

Quantifying Historic Differentiated Responsibility – Concept and Empirical Results

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Background:

- UNFCCC Art 3: *“The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed Party Parties should take the lead in combating climate change and the adverse effects thereof.”*

Historical Differentiated Responsibility

- To fully operationalize UNFCCC mandate, we need a sound, quantifiable, and comprehensible conceptualization of (historical) differentiated responsibility.

Conceptualization of Historical Differentiated Responsibility

- **Scientific dimension:** Must relate to the *cause* of anthropogenic climate change, i.e. *accumulation* of GHG in the atmosphere *over harmless levels*. “Accumulation” involves taking historical dimension of emissions into account.
- **Ethical dimension:** “Responsibility” must relate to the *purpose* of assigning responsibility, i.e. responsibility to undo harm and prevent damage to innocent persons. In this notion of “responsibility”, absence of knowledge of effect of emissions, or absence of intent to injure are irrelevant (philosophy of “civil liability”)
- “Responsibility” is *not* to be construed as moral responsibility in the punitive sense, in which knowledge of cause and effect and intent to cause injury are relevant (philosophy of “criminal liability”).

Historical Differentiated Responsibility:

- Scientific basis requires that GHG emissions by all Parties that have resulted in *net* GHG concentration increase are taken into account.
- Reckoning of “harmless level” beyond which responsibility would accrue is needed, on the basis of a *political determination* of Art 2 of UNFCCC.



Proposed Basis:

- **Definition:** Differentiated Responsibilities are the respective GHG emissions by each Party since the time that GHG concentrations began to increase above “natural” levels, less the Party’s share of global sinks assigned on equal per-capita basis.
- Note: Differentiated responsibilities will vary with time.



Quantification:

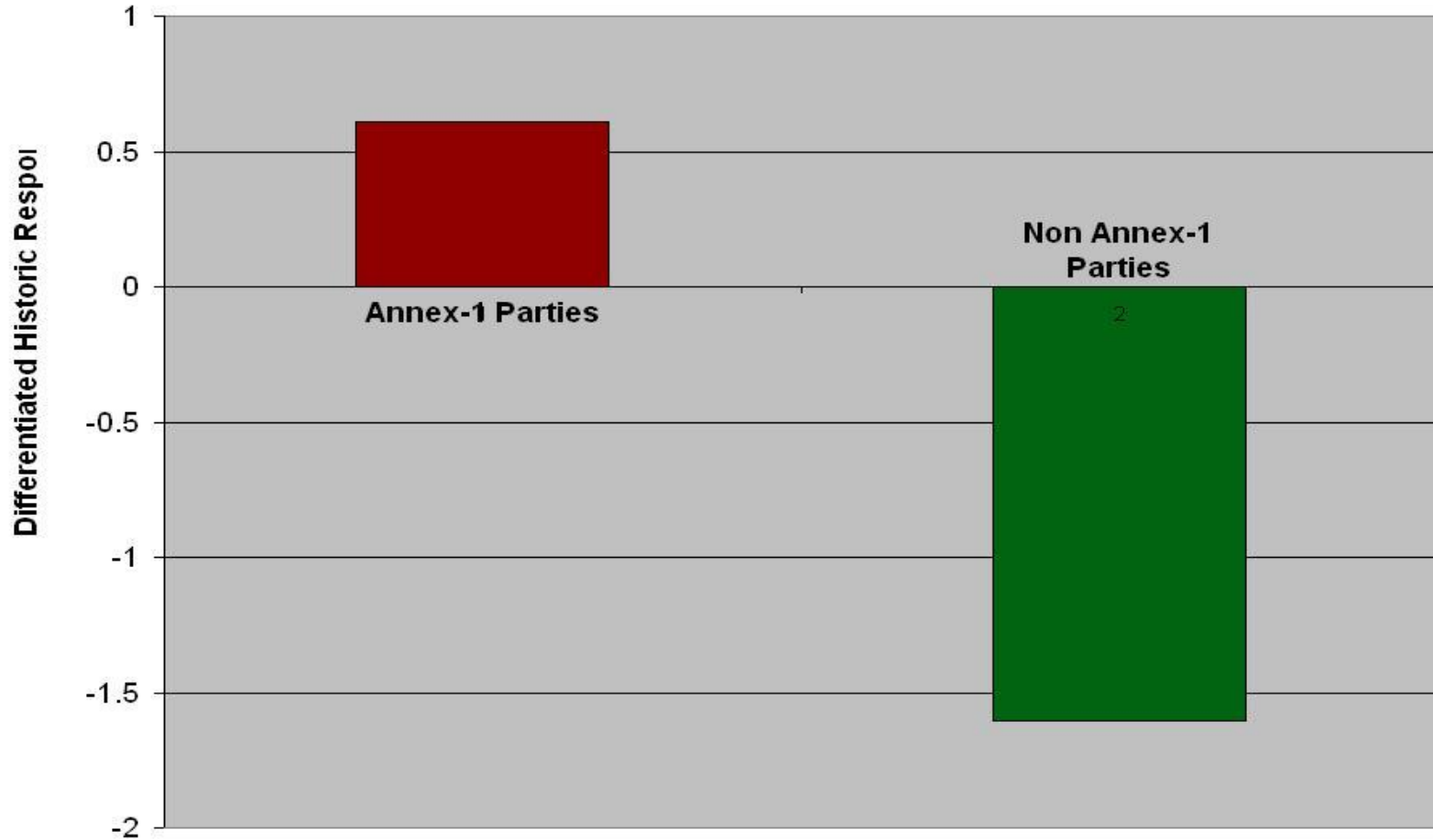
- Time Period: Since 1850, when GHG concentrations began to increase above “natural” levels due to increasing dominance of industrialization
- “Harmless Level”: 2 tonnes/capita-year of current population, being the level proposed by several Annex I Parties for stabilization of GHG in the atmosphere.
- Does NOT signify political acceptance of this proposed level, but empirical exercise explores the logical consequences of this level
- Date of determination: 2010.



Data Sources:

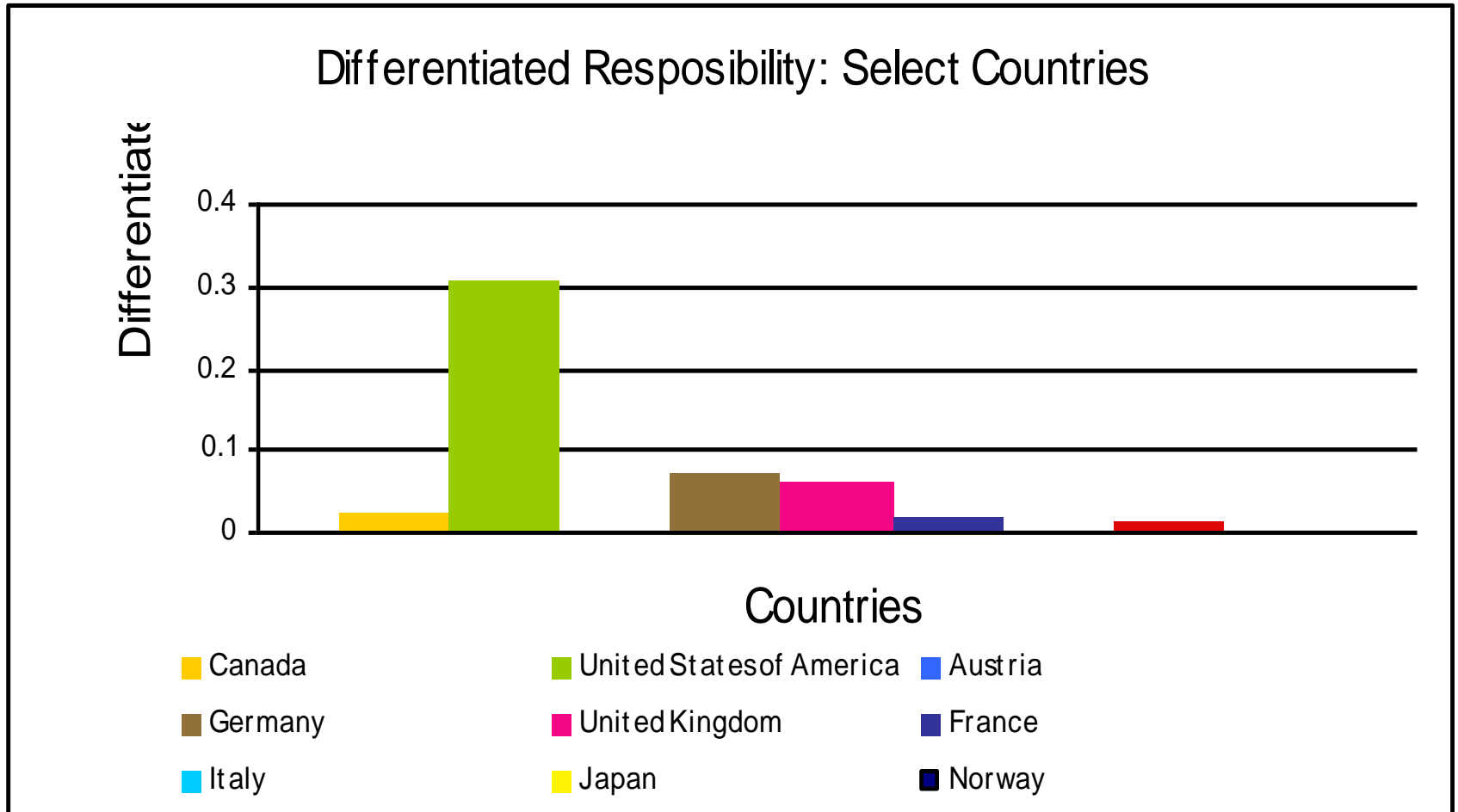
- Historical GHG emissions: WRI, CAIT database, with extrapolations from 2005 to 2010 by Harald Winkler
- Populations in 2010: Population Division of UNDESA: World Population Prospects: The 2008 Revision, <http://esa.un.org/unpp>

Historical Differentiated Responsibilities of Annex I and non-Annex I Groups, Share of Global

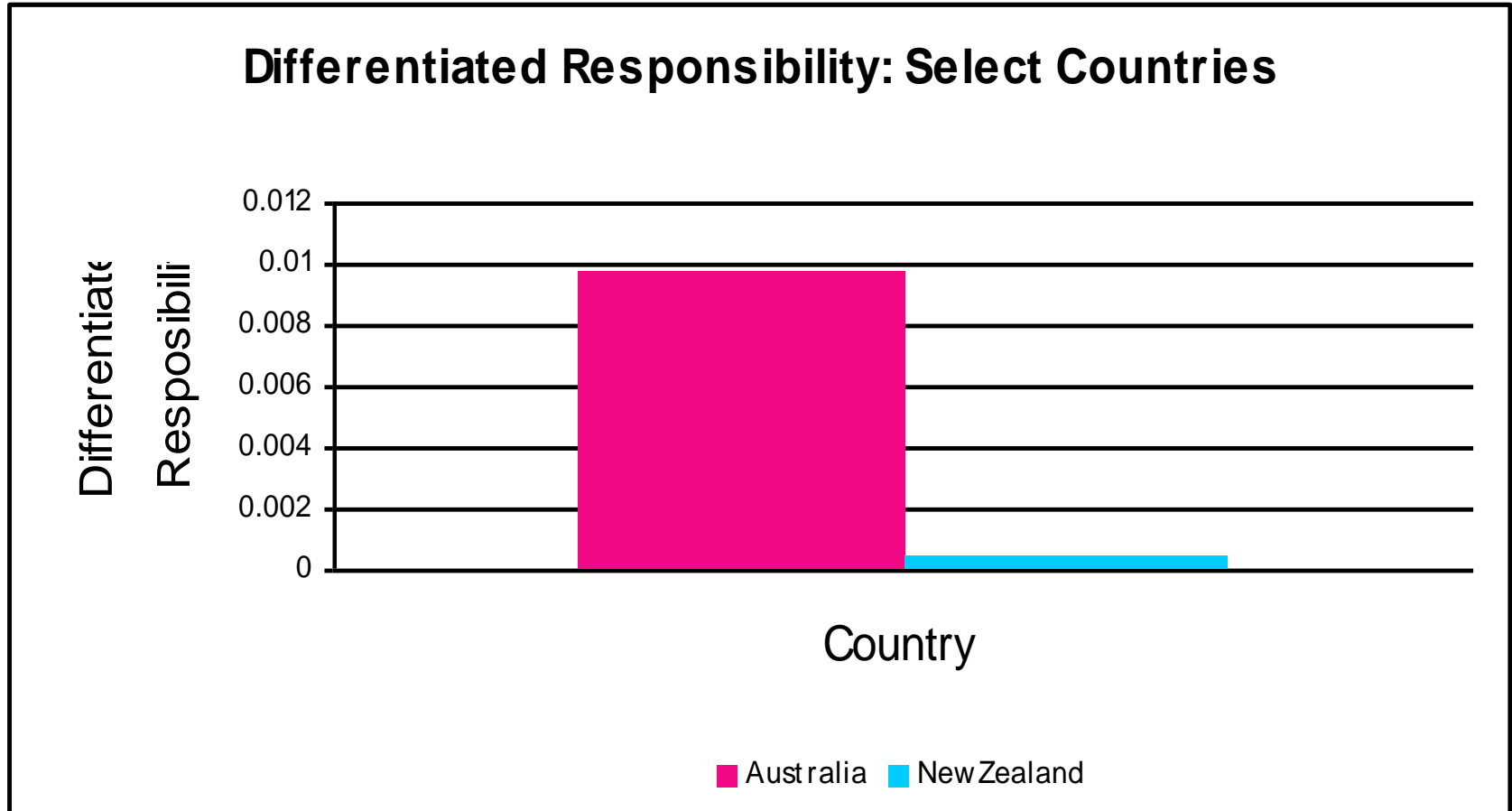


Historical Differentiated Responsibilities, Selected

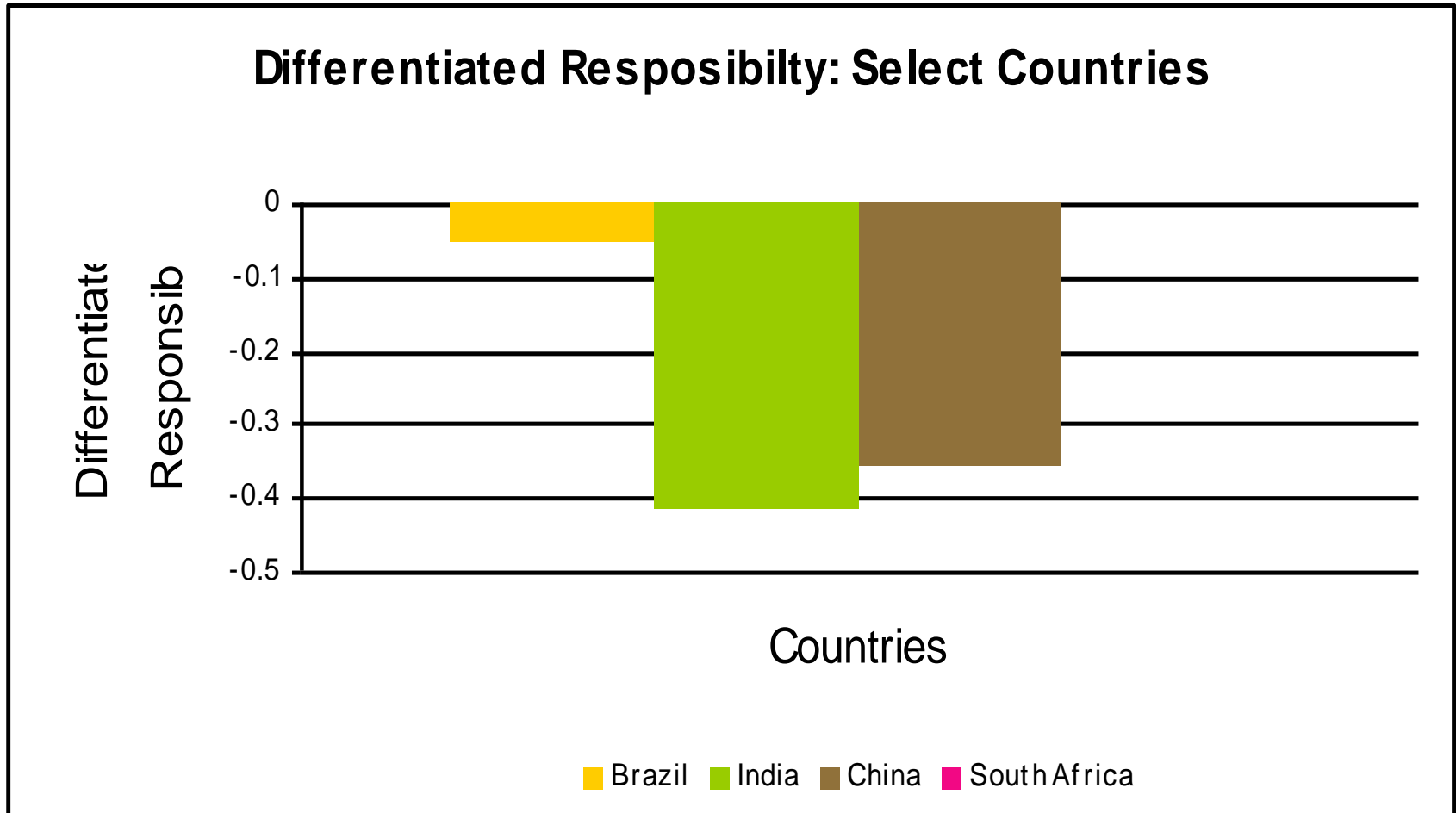
Annex I: Shares of Global



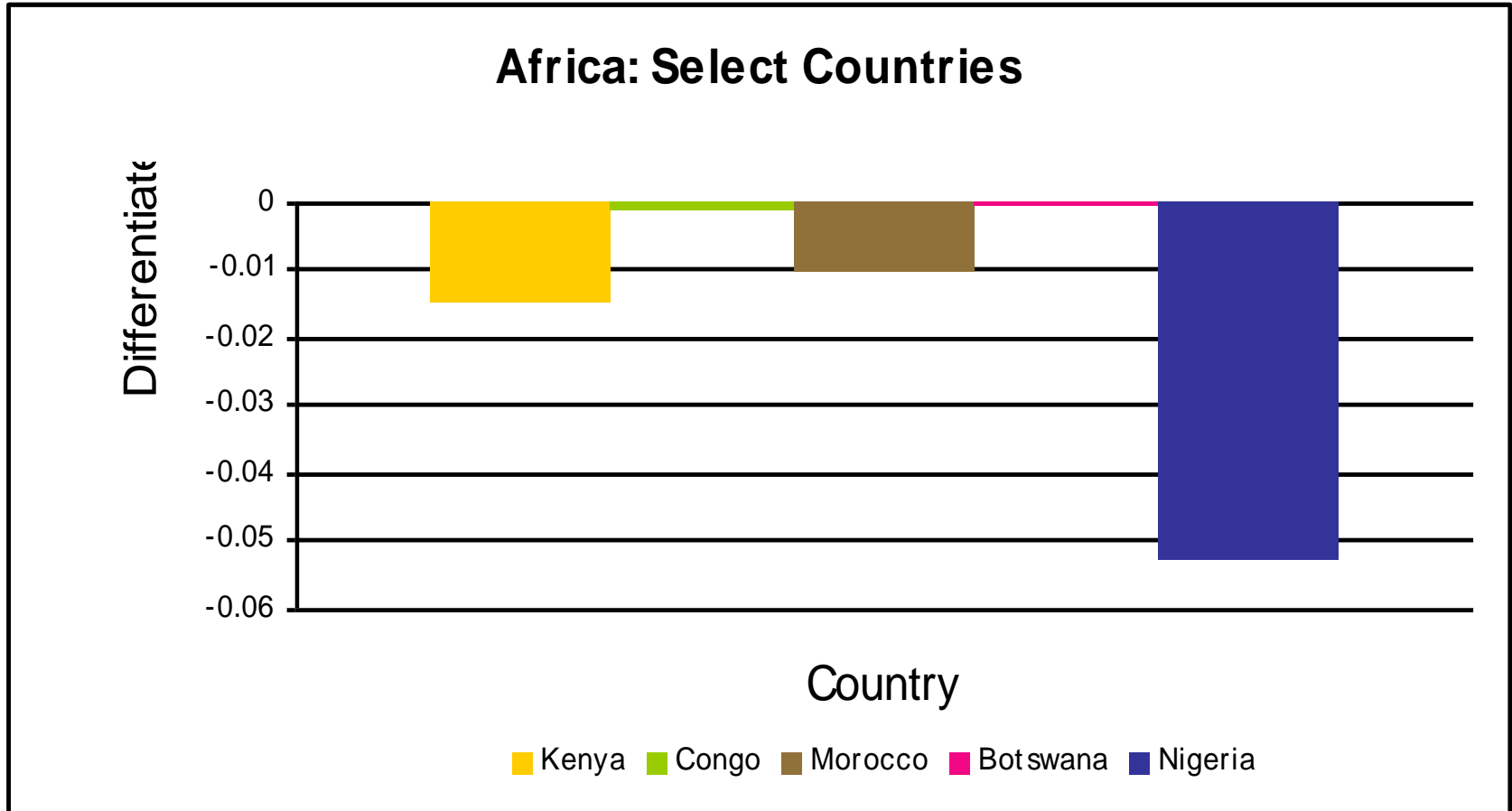
Historical Differentiated Responsibilities, Selected Annex I: AUS & NZ: Share of Global



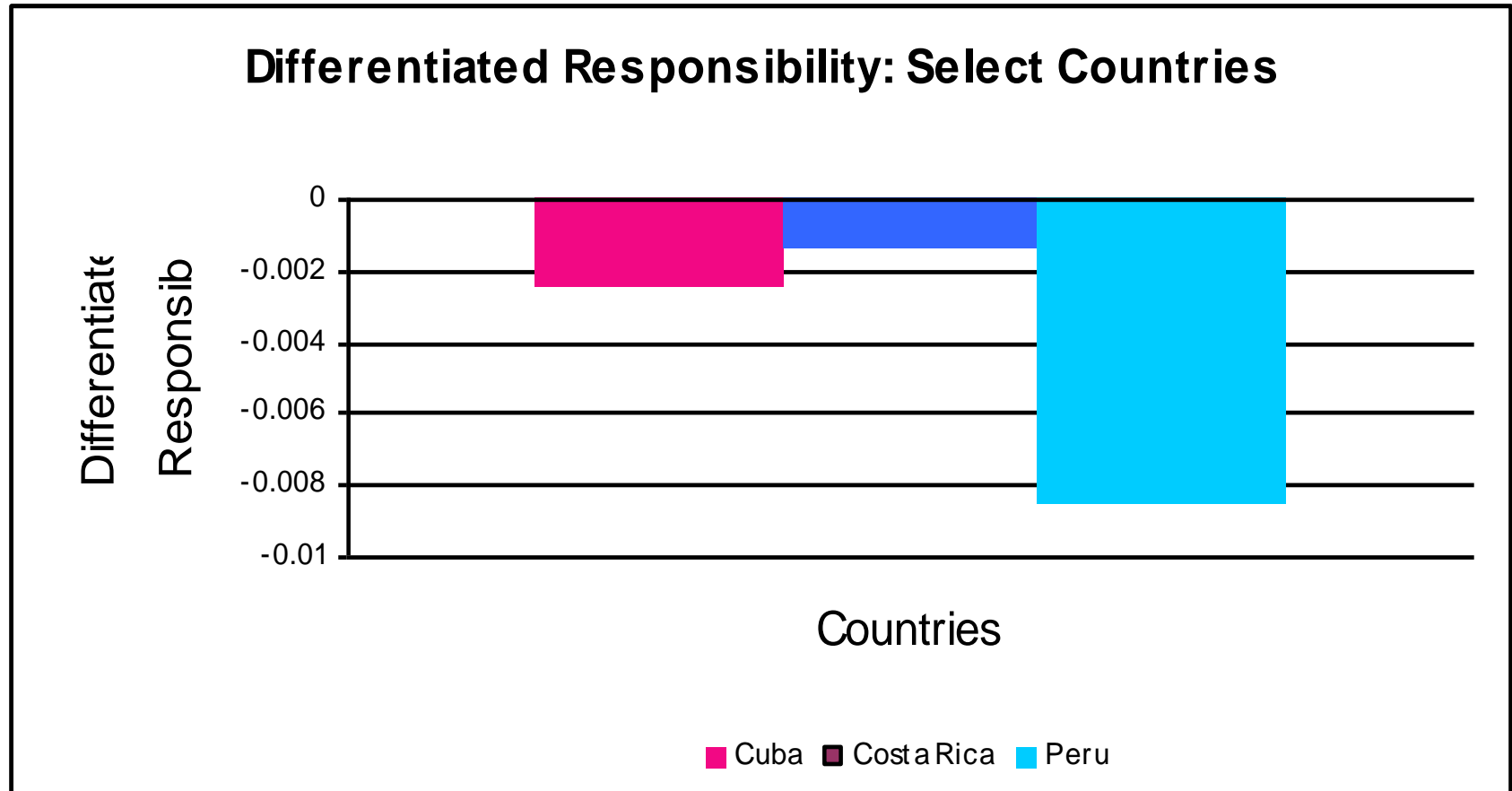
Historical Differentiated Responsibilities: Selected non-Annex I: BASIC Group: Shares of Global



Historical Differentiated Responsibilities, Share of Global: Selected non-Annex I: Africa



Historical Differentiated Responsibilities: Selected non-Annex I: LAC: Share of Global

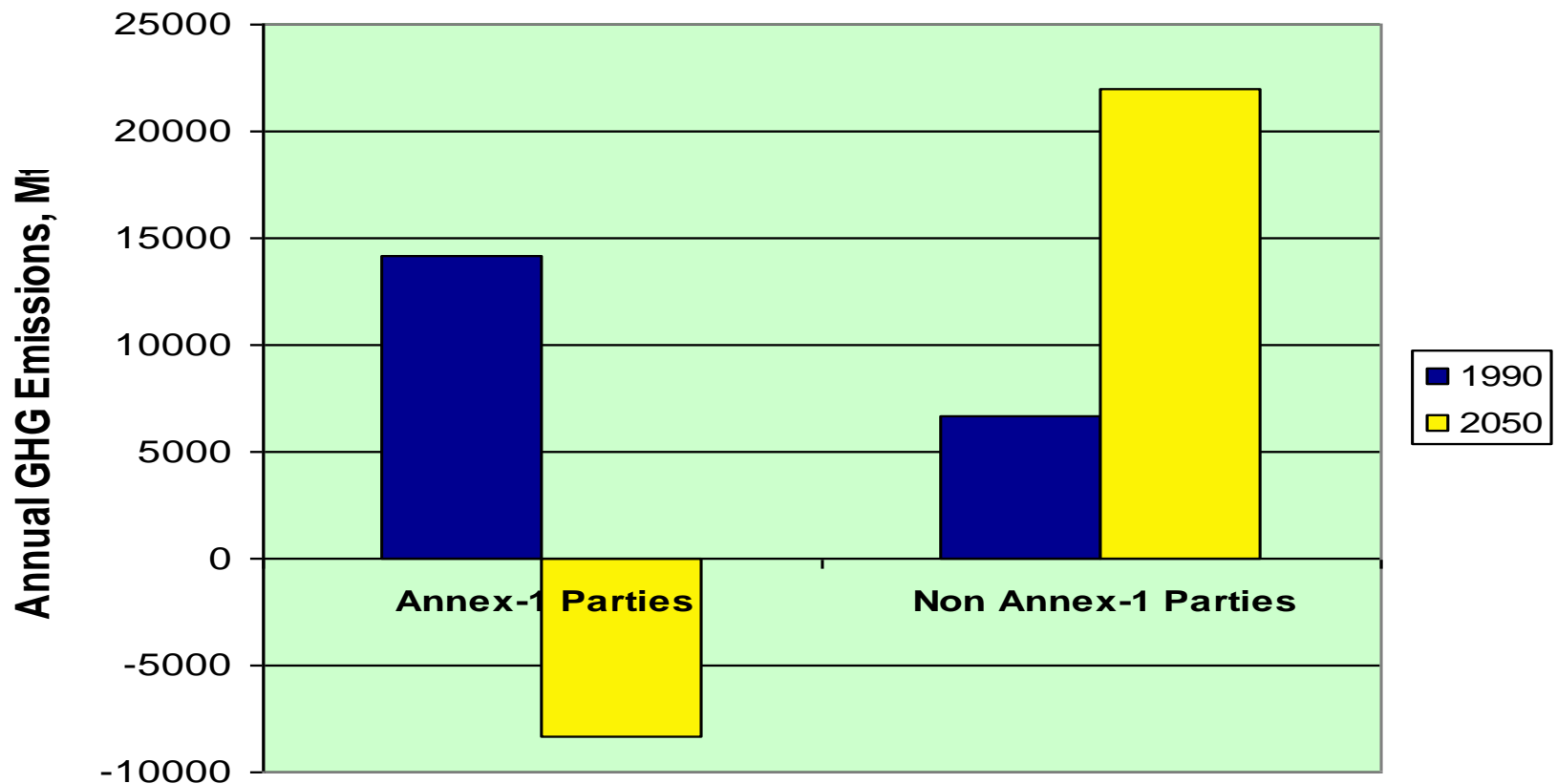




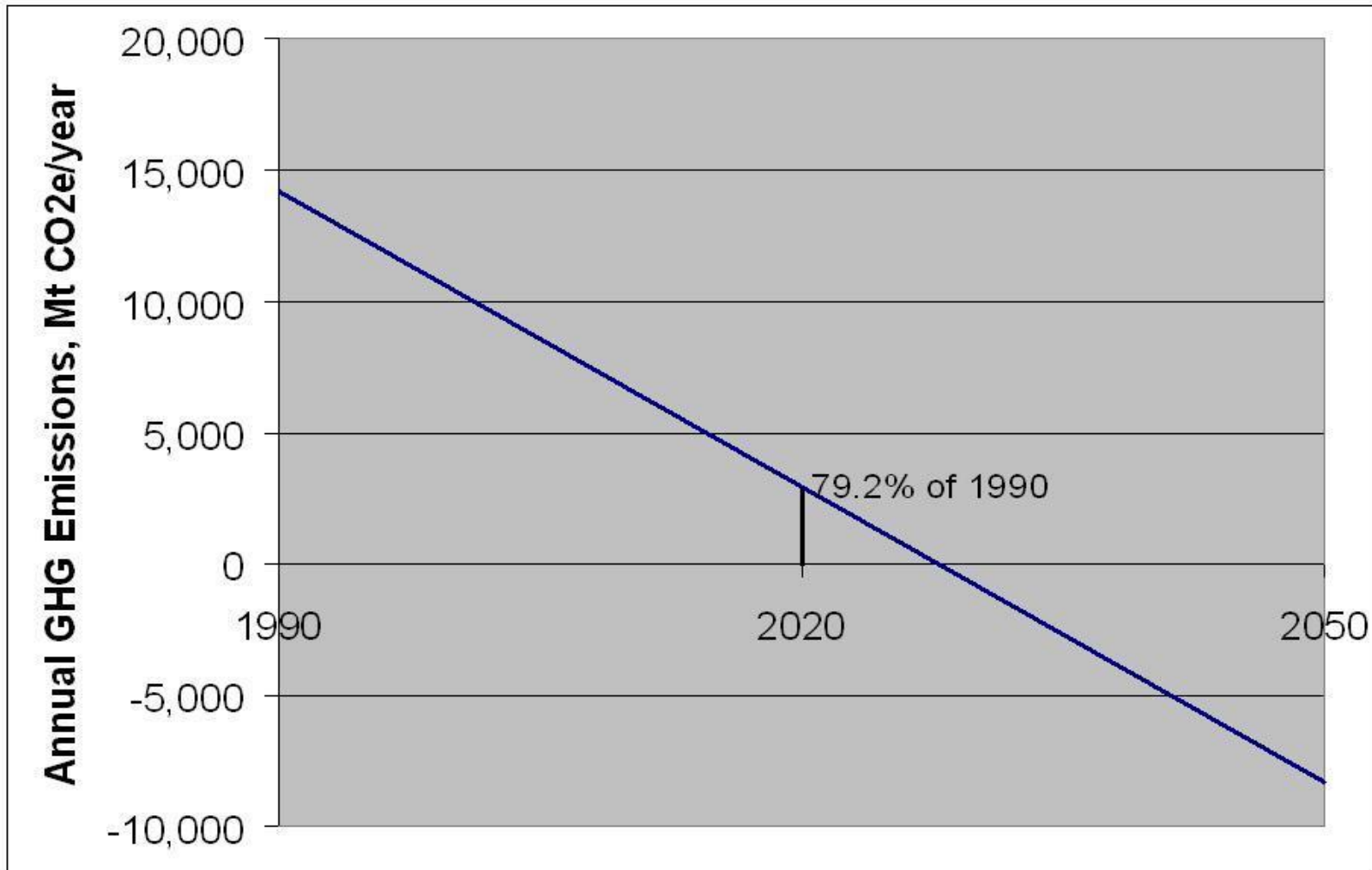
What Does it Mean?

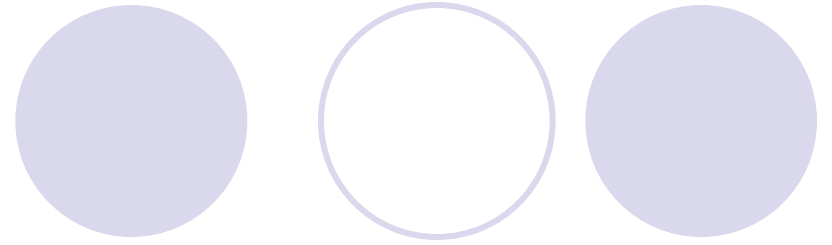
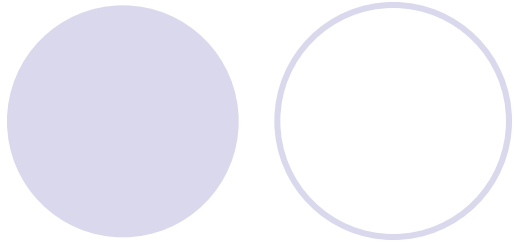
- Annex I Parties have positive Historical Differentiated responsibilities!
- Non-Annex I Parties have *negative* Historical Differentiated responsibilities
- China and India have *each provided more than the entire environmental space used by the US!*
- China and India together have provided more the entire environmental space *used by Annex I in total, and then some!*
- *Now, let us look at what differentiated responsibility in 2010 means for assignments in 2050, to arrive at a global average of 2 Tonnes-capita:*

GHG emissions entitlements for Annex I and non-Annex I in 2050 Based on Historical Differentiated Responsibility in 2010



Required Reduction from 1990 by 2020 by Annex I on the Basis of Historical Differentiated Responsibility in 2010 is 79.2%.





Thank You for Your Attention!