

The Caribbean and Climate Change: The Costs of Inaction

Ramón Bueno

Stockholm Environment Institute-U.S.

www.sei-us.org

www.sei-us.org/climate-and-energy/climate-economics.html

Climate Change: From the Science to Action

- Scientific consensus on climate change
- The debate now is about the *economic* analysis
- Wide range of economic models
 - Uncertainty, catastrophic risks,
 - Discount factors, growth rates, technology

Need for Climate Action

- Some say acting now will be costly
- Climate inaction will be even more costly
- Global trends and pressures
 - World's 6 billion people: 9B by 2100
 - Right to development

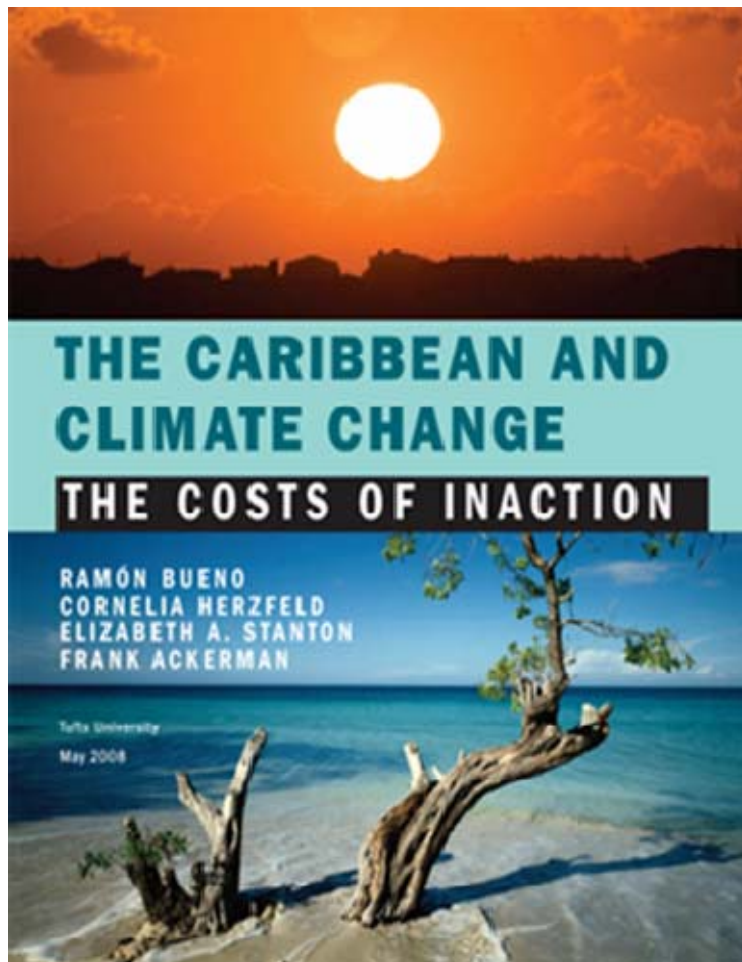
Caribbean Vulnerability



Challenges:

- Ecological
 - Social
 - Economic
 - Security
 - Food
 - Energy
-
- Infrastructure losses and coastal erosion
 - Tourism loss
 - Greater hurricane, storm surge damages
 - Salt water intrusions into fresh-water aquifers
 - Agriculture and ecosystems losses
 - Impaired health (flooding, sanitation, diseases, heat stress)

Caribbean Costs of Inaction



“For just these three categories—increased hurricane damages, loss of tourism revenue, and infrastructure damages—the Caribbean’s annual cost of inaction is projected to total \$22 billion annually by 2050 and \$46 billion by 2100. These costs represent 10 percent and 22 percent, respectively, of the current Caribbean economy.”

Action vs. Inaction Scenarios

		2050	2100
Annual Average Temperature Increase (in degrees above year 2000 temperature)			
Low-Impact	F	1.1	2.2
	C	0.6	1.2
High-Impact	F	4.9	9.7
	C	2.7	5.4
Sea-Level Rise (above year 2000 elevation)			
Low-Impact	in	3.5	7.1
	cm	8.9	18.0
High-Impact	in	22.6	45.3
	cm	57.4	115.1

Climate Change Scenarios

Total Caribbean

Climate Change Scenarios: \$US Billions

(billions of 2007 dollars; percentages based on 2004 GDP)

LOW-IMPACT	2050	2100
Storms	2.0	2.1
Tourism	0.8	1.6
Infrastructure	2.9	5.9
Total	\$5.7	\$9.6
% Current GDP	2.7%	4.5%

HIGH-IMPACT	2050	2100
Storms	4.7	10.0
Tourism	4.0	8.0
Infrastructure	18.9	37.8
Total	\$27.6	\$55.8
% Current GDP	13.0%	26.3%

Caribbean Cost of Inaction:

Total Caribbean	Cost of Inaction (\$US Billions)	
	2050	2100
<i>(billions of 2007 dollars; percentages based on 2004 GDP)</i>		
Storms	2.8	7.9
Tourism	3.2	6.4
Infrastructure	15.9	31.9
Summary: Costs of Inaction	\$21.9	\$46.2
in billions of 2007 dollars		
as percent of Caribbean GDP	10.3%	21.7%

Cost of Inaction by Island

Cost-of-Inaction: % of 2004 GDP	2050	2100
Anguilla	20.7	41.4
Antigua & Barbuda	25.8	58.4
Aruba	10.1	20.1
Bahamas	13.9	31.7
Barbados	13.9	27.7
British Virgin Islands	9.0	18.1
Cayman Islands	20.1	53.4
Cuba	12.5	26.8
Dominica	34.3	77.3
Dominican Republic	19.6	40.3
Grenada	46.2	111.5
Guadeloupe	4.6	9.5
Haiti	61.2	123.2
Jamaica	27.9	56.9
Martinique	3.8	8.1
Montserrat	21.7	49.5
Netherlands Antilles	16.1	36.0
Puerto Rico	2.8	6.0
Saint Kitts & Nevis	35.5	89.3
Saint Lucia	24.3	49.1
Saint Vincent & the Grenadines	23.6	47.2
Trinidad & Tobago	8.0	16.0
Turks & Caicos	37.9	75.9
U.S. Virgin Islands	14.2	32.4
TOTAL CARIBBEAN	10.3%	21.7%

Caribbean Cost of Inaction -- by % Total Impact in 2100

(millions of 2007 dollars; percentages based on 2004 GDP)

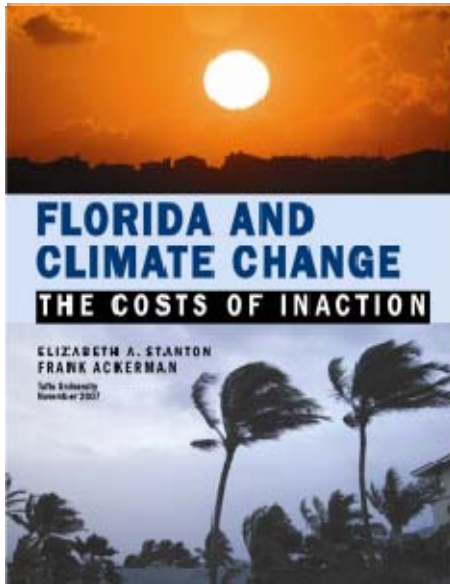
	GDP	% of GDP				\$ Million			
		Storms	Tourism	Infrastr.	Total	Storms	Tourism	Infrastr.	Total
Haiti	\$ 4,378	2.4%	0.8%	120.0%	123.2%	107	36	5,252	\$ 5,394
Grenada	\$ 391	63.0%	7.8%	40.7%	111.5%	247	31	159	\$ 436
Saint Kitts & Nevis	\$ 359	60.5%	8.5%	20.3%	89.3%	217	31	73	\$ 321
Dominica	\$ 249	28.8%	5.0%	43.5%	77.3%	72	12	108	\$ 193
Turks & Caicos	\$ 181	0.0%	52.3%	23.6%	75.9%	-	95	43	\$ 137
Antigua & Barbuda	\$ 750	22.7%	16.4%	19.3%	58.4%	170	123	145	\$ 438
Jamaica	\$ 8,773	3.3%	6.8%	46.8%	56.9%	292	593	4,106	\$ 4,991
Cayman Islands	\$ 2,204	43.7%	6.3%	3.5%	53.4%	963	138	76	\$ 1,178
Montserrat	\$ 34	20.2%	8.0%	21.3%	49.5%	7	3	7	\$ 17
Saint Lucia	\$ 699	1.6%	12.1%	35.4%	49.1%	11	85	247	\$ 343
Saint Vincent & the Grenadines	\$ 371	0.0%	9.5%	37.7%	47.2%	-	35	140	\$ 175
Anguilla	\$ 120	0.0%	25.5%	15.9%	41.4%	0	31	19	\$ 50
Dominican Republic	\$ 20,519	4.0%	5.6%	30.8%	40.3%	814	1,144	6,318	\$ 8,276
Netherlands Antilles	\$ 2,705	12.6%	11.0%	12.5%	36.0%	341	296	338	\$ 975
U.S. Virgin Islands	\$ 3,104	13.3%	13.6%	5.5%	32.4%	414	422	170	\$ 1,005
Bahamas	\$ 5,786	12.9%	10.8%	7.9%	31.7%	748	627	458	\$ 1,833
Barbados	\$ 2,538	0.1%	11.0%	16.6%	27.7%	1	280	422	\$ 704
Cuba	\$ 38,065	5.8%	2.0%	19.1%	26.8%	2,197	761	7,256	\$ 10,214
Aruba	\$ 2,347	0.0%	13.8%	6.3%	20.1%	-	323	149	\$ 472
British Virgin Islands	\$ 967	0.4%	14.2%	3.4%	18.1%	4	138	33	\$ 175
Trinidad & Tobago	\$ 12,610	0.0%	1.0%	15.0%	16.0%	0	127	1,892	\$ 2,020
Guadeloupe	\$ 8,623	1.2%	0.6%	7.7%	9.5%	101	52	667	\$ 820
Martinique	\$ 9,896	1.4%	0.7%	6.0%	8.1%	137	67	596	\$ 800
Puerto Rico	\$ 86,726	1.2%	1.1%	3.7%	6.0%	1,055	970	3,202	\$ 5,227
TOTAL CARIBBEAN	\$ 212,397	3.7%	3.0%	15.0%	21.7%	\$ 7,899	\$ 6,418	\$ 31,876	\$ 46,193

Caribbean Cost of Inaction -- by % Tourism Impact in 2100

(millions of 2007 dollars; percentages based on 2004 GDP)

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		Storms	Tourism	Infrastr.		Storms	Tourism	Infrastr.	Total
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Costs of Inaction: Florida, USA

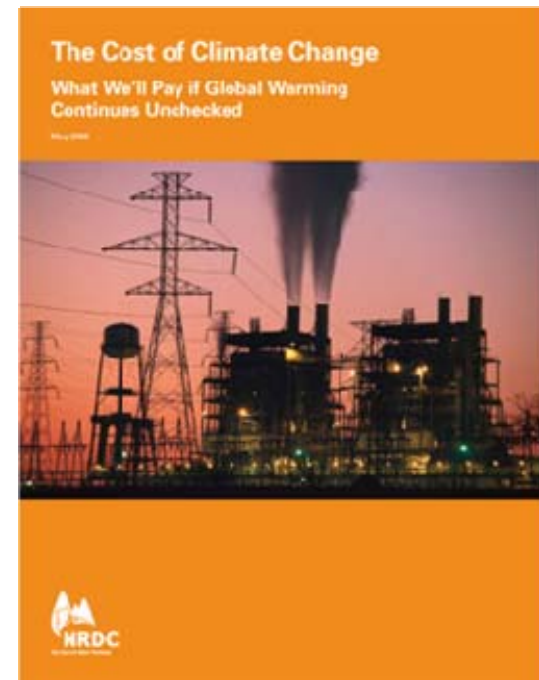


“For just these four categories — loss of tourism revenue, increased hurricane damages, at-risk residential real estate, and increased electricity costs — the annual costs of inaction are projected to total \$92 billion by 2050 and \$345 billion by 2100, figures that respectively would constitute 2.8 percent and 5.0 percent of the state’s projected Gross State Product “

- Stanton and Ackerman, November 2007

For the United States the cost of climate inaction in four cost categories – increased hurricane damages, residential real estate losses due to sea level rise, increased energy costs, and water supply costs – will add up to \$1.6 trillion (in today’s dollars), more 1.5 percent, of U.S. output per year by 2100.

-Ackerman and Stanton, May 2008



Cost of Inaction in Perspective

Costs of Inaction *

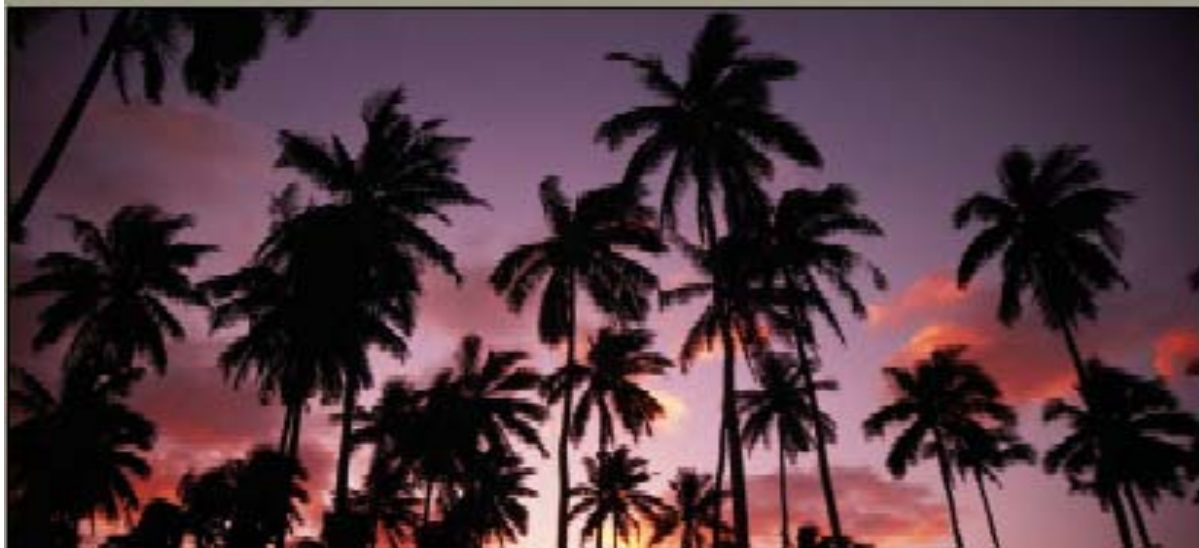
	2050	2100
Percent of United States GDP	1.20%	1.55%
Percent of Florida GSP	2.8%	5.0%
Percent of Caribbean GDP **	10.3%	21.7%

* Not an exact accounting of similar categories of losses and damages

** Based partly on a different methodology

Leading the Way

- Good costs: innovation, efficiency and growth
- Avoid damages *and* enable development
- Climate action is life insurance for the planet!





Stockholm Environment Institute

- Independent international research organization working on sustainable development.
- HQ in Stockholm, Sweden with centers in the US, UK, Estonia, and Thailand.
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