Counting the Cost of Climate Change in Developing Countries: Application to sub-Saharan African countries

Muyeye Chambwera

James MacGregor

International Institute for Environment and Development

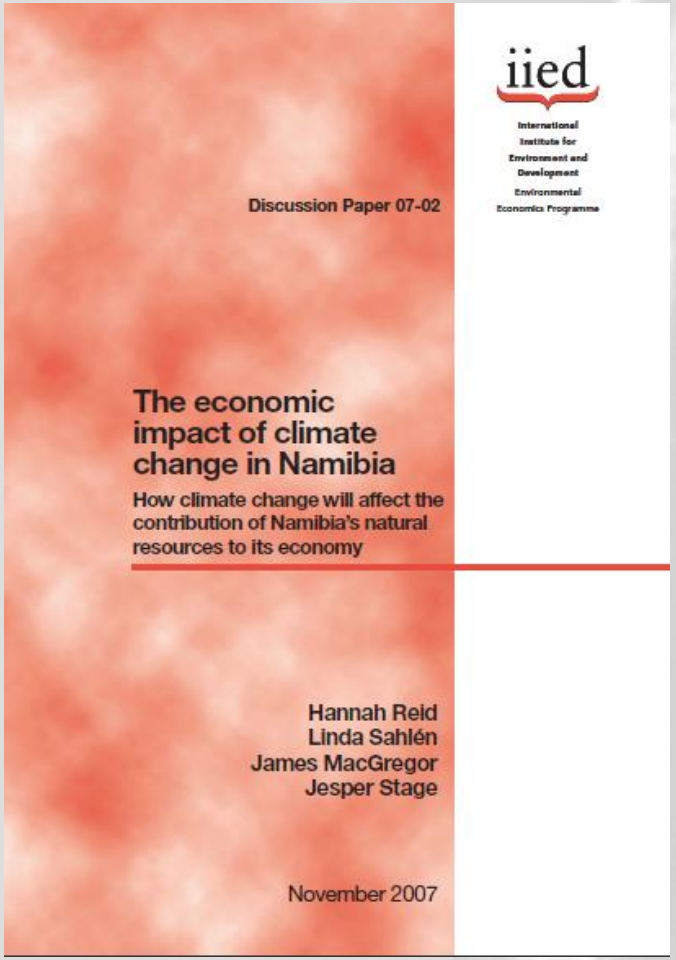
www.iied.org

The economic impact of climate change in Namibia

How climate change will affect the contribution of Namibia's natural resources to its economy

Downloadable: www.iied.org

Copies of 2 page briefing …



Climate change and economics at IIED

IIED's is a policy-focused independent research organisation that specialises in linking local to global.

- We work with some of the world's most vulnerable people to ensure they have a say in the policy arenas that most closely affect them — from village councils to international conventions.
- We work in partnership with local organisations to make appropriate global change

Climate change at IIED finds fair and equitable solutions to CC by improving:

- Understanding of CC impacts for developing countries;
- Decision making capacities;
- Negotiating capacities in international CC negotiations;
- Sustainable livelihoods opportunities in the face of CC impacts

Economics at IIED has the following resources and capacities:

- 7 economists working in London and Edinburgh
- Track record in bringing an economic approach to a range of issues: forestry, conservation, livelihoods, poverty alleviation, agriculture
- **Global network** of economists, near-economists, econometricians and others
- **Knowledge management**: responsive and supporting

Climate change economics at IIED

Wide range of IIED projects featuring economics approaches to influencing decision-makers' opinions

- Agricultural trade
- Economic costs of climate change
- Pastoralism
- Wildlife and tourism
- REDD

Process of identifying needs and gaps in knowledge, filling these, plus facilitating and managing policy change process

- Developing "killer facts": Data, numbers, e.g. % cost of GDP
- Listening to decision-makers' needs
- Working with local partners

Estimating the economic costs of CC

IIED's partners are seeking ways of developing economic data to influence policy-makers' decisions

- And downstream to influence public/private behaviour
- Project goal to estimate the economic costs of CC impacts in light of poor available data (economics and CC)
- Pilot in Namibia owing to
  - NRA for fish, forests, wildlife, water and minerals
  - Social accounting matrix
  - CGE model develop potential
- Namibia:
  - One of the driest countries in the world
  - V low population densities
  - Over 30% of GDP from its natural resources
  - Independent since 1990
  - World's highest Gini coefficient

Methodology

- **Literature review**
  - Grey, web, official, NGO, etc
- **Stakeholder engagement**
  - champion identification
  - Gap identification
  - Local economists
- **Expert meeting**
  - facilitated by economists
  - generation of “consensual” findings
- **Outputs – data and gap identification**
- **Modelling – static and dynamic**
- **Dissemination phase – media, stakeholders, etc.**

Table 4. Possible Climate change effects on GDP per sector

Values	Current contribution to GDP	Changes expected due to climate change	Affect on GDP, millions N$ per year	Confidence in range of change
Use values				
- Cereal production	0,5%	*Decrease (10 - 20%)*	- 16 to - 32	*Low to Medium*
- Crop production	1,0%	*Decrease (10 - 20%)*	- 32 to - 65	*Low to Medium*
- Livestock production	4,0%	*Decrease (20 - 50%)*	- 264 to - 660	*Medium*
- Traditional agriculture	1,5%	*Decrease (40 - 80%)*	- 197 to - 395	*Medium to high*
- Fishing	6,0%	*Increase (30%)/decrease (50 %)*	0 to - 990	*Low*
- Tourism	2-3%	*Increase/Decrease*	-	*Low*
- Forests	+ *	*Unchanged*	0	*Low*
Non-use value	+ *	*Decrease*	-	*Low*
Total value			- 509 to - 2 142	

** not included in the traditional national accounts*

Outcomes

- **Climate:**
  - drier, intense variable rainfall, 2-6 degree increase, less plant cover, higher evaporation, desertification, water shortages
- **Macroeconomic:**
  - up to 6% loss to GDP – US$70-200 million
  - under worst case scenario – agricultural and fishing outputs impacted
  - Irrigated crop production could thrive but job creation minimal
- **Social: poorest hardest hit –**
  - Labour-intensive livestock farming hit hard
  - loss of 24% of unskilled wages
  - Poor pastoralist and dryland populations most affected
  - Displacement/ migration to urban areas

Policy pointers

- **National policy pointers:**
  - need for climate proofing of policies essential
  - NOT a single issue! Decisions must not consider their own adaptation measures in isolation; they need to incorporate the fact that their policies will affect the behaviour of firms and households, and include estimates of these changes in behaviour when they compare the effects of different adaptation measures
  - Impacts on agriculture are likely to be an extremely important part of the overall impact of climate change. In many developing countries, own production of food is still an important part of farming, making economic analysis complicated.
  - Strategy development to deal with displaced farmers, farmworkers and intensified rural poverty vectors

- **International policy:**
  - Recognise 'ecological space' - Namibia is not a contributor to CC, a recipient
  - Who will foot the bill? Can economic mechanisms promote north-south flows?
  - CC is clearly a key influence on economic growth in many developing nations – an influence that is going to be exacerbated under CC shifts

Methodology pointers

- **Pilot of CGE-driven methodology**
  - Used previously Magadza (1994), Winters et al. (1998), Sanderson & Islam (2003), London (2004), Dasgupta et al. (2007), Seo (2007), Bigano (2008), Calzadilla (2009).
  - Weaknesses for Namibia – informality, subsistence, data weakness
  - Ignores impacts on health infrastructure and energy that relate less to natural resources but are clearly significant
- **Other options – e.g. Ricardian analysis**
  - Used widely in developing nations - Mendelsohn and Dinar (1999), Deressa et al. (2005), Timmins (2006, 2007), Kurukulasuriya and Mendelsohn (2007a, 2007b, 2008), Lotsch (2007), Maddison et al. (2007), Mendelsohn and Seo (2007), Seo and Mendelsohn (2007a, 2007b, 2007c, 2008a, 2008b).
  - Can probably provide the best guide towards assessing **autonomous** adaptation on the part of farmers; this can help inform development planning in agriculture, by identifying possible constraints to adaptation
- **In conclusion …**
  - Does policy formulation/ lobbying/ influence need economic rigour?
  - Killer facts, local champions, transparent processes equally important
  - Mainstreaming adaptation into national policy. As long as such local and national forecasts are not available, climate change will probably continue to be seen as an unnecessary extra activity rather than as a crucial part of development planning
  - Standard C-B toolbox: Appears useful for assessing adaptation measures provided correct baseline used – new economic tools are not needed
  - IIED has a project in ten sub-Saharan African countries assessing data availability and technical capacities on different methodologies – www.iied.org [~June 2009]

Summary

- **Policy-facing: Application of existing methodologies demanded**
  - "No black box"
  - Local champions – CC experts, economists,
  - Locally-inclusive process – gaps e.g. finance, mining and energy
  - Killer facts – internal and external lobbying

- **Methodology**
  - Adapting existing tools to fit with data constraints
  - Expand into sectors – agriculture in Tanzania, wildlife in South Africa, mining in Argentina

- **Updates on www.iied.org – maintaining an email list**