



Evaluating Climate Adaptation Efforts: notes toward a framework

Kenneth Chomitz

Senior Advisor, IEG

Kchomitz [at] worldbank.org

www.worldbank.org/ieg/climatechange

IEG's Climate Evaluation Series



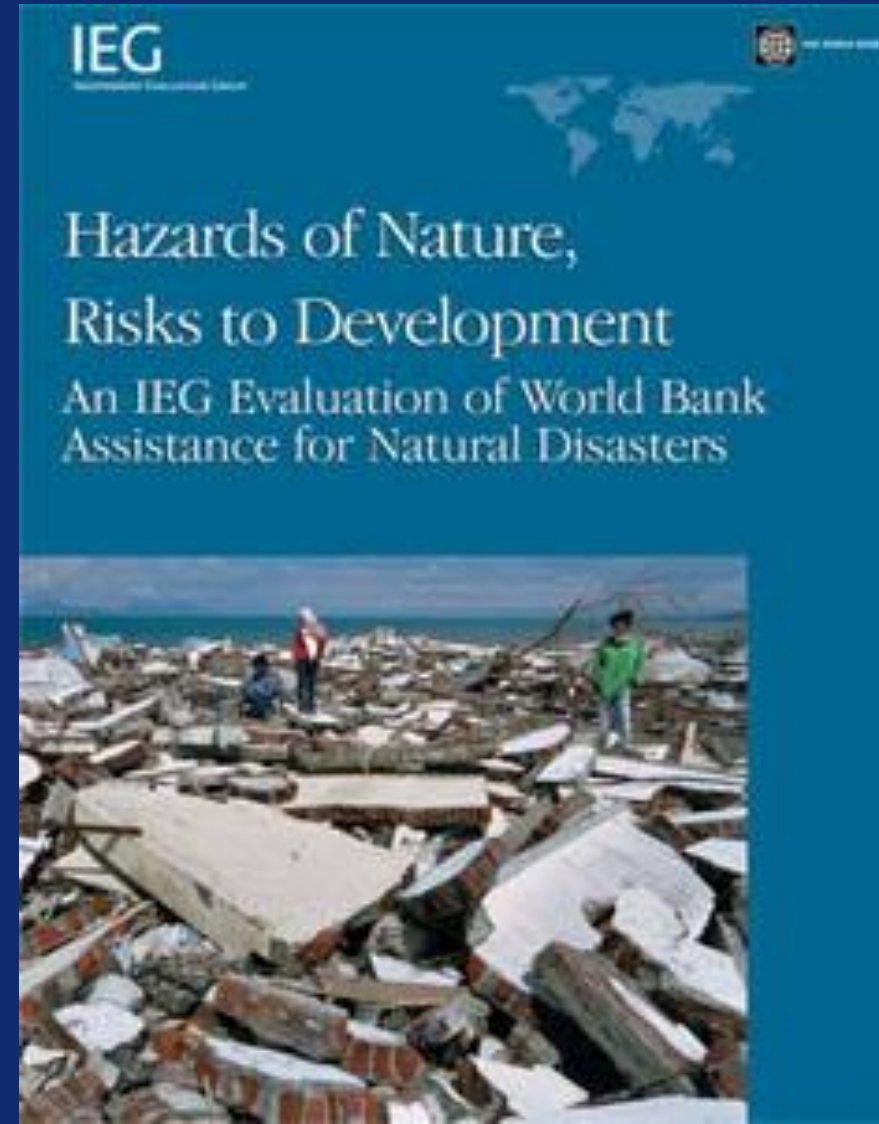
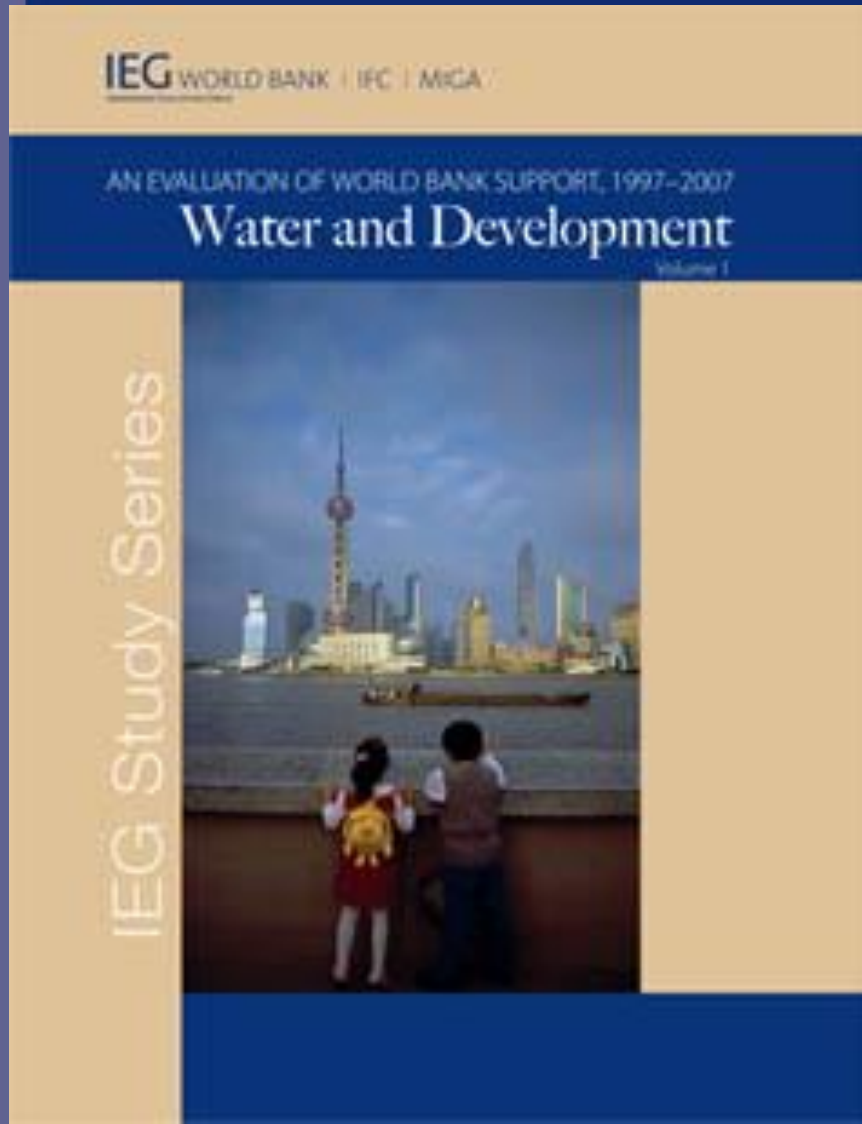
Phase I:
Win-win Energy Policies
2009

Phase II:
Mitigation
Nov 2010

Phase III:
Adaptation
2011



Other relevant IEG evaluations



Outline



- ▶ Why evaluate?
- ▶ Challenges of evaluating adaptation
- ▶ Three kinds of adaptation
- ▶ Climate adaptation actions
- ▶ Levels of intervention
- ▶ Levels x Actions
- ▶ Geography as an organizing system
- ▶ Tracking adaptation efforts: expenditures or impacts



Why evaluate?

- ▶ Assess efforts explicitly aimed at promoting adaptation:
 - Relevance
 - Efficacy
 - Efficiency
- ▶ Learn lessons from “adaptation analogs” (efforts that may promote adaptation even if not so-labeled)
 - Impact assessment: economic returns, risk reduction, poverty impacts and differential gender impacts
- ▶ Inform strategic choices
 - How best to mainstream adaptation
 - Priorities – what to worry about first
 - Within sector vs. cross-sector adaptation tradeoffs



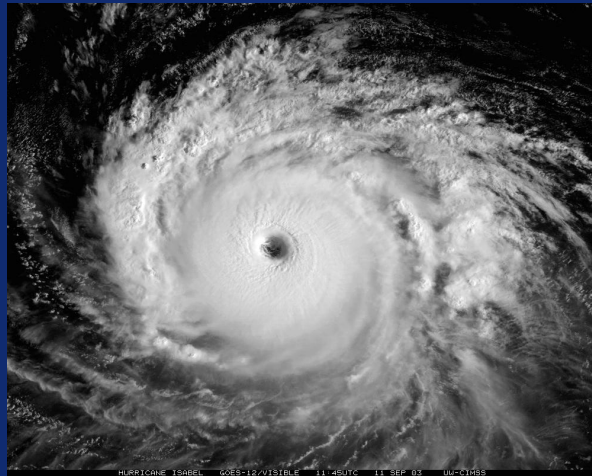
Challenges for evaluation

- ▶ Does all of agriculture and water management qualify as adaptation? How to usefully focus on key areas.
- ▶ Explicit adaptation efforts are new. Too soon to evaluate?
- ▶ Some adaptation efforts pay off decades hence, or only in case of a rare but catastrophic event. How to evaluate?
- ▶ Assessing within-sector vs. cross-sector adaptation
- ▶ Lack of metrics for vulnerability and resilience

Three kinds of adaptation needs



Current chronic conditions



Unreckonable risks

Inexorable calamities





Current chronic conditions

- ▶ Examples of lack of adaptation to current conditions
 - Unsustainable groundwater extraction
 - Chronic floods or droughts (return period <20 years)
- ▶ Adaptation responses
 - Water pricing, water management institutions, water efficiency
 - Weather index insurance
 - Urban drainage infrastructure construction and maintenance
 - Remove subsidies to groundwater extraction, thirsty crops
- ▶ Evaluability
 - Substantial track record of experience
 - Can look at *ex post* outcomes and impacts
 - Quasi experimental or experimental impact analysis is possible

Unreckonable risks



▶ Examples

- Designing coastal defenses against storm surges: is what we think is a 1000 year event now already a 100 year event?
- Planning climate-sensitive, long-lived infrastructure when some projections show rainfall increases, others show decreases.

▶ Adaptation responses

- Robust (and more costly) design of infrastructure
- Shift away from climate-sensitive locations and sectors

▶ Evaluation approach

- *Ex-post* evaluation is impossible
- *Ex-ante* evaluation: review basis for climate scenarios, and use of these scenarios in project and program design

Inexorable Calamities



▶ Examples

- Loss of glacial water supplies
- Inundation of low-lying islands and deltas
- Semi-arid areas become fully arid

▶ Adaptation actions (often with long lead times)

- Reservoirs to replace glacial water storage
- Abandonment of threatened lowlands or grasslands

▶ Evaluation issues and approach

- Issue: costs of investment too soon vs. too late
- *Ex post* evaluation is impossible
- Evaluate *ex ante* (with updating)

Adaptation actions and evaluation criteria



<p>Information and Tools (including GIS on climate and vulnerabilities)</p>	<ul style="list-style-type: none">•Reliability of information/tools.•Adequacy for purpose.•Transparency and documentation•Feedback from users <p><i>Evaluate ex post</i></p>
<p>Capacity building and institutional development</p>	<ul style="list-style-type: none">•Use of information and tools•Adequacy of funding and staffing•Strength of cross-sectoral, cross-agency cooperation <p><i>Evaluate ex post</i></p>
<p>Monitoring, diagnosis, and planning activities</p>	<ul style="list-style-type: none">•Adequacy of monitoring.•Degree of mainstreaming of climate into other sectoral concerns•Strategic priority-setting
<p>Financing and implementation of plans</p>	<p>Are plans being implemented? Ex ante or Ex post impacts vs costs Distributional impacts</p>



Levels of evaluation

- ▶ Within-MDB or development agency
- ▶ Global
- ▶ National
- ▶ Project



Putting it all together

	Info/tools	Capacity	Planning	Execution
MDB/ Agency				
Global				
National				
Project				

Current chronic conditions
Unreckonable risks
Inexorable calamities



Geography as an organizing principle



Biomes and geographic regions face distinctive bundles of adaptation issues and solutions:

- ▶ Low-lying islands
- ▶ Deltas and estuaries
- ▶ Floodplains
- ▶ Mountains
- ▶ Coastal cities
- ▶ Semi-arid areas

Project level and national level efforts can be compared or summarized via such a geographical cut

Tracking Adaptation Expenditures



▶ Current tracking efforts

- Attempt to attribute adaptation share of funding for each development project

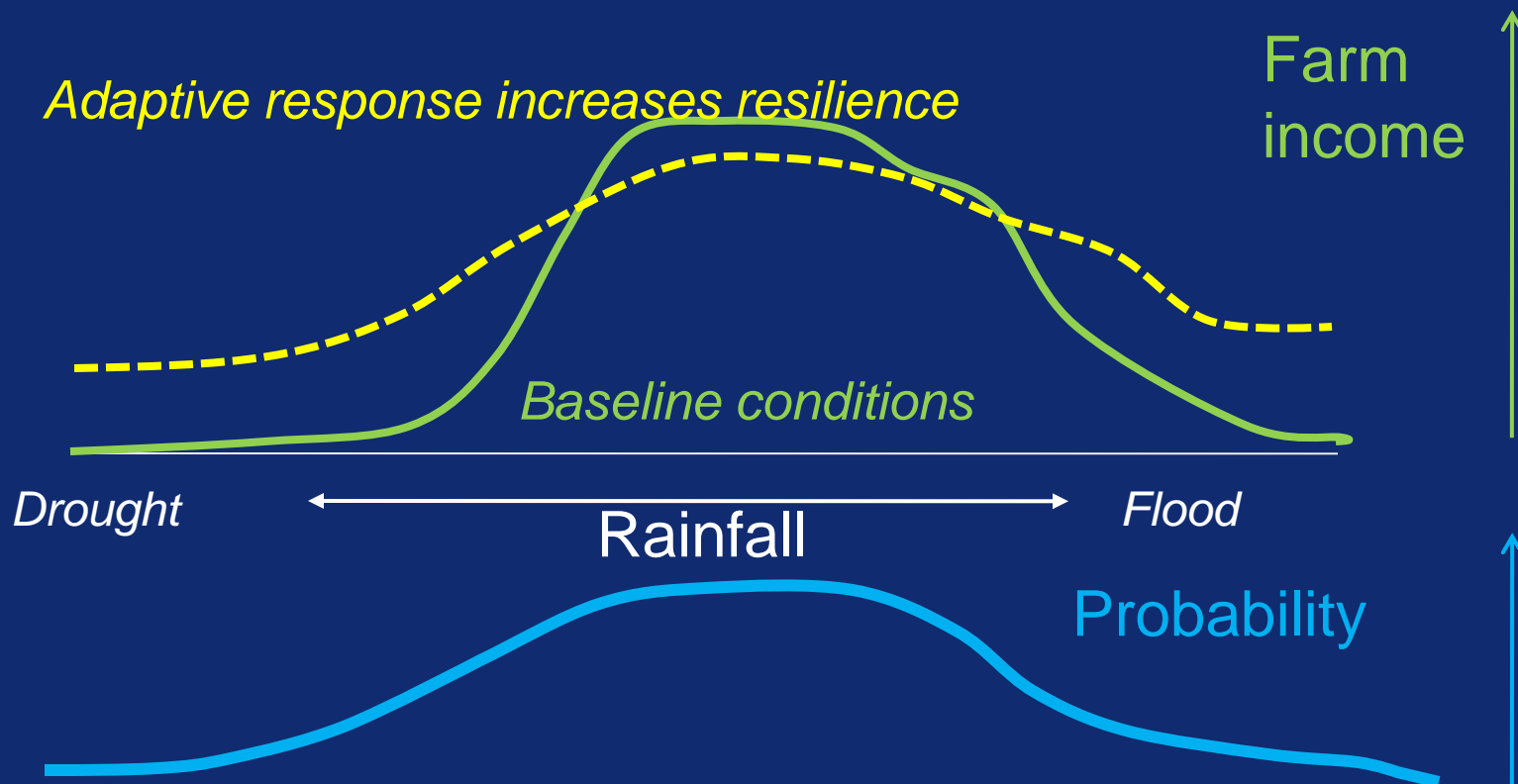
▶ Motivations

- Assuring additionality of funding
- Assuring investments in adaptation

▶ Issues

- Does intentionality count?
- It is difficult to allocate adaptation share when adaptation is integral to project design and goals
- Emphasizes inputs rather than outcomes; not conducive to efficiency

Quantifying impacts on resilience



Feasible measures of resilience or vulnerability (at the national level)



Climate-focused measures, e.g.

- ▶ Water use vs. availability
- ▶ People and assets exposed to extreme weather events
- ▶ Proportion of GDP and employment in rainfed agriculture
- ▶ Protected wetland area as a proportion of floodplains
- ▶ Proportion of natural ecosystems that could not survive a 3° C temperature rise

Comprehensive measures

- ▶ Total mortality/morbidity risk
- ▶ 5 year probability that a household falls below poverty line