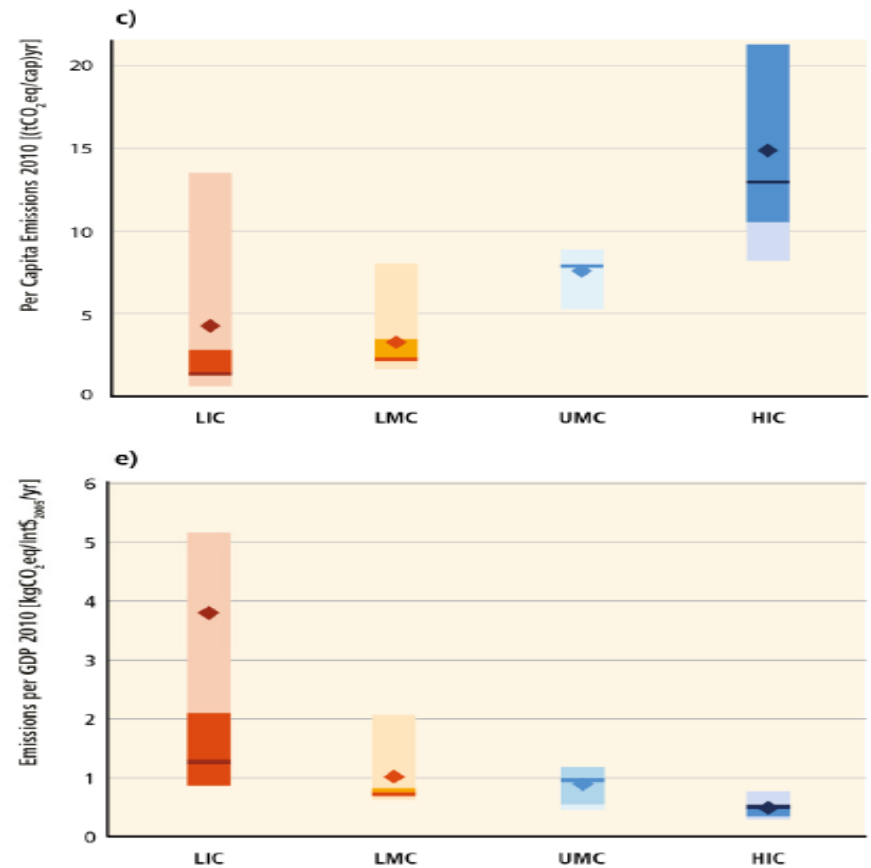
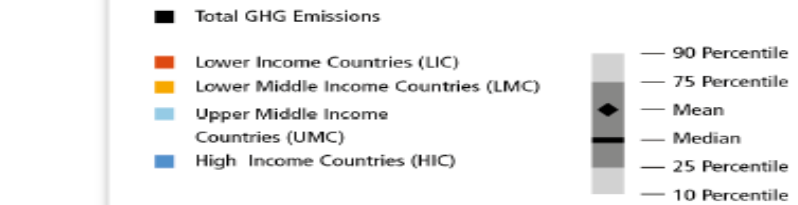
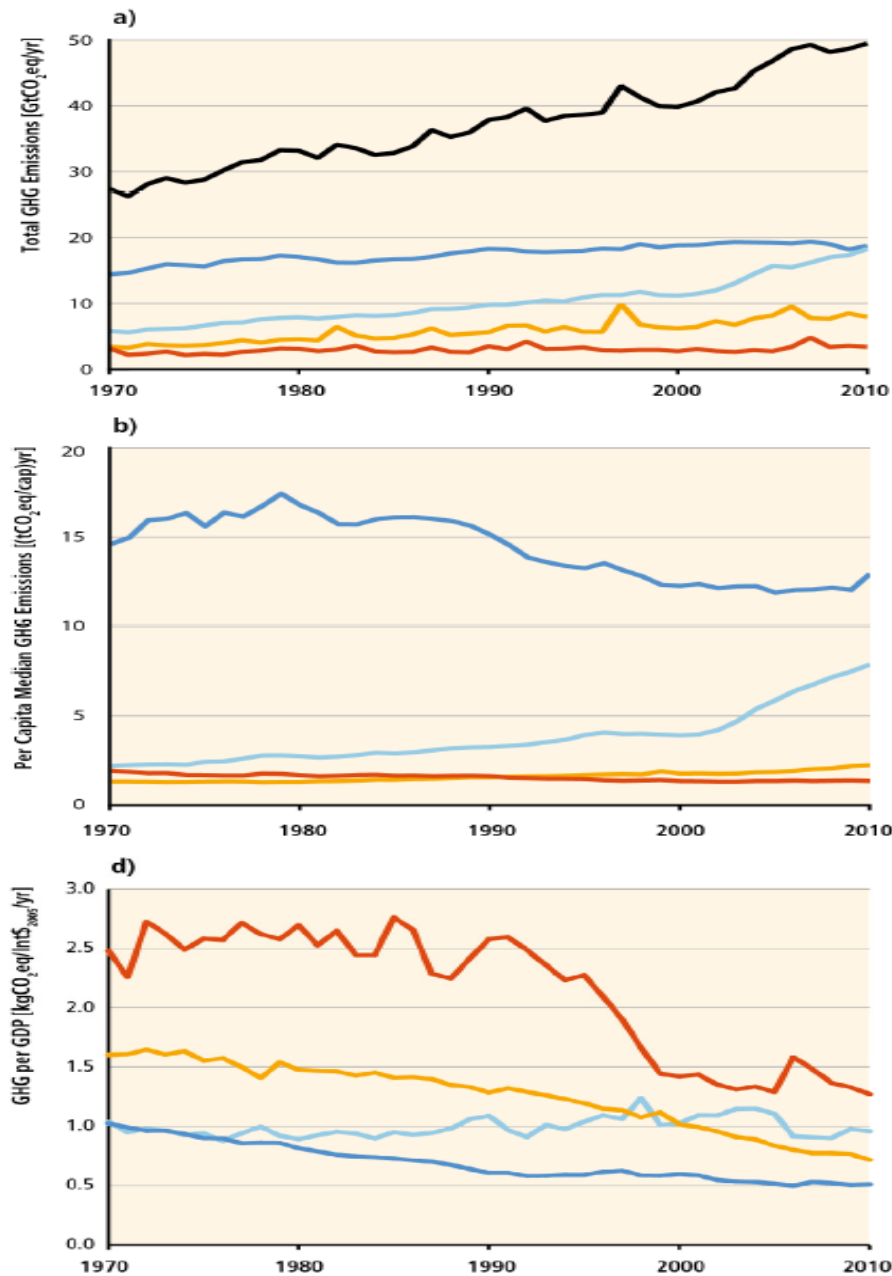
Source: IPCC (2014)

Decomposition of the Change in Total Global CO₂ Emissions from Fossil Fuel Combustion

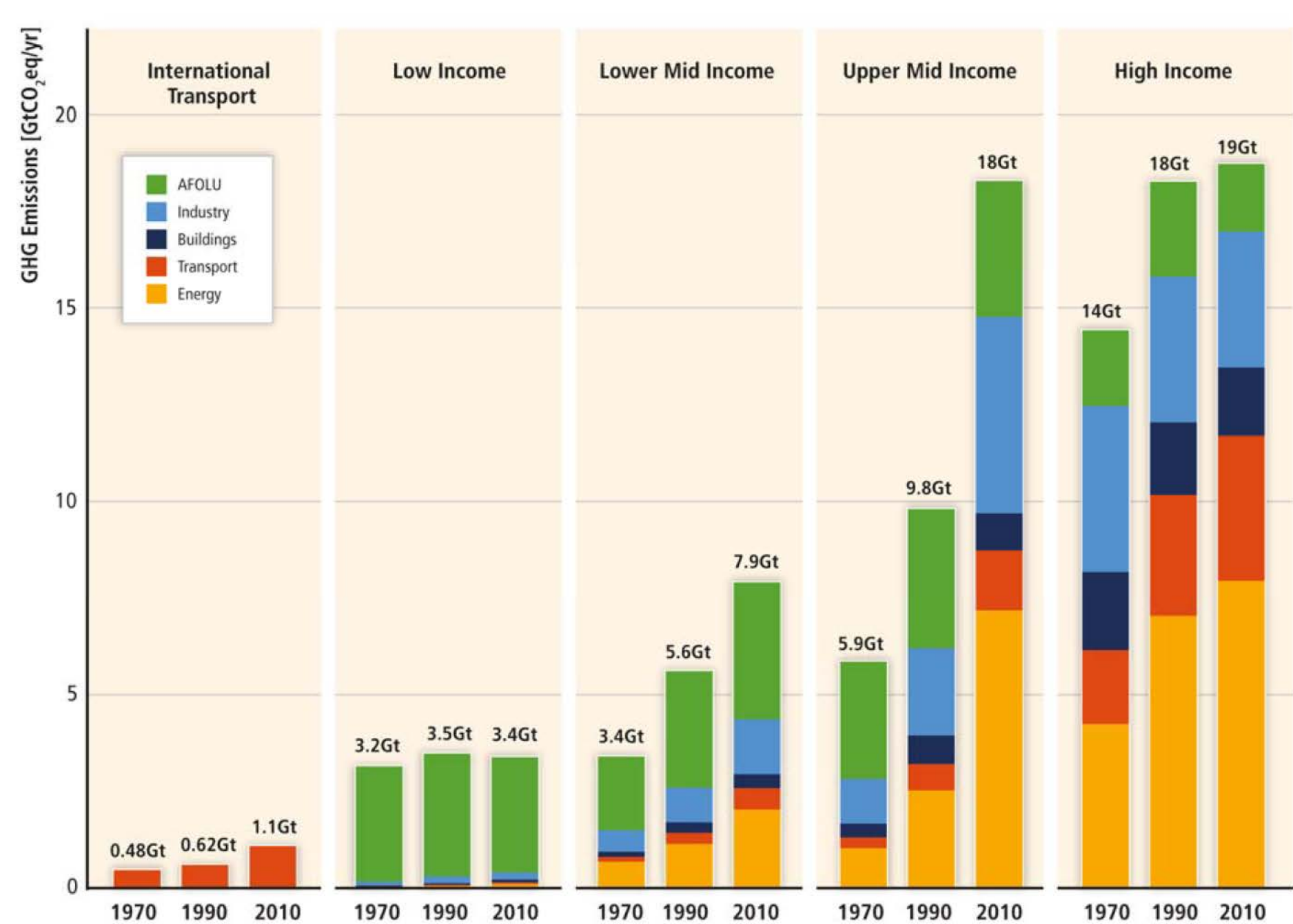


Recent Trends

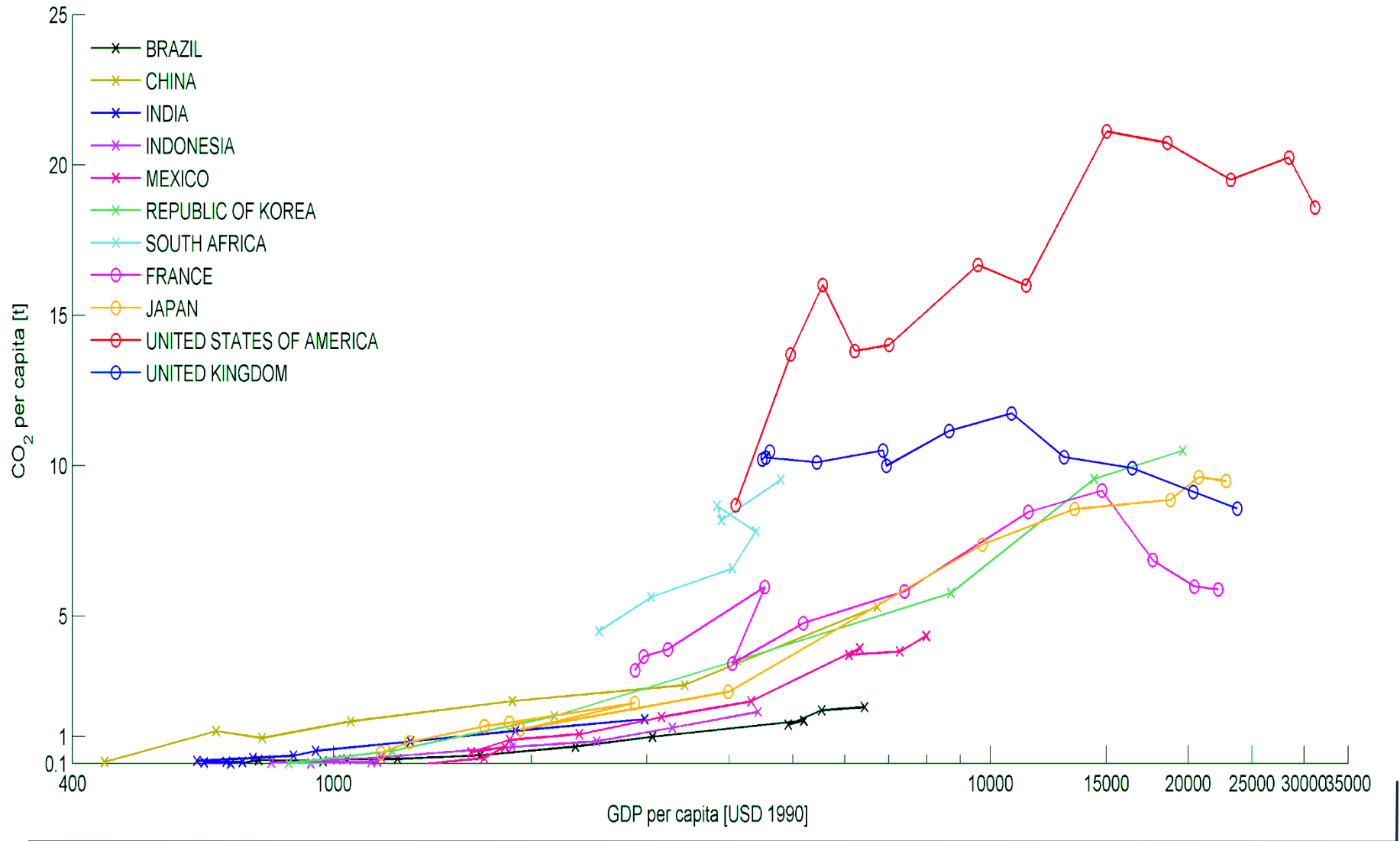
Multiple Perspectives on Trends in GHG Emissions by Country Income Groups

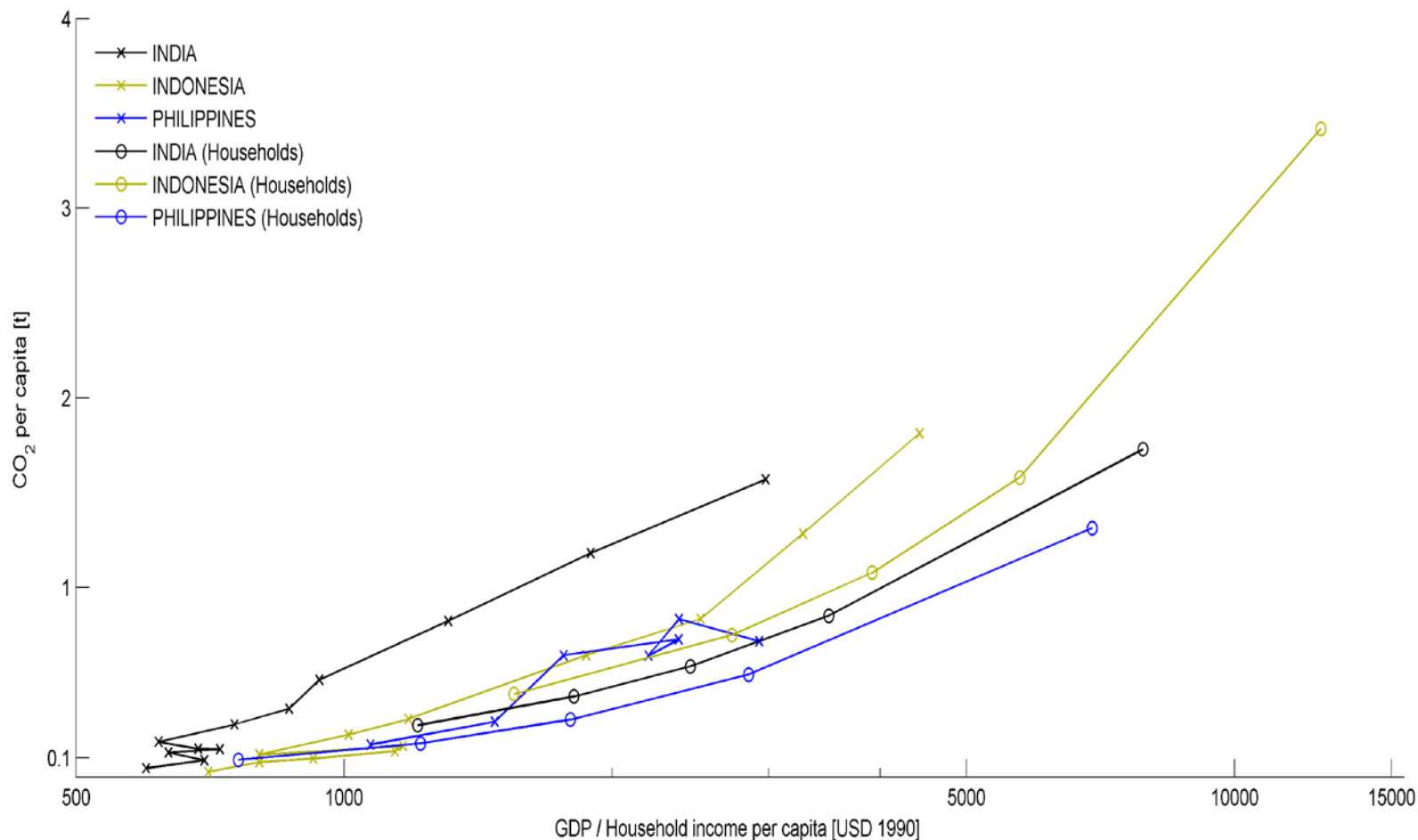


Source: IPCC (2014)



Source: IPCC (2014)





2. National Inequality and CO2 emissions

- Effect ambiguous:
 - Environmental Kuznets Curve (-);
 - Emulation effects (+);
 - Political economy arguments (+);
 - People outside of carbon economy (-);
- Grunewald, Müris, Martinez-Zarzoso, Klasen (2016)
 - Effect depends on income;
 - In richer countries, inequality increases emissions, in poorer countries, the reverse is true;

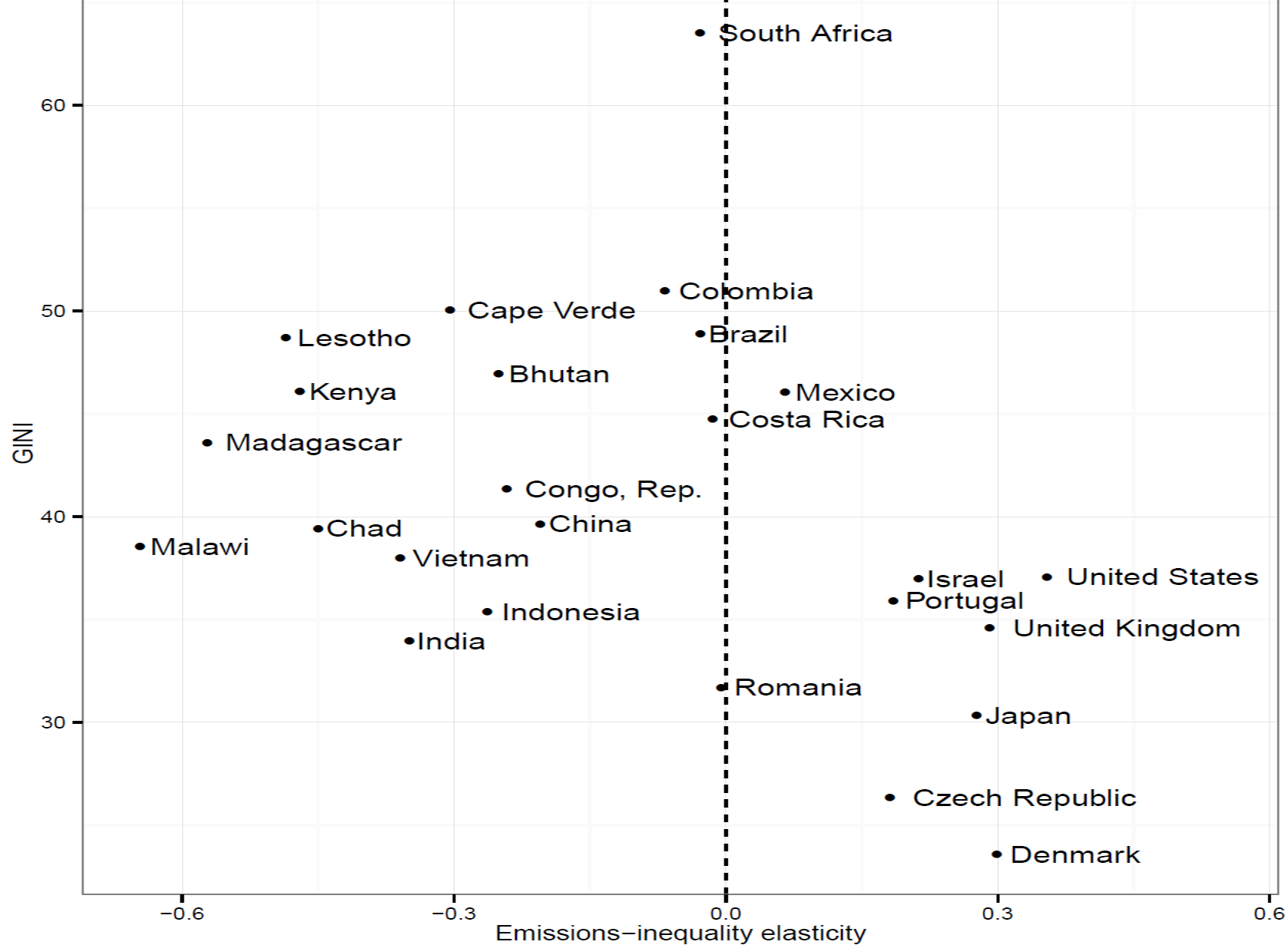


Figure 1: Estimated emission-inequality elasticities for a group of countries in 2005, for the benchmark group fixed effects model.

Source: Grunewald et al. (2016)

3. Economics and Climate Policy

- First best (efficient) economic solution obvious:
 - Global uniform carbon price;
 - Carbon tax or emissions trading;
 - One instrument;
 - Focused on addressing GHG directly;
 - Mandatory participation (to prevent free-riding)
 - Only open discussion: how to allocate burden (e.g. via allocation of initial emission rights);

3. Economics and Climate Policy

- Reality looks very different;
 - Inefficient blunt instruments (e.g. regulation, fuel taxes) largest impacts to far (e.g. emission trading in EU versus regulations on energy efficiency or biofuels or national fuel taxes and feed-in tariffs);
 - Voluntary participation (Paris climate accord);
 - Co-benefits the main driver of action in developing countries (esp. air pollution, energy security);
 - Action at many layers of government and society (e.g. local governments, firms, EU member states, etc.);

3. Economics and Climate Policy

- Consequences for better climate policy:
 - Focus more on co-benefits (esp. air pollution, energy security);
 - Focus on low-hanging fruits (e.g. energy subsidies);
 - Focus on improving blunt instruments (e.g. regulations to phase out coal, improve fuel taxes);
 - Investigate interactions of policies:
 - Do policies at different jurisdictions reinforce or undermine each other?
 - Problem of emission trading;

Conclusions

- Reducing global poverty and inequality will increase GHG: need policies to decouple GHG from growth;
- Reducing inequality will increase CO₂ emissions in poor countries, lower it in rich countries;
- Economists need to contribute to better climate policy:
 - Abandon first best approach;
 - Focus on co-benefits and low hanging fruits;
 - Improve blunt instruments;
 - Focus in interactions;

Total Anthropogenic CO₂ Emissions from Fossil Fuel Combustion, Flaring, Cement, as well as Forestry and Other Land Use (FOLU) by Region between 1750 and 2010

