



**LINKING PRESENT AND FUTURE  
CHOICES: SUSTAINABILITY AND THE  
MEASUREMENT OF HUMAN DEVELOPMENT**

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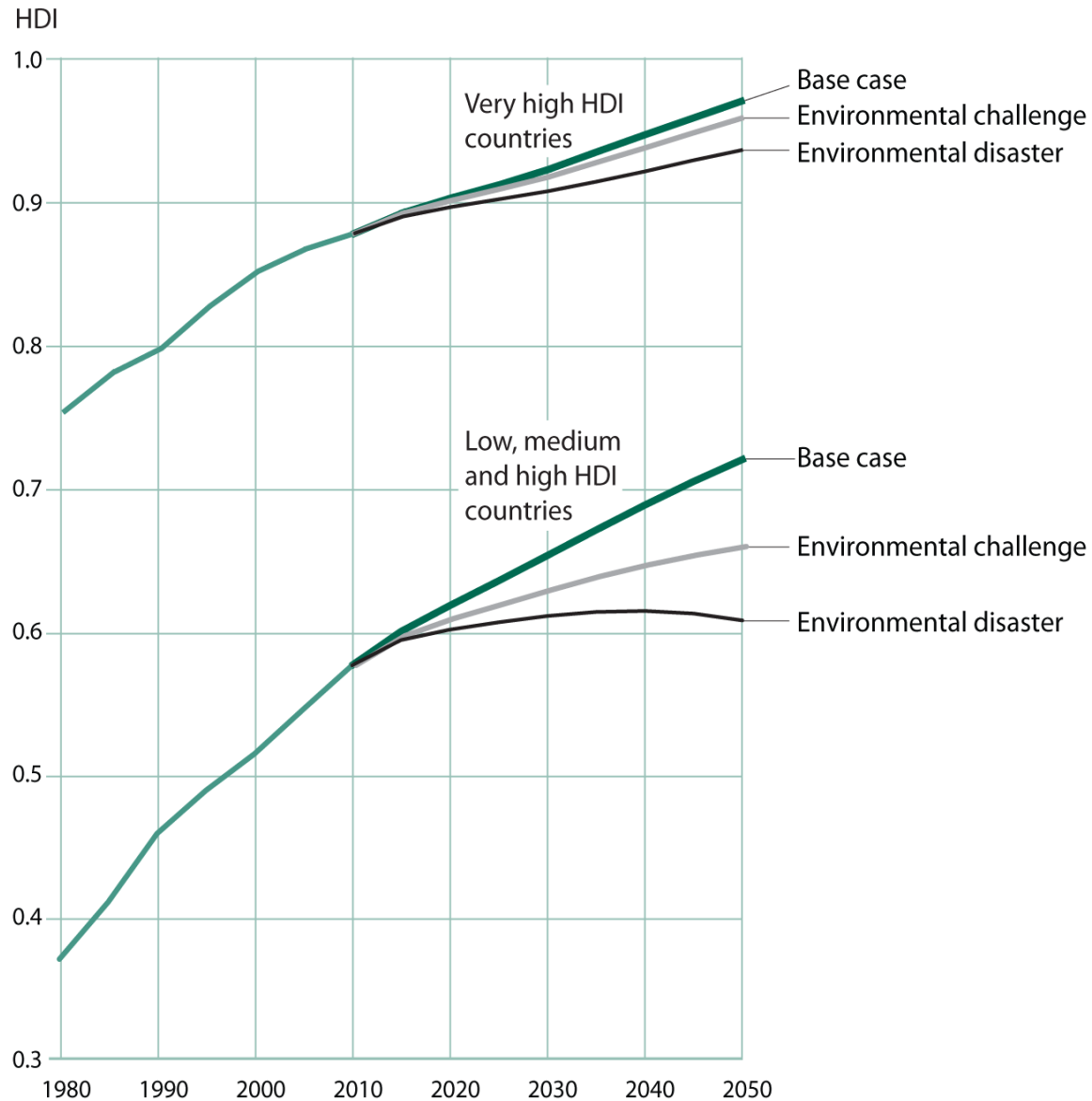
# OUTLINE

- Motivation
  - Significant cost of inaction
  - Human development at the core of measurement
- Building blocks
  - Linking present and future choices
  - National and global sustainability and the existence of thresholds
  - The loss function: fair share and global responsibility
- Relation with existing measures
- Final Remarks

## SIGNIFICANT COSTS OF INACTION

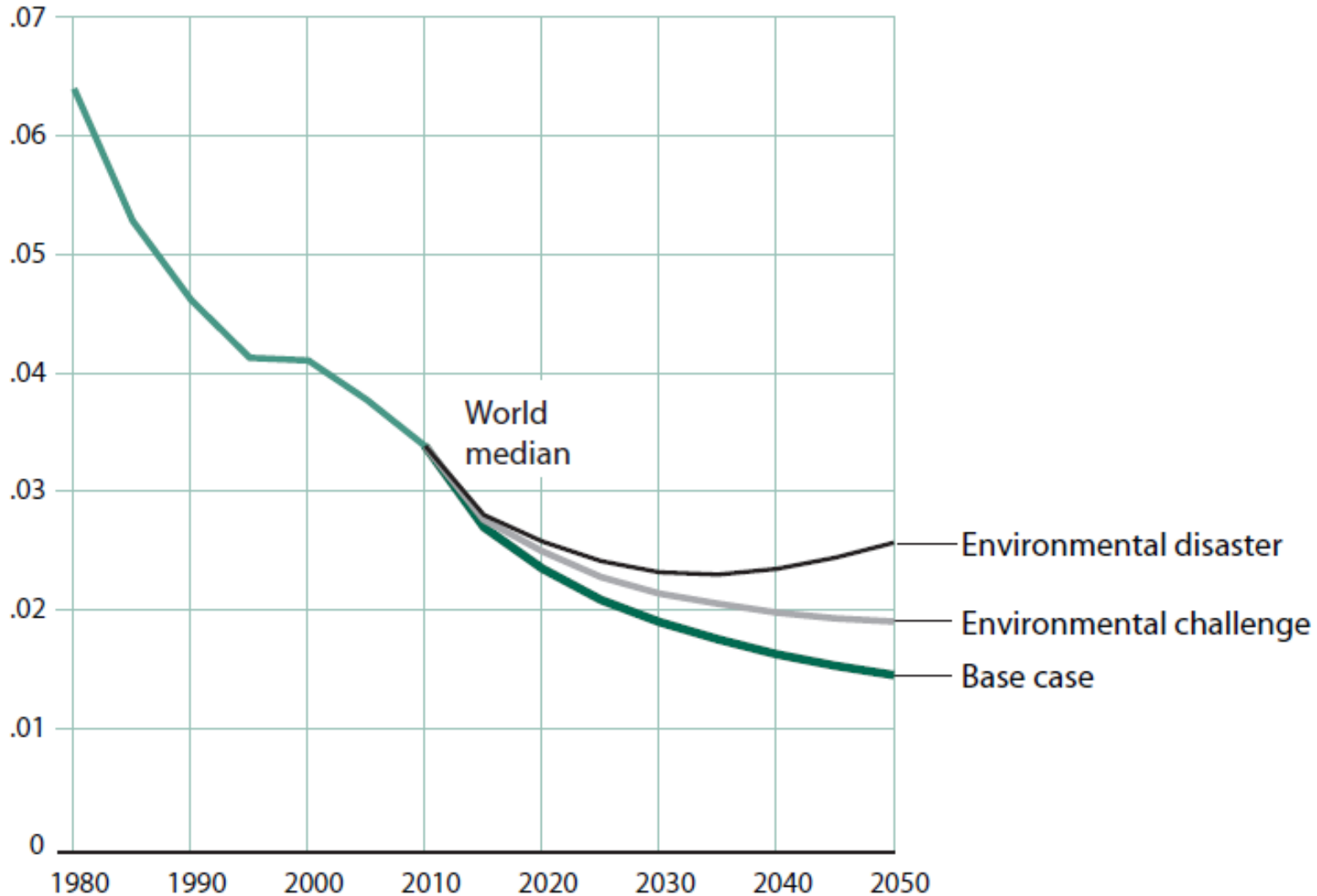
- **Current and future environmental threats could jeopardize human development progress:**
- In an “*environmental challenge*” scenario by 2050 the world HDI would be 8 percent lower than in the baseline
- Under an even more adverse “*environmental disaster*” scenario the global HDI would be at least 15 percent below the projected baseline
  - Declining global inequality trend will be reversed

# ENVIRONMENTAL THREATS COULD STOP HUMAN DEVELOPMENT PROGRESS



# ... AND REVERT THE REDUCTION OF DEVELOPMENT GAPS

Atkinson inequality index



# HUMAN DEVELOPMENT AT THE CORE OF MEASUREMENT

- Amartya Sen
  - “Human development is concerned with advancing the richness of human life, rather than the richness of the economy in which human beings live, which is only a part of it.”
- HDI pioneer as an alternative to GDP in measuring development from a human perspective
  - HDI is a capabilities index
- Capabilities are very different from a utilitarian approach
  - The later may fail to reflect a person’s real deprivation (adaptation)
  - A social welfare function is designed to be maximized, while a capabilities index is a partial theory of well-being

# UNIVERSALISM

- Human Development Report (1994):
  - “There is no tension between human development and sustainable development. Both are based on the universalism of life claims”
- Anand and Sen (2000):
  - Human development involves equal rights applied to all. Unacceptable any form of discrimination based on class, gender, race, community, and also generation
    - Future generations should receive the same attention than the current generation
- Sen (2009):
  - “Sustainable freedom” implies preserving human’s capabilities today without “comprising those of future generations”

# CONNECTING UNIVERSALISM WITH THE MEASUREMENT OF HUMAN PROGRESS

- Progress in human development achieved at the cost of future generations *is viewed* less favorably than progress achieved in a sustainable way
  - Measuring capabilities is reflective – rather than mechanical
  - Applies to all capabilities and not just with those that come from income
- One of the main dimensions affecting the connection between the choices of current and future generations is the environment
  - Other dimensions are also important:
    - e. g. Savings and investment, parents' education



## GREATER INTEGRATION OF SCIENCE

- Greater integration of science into all levels of policymaking on sustainable development
  - Call from the Report of the United Nations Secretary-General's High-level Panel on Global Sustainability
- **Planetary boundaries** by Rockström et. al. (2009)
  - Transgressing planetary boundaries may be catastrophic due to the risk of crossing *thresholds* that will trigger non-linear, abrupt environmental changes
- The Millennium Ecosystem Assessment and the Intergovernmental Panel on Climate Change (IPCC) are also important references

# A “RIGHTS” APPROACH

- We follow a “*Rights*” approach –egalitarian criterion- by proposing a universally equal or “fair” use of the environment
  - Every person has the “Right” higher human development within the limits imposed by the sustainability of our planet
  - Environmental indicators are measure in per capita terms (CO<sub>2</sub> emissions per capita)
- A *fair* and *sustainable* use of the environment in a country is when its average citizen has a use equal to or less than the *per capita* threshold or maximum fair share of the planetary boundary
- Country’s *responsibility* regarding its excessive use of the environment should be higher, the larger the country is

# INTERPRETATION OF THE LOSS FUNCTION

- People do not only care about the choices that are open to them (measured by the HDI) but also about how they were procured and their impact on the choices of *future generations*
- People care about *inter-generational* equity not only locally but globally
- If a country's citizens are exceeding its fair share of the planetary boundaries, its HDI is reduced by a *loss function* that captures the potential negative effect of current actions on the possibilities of future generations globally

# RELATIONSHIP BETWEEN SUSTAINABILITY INDICATORS AND THE HDI

## Selected indicators of sustainability

Stats	EFP		ANS		CO <sub>2</sub>		Freshwater		Cropshare		Extshare	
	above threshold (>1.8)	All	below threshold (<0)	All	above threshold (>2.65)	All	above threshold (>590.3)	All	above threshold (>15)	All	above threshold (>1.75)	All
Mean	4.1	2.9	-6.9	8.6	9.1	4.9	1090.7	467.8	25.1	4.0	4.8	0.3
s.d.	1.9	2.1	7.4	9.6	7.6	6.7	688.5	556.3	10.4	6.8	1.4	0.8
Min	1.8	0.5	-29.2	-29.2	2.7	0.0	604.8	8.9	15.3	0.0	2.9	0.0
Max	11.7	11.7	-1.4	36.3	49.1	49.1	4818.2	4818.2	46.9	46.9	6.3	6.3
N (obs.)	82	140	13	104	90	185	49	172	11	186	4	186

Source: Own calculations based on World Bank, IUCN “Red list”, FAO, and Global Footprint Network.

- Only two indicators have a strong positive and statistically significant correlation with HDI are EFP and CO<sub>2</sub> emissions per capita (.75 and .55, respectively)
- These indicators have the largest share of countries above the threshold, while the share of extinct species over total has the lowest

# FINAL REMARKS

- We have underscore the need to improve measurement tools in a way that is:
  - Human centered, combining the best available scientific evidence with social justice criteria
  - To connect the choices available to current generations with those that could be available to future generations
  - Takes into account global and local realities
- Human development approach can help us advancing on measurement
  - Offering a framework for understanding sustainability, which connects inter- and intra-generational equity with global justice



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**Measuring The Future We Want  
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