

Measuring Economic & Human Development in the  
Anthropocene: Bringing Climate Change in  
Highlights and Issues for Consideration

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# Some Highlights of the Paper

- Provides an overview of efforts to broaden measurement of human development, motivation, associated challenges
- Presents key features and limitations of various HD and related indices
- Highlights the need to have clearly measurable and universally acceptable components in any HDI
  - Gives examples of indices (Happy plant index) which did not gain traction as they resulted in rankings that were not accepted
  - Points to the difficulties in incorporating certain issues (security, conflict) though important

- In the context of climate, discusses tradeoff between human development as measured by the HDI and energy use per capita and ecological capacity, why need to include ecology and climate change related variables into the HDI to motivate action on climate and environment
- Discusses the need to create a new index which captures broader vulnerabilities to economic, health, ecological shocks- a vulnerability adjusted HDI
- Outlines various sources of vulnerability and related literature
- Presents a vulnerability adjusted HDI and simulates impact from shocks of varying degrees
- Demonstrates how creating a vulnerability adjusted HDI could provide a more targeted way of mitigating the human development impact of shocks in the future

# Comments and Views

- Interesting to see impact of shocks on the Vulnerability Adjusted HDI versus simple HDI or inequality adjusted HDI
- Illustrates sensitivity of the indicators to what is included and how it is included with countries shifting categories depending on extent of shock and how vulnerability is incorporated
- Useful for highlighting specific challenges to human development and how policies could be targeted better

- Some points in favour of incorporating vulnerabilities
- High cost of climate (natural disaster) related vulnerabilities
  - Damage from Thailand's 2011 floods at around 10% of its GDP, likely higher given indirect costs due to loss in economic activity
  - Estimated total cost of California's 2018 wildfires was \$350 billion or 1.7 percent of U.S. GDP
  - Over the past decade, direct damage from climate related disasters estimated to add up to around US\$ 1.3 trillion (around 0.2% of world GDP on average, per year)
- Impact of climate on migration
  - Empirical evidence suggests that as temperatures rise, so does migration in low-income countries
  - Effects of extreme heat and low precipitation seem to uniquely impact countries with a high share of agricultural activities in the economy (for instance, sub-Saharan countries).”
  - Huge economic and social costs of climate migration with significant implications for human development and need for associated services and resource allocation

- But several issues for consideration when incorporating climate
- “If we now want real action on climate and ecology, we need to include damage to the environment and depletion of natural resources, conflict, and security as factors in measuring development.”
  - How might incorporation of climate, especially metrics like energy use, alter rankings of countries which are not as industrialized to pollute or lack the technology to exploit their natural resources?
  - Would their ranks get sufficiently counterbalanced by their poorer performance on other parameters of the HDI to ensure credible shifts in rankings?
  - We need to be careful about overestimating human development in underdeveloped, non-polluting, less energy-intensive states

- Covid-19 Pandemic: emissions decreased, but poverty increased (set development back by decades)
  - Might adding climate into human development measures obscure living standards issues?
  - Might we end up conflating the effects of different kinds of shocks by ignoring their interdependencies?
- “Higher human development as measured by the HDI comes with greater energy use per capita”
  - Bi-directional relationship exists as greater energy use per head also has a bearing on access to various services and better standards of living
  - How do we differentiate between different sources of energy and their impact on the environment-clean versus polluting?

## Methodological issues

- A comprehensive index would make disaggregating the different components difficult and harder to explain movements
  - What is driving a higher value?
  - How are the different factors counteracting each other or reinforcing one another?
  - How do we ensure independence/appropriate adjustment for dependencies among factors?
- When we incorporate vulnerability into the index, how do we take care of the correlation/dependence between the different dimensions of vulnerability?
- How much is vulnerability itself a function of education, health, income levels?



- How we do account for correlation between vulnerability dimensions and other components of the HDI?
  - Share of vulnerable employment would be related to a country's education status and skills
  - Share of population without health insurance would be related to health status and conditions
- So a broader question- how do we extricate vulnerability measures from these other components of the HDI to avoid biased results?
- It would be helpful to provide an exposition of these dependencies and how they can be accounted for to avoid biasing the results

## Understanding the pathways

- Useful to tease out the channels through which vulnerabilities of different kinds, including climate, can impact human development
- To what extent are these intermediated through the channels of health, education, income per capita?
  - For climate related vulnerability, the linkages with health (due to natural disasters, growing incidence of vector borne diseases and pandemics, emissions and pollution) are increasingly evident
  - How would these interdependencies be captured, measured?
  - We must be clear about the channels, these can be many and quite complex, not always well understood

- If it is to be incorporated, what are the channels which could be focused on and why
- Helpful to have some discussion on possible methodologies for incorporating climate change given the channels highlighted, and what could be some challenges
  - One example could be to explicitly consider climate impacts on specific parameters like health
  - Conduct vulnerability and health systems assessments to understand the nature of the climate challenge on the health system of a country
- But again, key is to understand the channels of impact, gauge significance for various human development outcomes, then decide how to incorporate it into the index, but measurability likely to be a challenge

## Additional issues to consider

- Will incorporating climate necessarily help us in better targeting policies?
  - Climate change impacts as well as adaptation have local, regional, and global dimensions
  - Can we capture these differential risk vulnerabilities within countries, between urban and rural, between geographies/regions into an HDI?
  - Will incorporating climate vulnerability into the HDI necessarily translate into more climate action and allocation of resources to climate risk management?
  - It would require linking development priorities with climate risk but local and national priorities and needs often compete

Thank You