World Development Report 2014

Risk and Opportunity

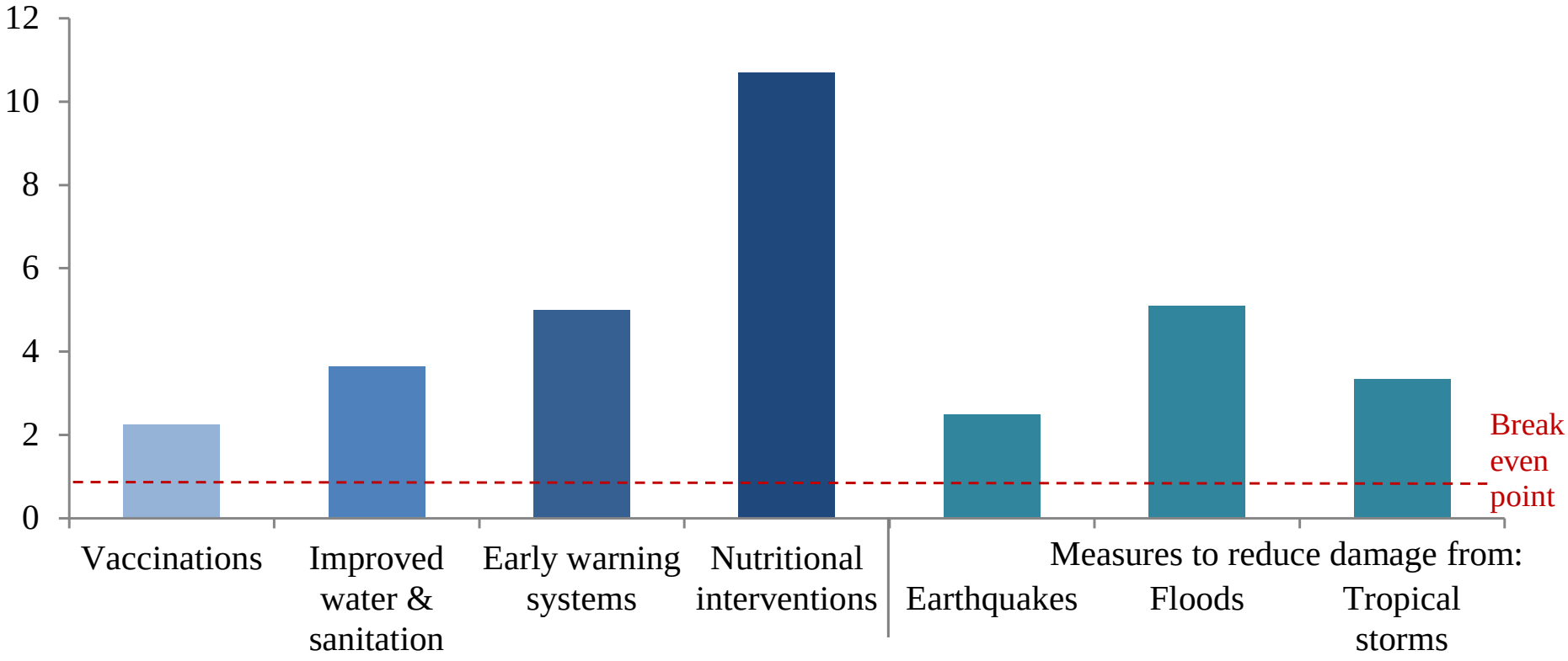
Managing Risk For Development

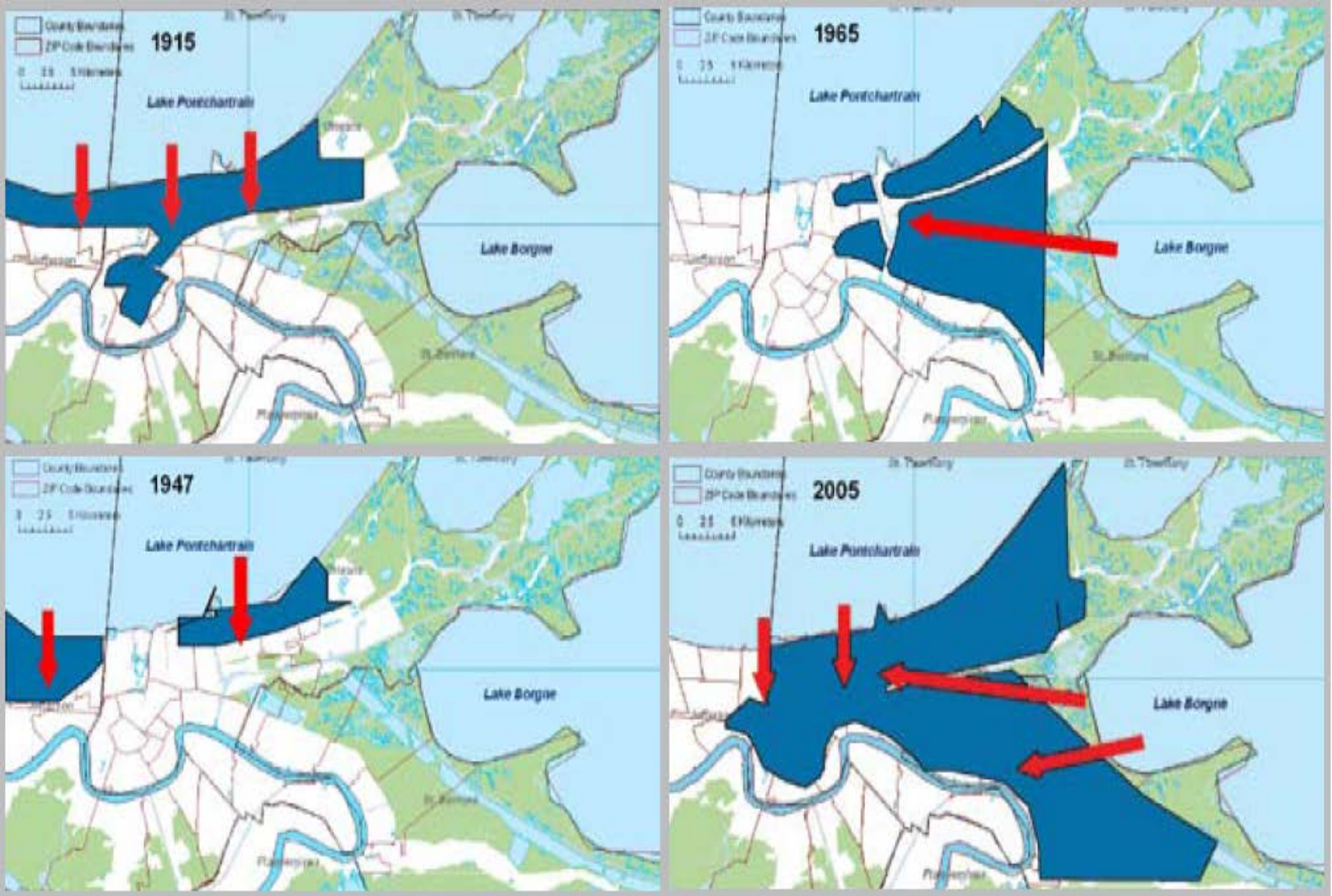
Stephane Hallegatte

November 1, 2013

The potential benefits of risk management outweigh the costs

Median benefit-cost ratios across a range of studies





Historical flooding in New Orleans in 1915, 1947, 1965 and 2005

Source: Muir-Wood and Grossi (2006)

A puzzling situation in the US

Table 1 | City ranking by risk (AAL) and relative risk (AAL in percentage of GDP) for 2005.

	Ranking by AAL (US$ million)					Ranking by relative AAL (percentage of city GDP)			
	Urban agglomeration	100 year exposure	AAL, with protection (US$ million)	AAL, with protection (percentage of GDP)		Urban agglomeration	100 year exposure	AAL, with protection (US$ million)	AAL, with protection (percentage of GDP)
1	Guangzhou	38,508	687	1.32%	1	Guangzhou	38,508	687	1.32%
2	Miami	366,421	672	0.30%	2	New Orleans	143,963	507	1.21%
3	New York—Newark	236,530	628	0.08%	3	Guayaquil	3,687	98	0.95%
4	New Orleans	143,963	507	1.21%	4	Ho Chi Minh City	18,708	104	0.74%
5	Mumbai	23,188	284	0.47%	5	Abidjan	1,786	38	0.72%
6	Nagoya	77,988	260	0.26%	6	Zhanjiang	2,780	46	0.50%
7	Tampa—St. Petersburg	49,593	244	0.26%	7	Mumbai	23,188	284	0.47%
8	Boston	55,445	237	0.13%	8	Khulna	2,073	13	0.43%
9	Shenzen	11,338	169	0.38%	9	Palembang	1,161	27	0.39%
10	Osaka—Kobe	149,935	120	0.03%	10	Shenzen	11,338	169	0.38%
11	Vancouver	33,456	107	0.14%	11	Hai Phòng	6,348	19	0.37%
12	Tianjin	11,408	104	0.24%	12	N'ampo	507	6	0.31%
13	Ho Chi Minh City	18,708	104	0.74%	13	Miami	366,421	672	0.30%
14	Kolkata	14,769	99	0.21%	14	Kobe	955	14	0.30%
15	Guayaquil	3,687	98	0.95%	15	Tampa—St. Petersburg	49,593	244	0.26%
16	Philadelphia	22,132	89	0.04%	16	Nagoya	77,988	260	0.26%
17	Virginia Beach	61,507	89	0.15%	17	Surat	3,288	30	0.25%
18	Fukuoka—Kitakyushu	39,096	82	0.09%	18	Tianjin	11,408	104	0.24%
19	Baltimore	14,042	76	0.08%	19	Grande_Vitória	6,738	32	0.23%
20	Jakarta	4,256	73	0.14%	20	Xiamen	4,486	33	0.22%

A comparison with a ranking by exposure is proposed in the Supplementary Information.

nature climate change

LETTERS

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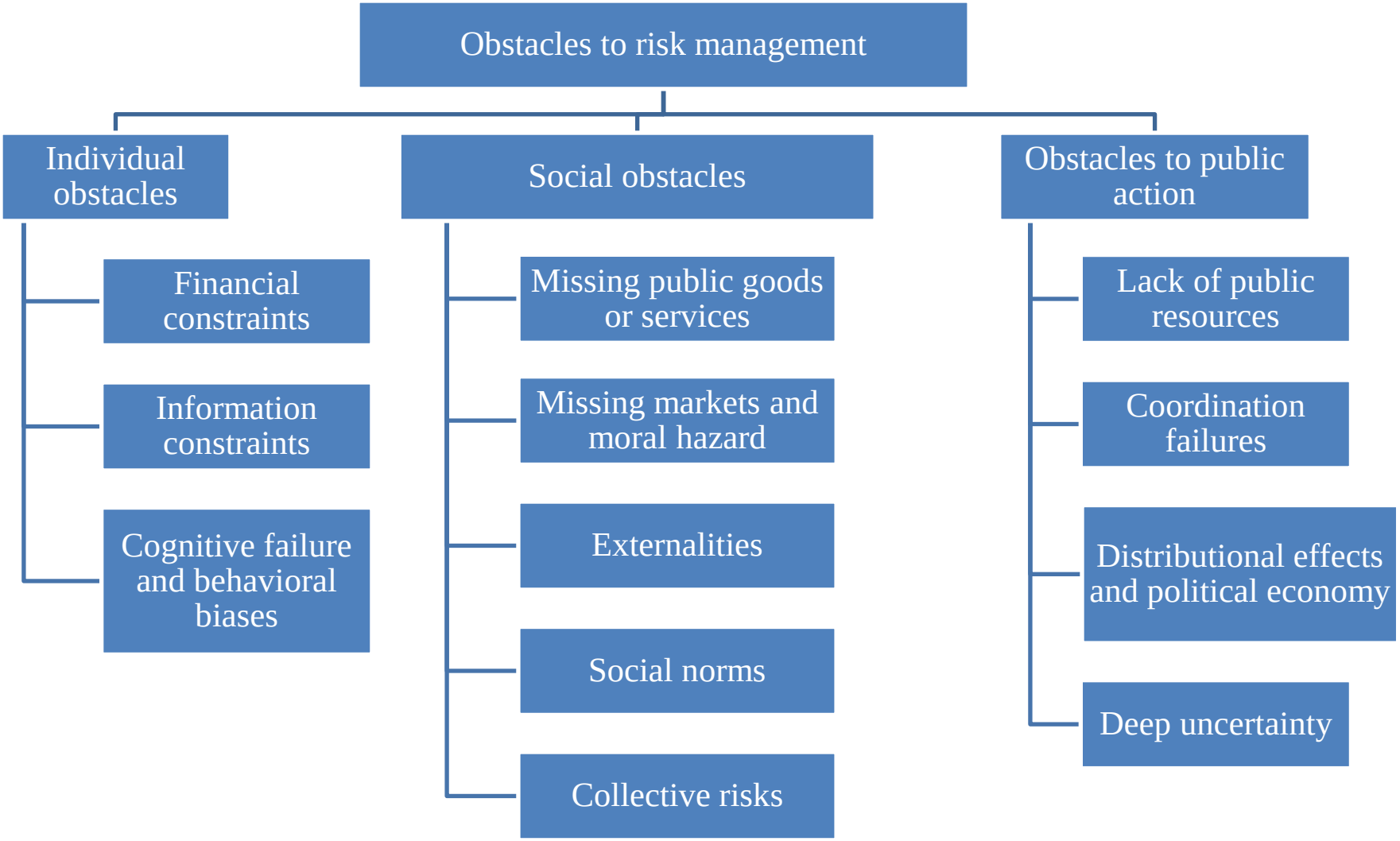
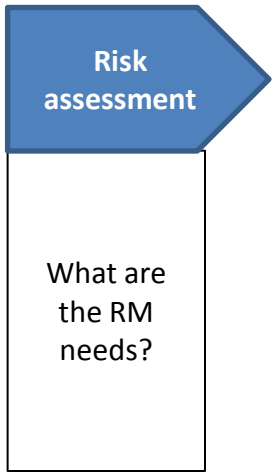
Future flood losses in major coastal cities

Stephane Hallegatte[1,2*], Colin Green[3], Robert J. Nicholls[4] and Jan Corfee-Morlot[5]

Identifying obstacle to risk management to design policy responses



A roadmap to design risk management policies



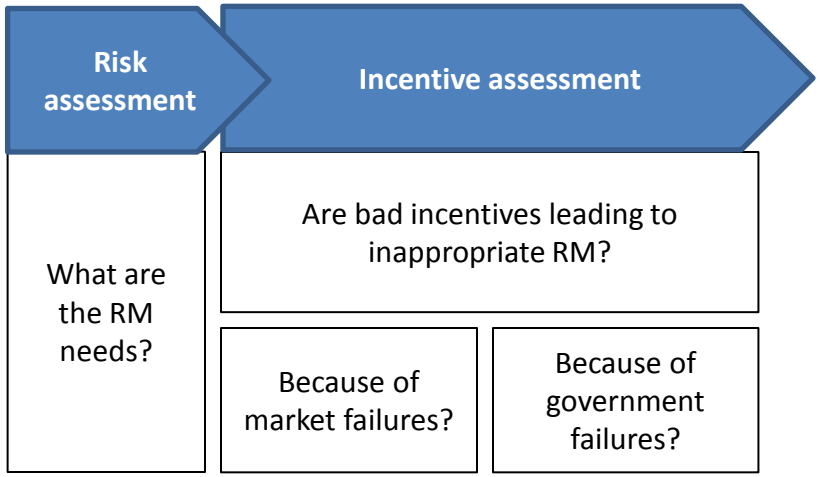
We should not suppress risk taking

- **Investments in safe and risky areas are imperfect substitutes**
  - Close to coast, for export-led industries
  - Agglomeration externalities in urban areas
  - Amenities

- Suppressing all risk taking would prevent us from capture these opportunities

- Not all “risk” is bad !

A roadmap to design risk management policies

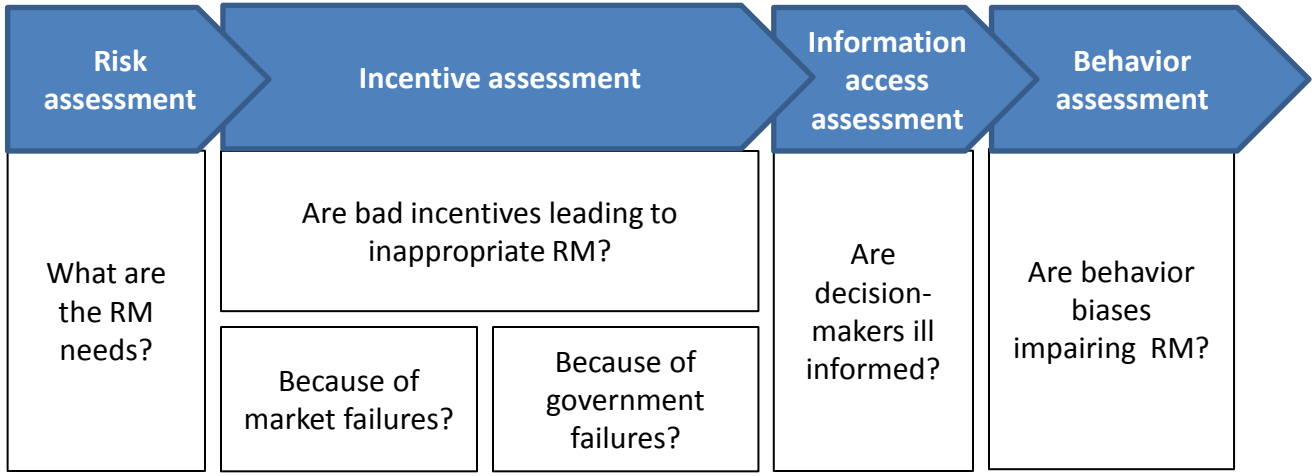


Political economy of risk management

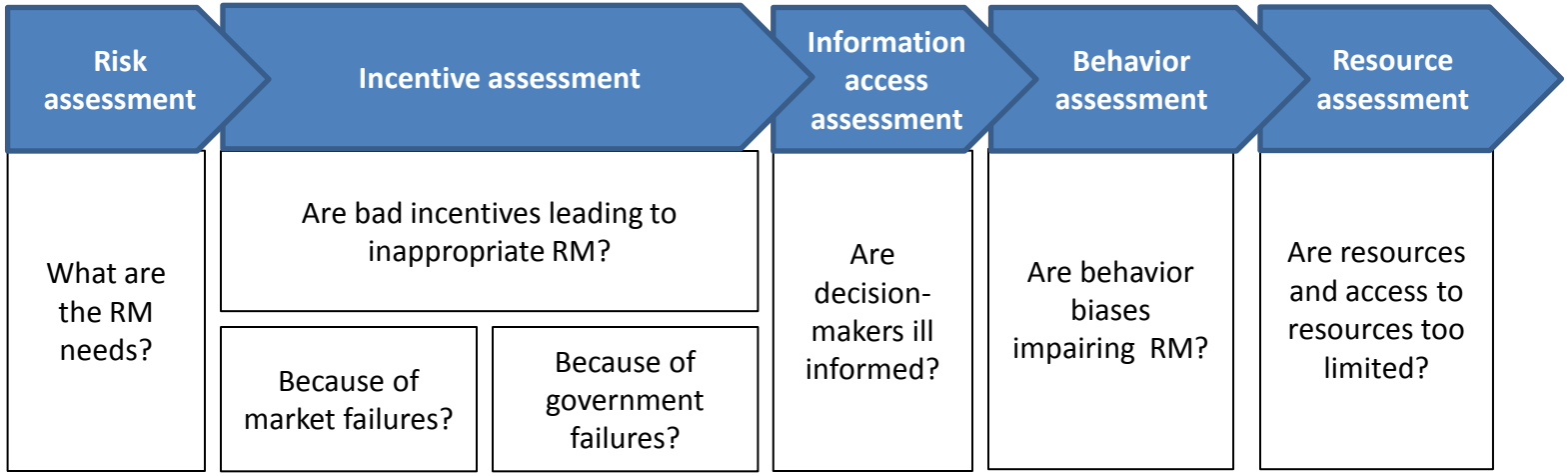
- **Cost-benefit asymmetry:**
  - Risk management cost will be immediate, visible, and concentrated (e.g., zoning policy)
  - Resulting benefits will be remote, invisible (avoided impacts), and diffuse (e.g., reduced floods)
- **No indicators for risk management "performance" (**to reward/punish policy-makers)
- **Lack of incitation for policy-makers and sub-optimality:**
  - Huge role of lobbies and interest groups
  - Insufficient anticipated action (and thus higher cost)

- **Proposals:**
  - Give a voice to affected communities
  - A National Risk Board?

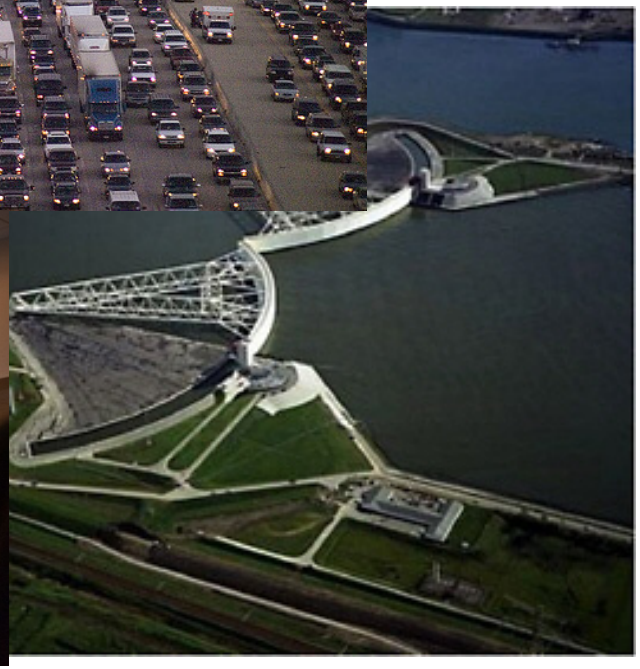
A roadmap to design risk management policies



A roadmap to design risk management policies

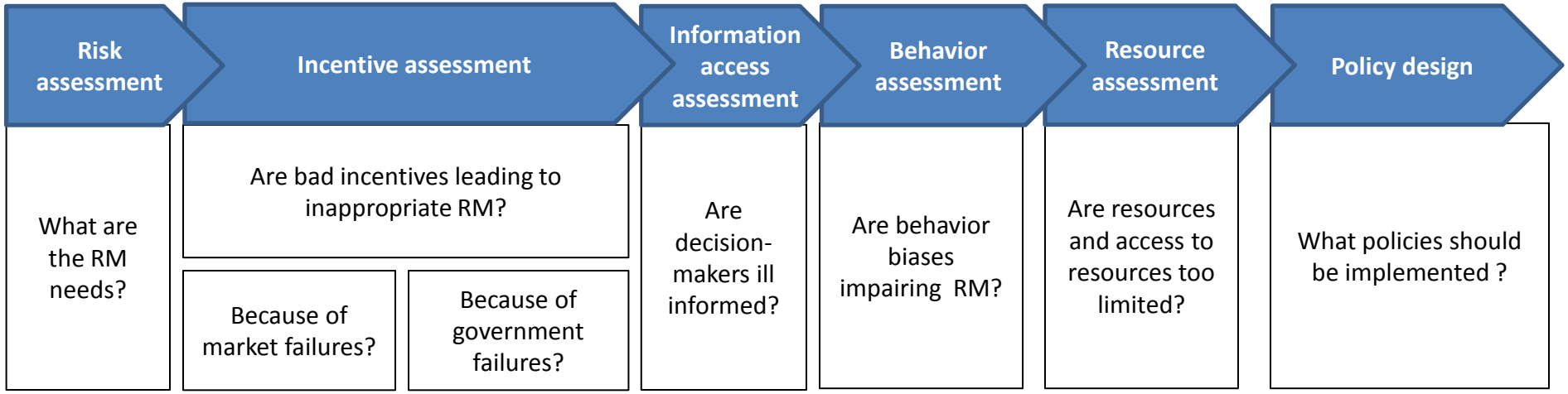


Infrastructure for risk management are critical…

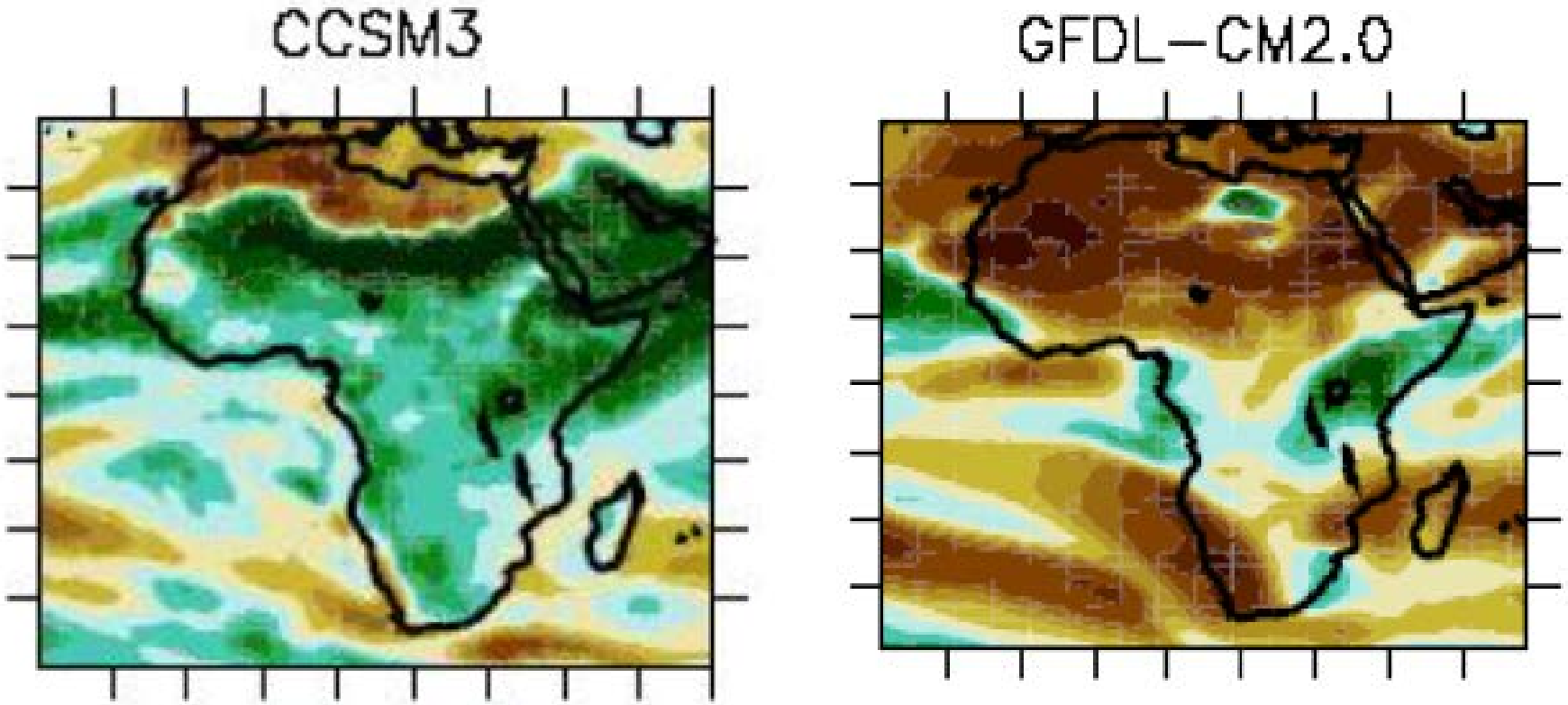


… but efficient only if incentives are correct

A roadmap to design risk management policies



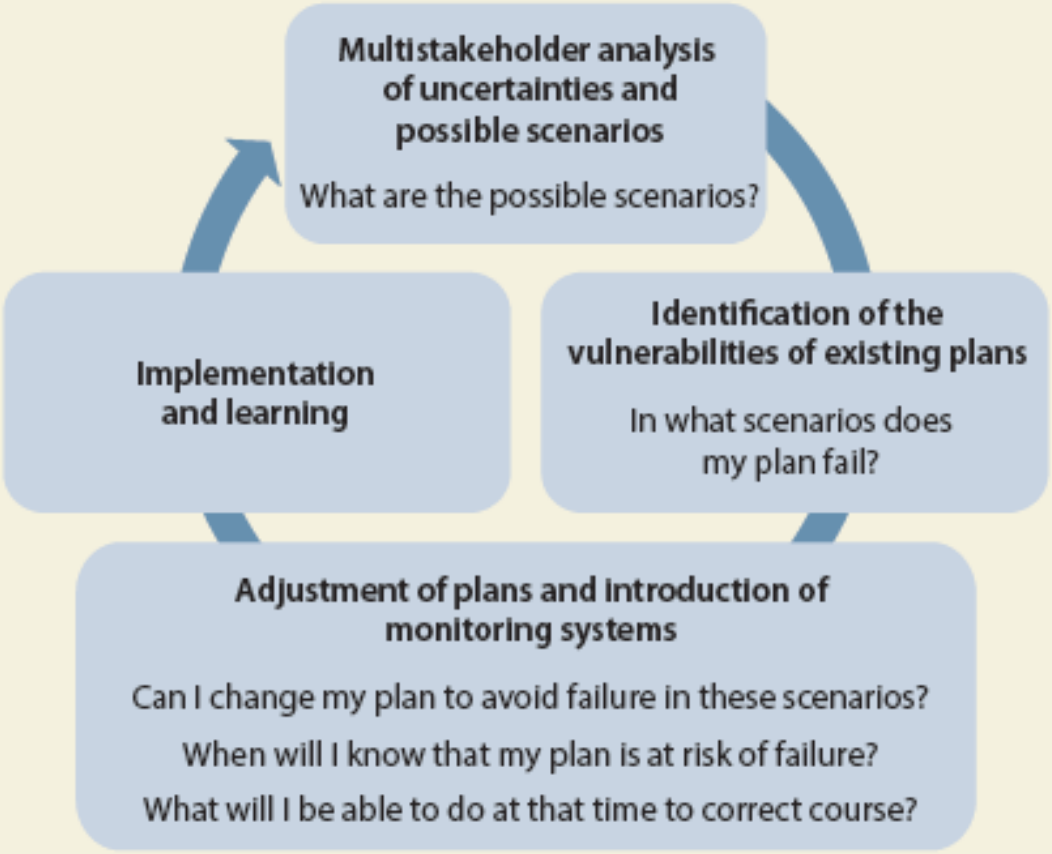
“Deep uncertainty”



Sometimes, experts and stakeholders cannot agree on the parameters of the problem, making standard risk-management approaches difficult to apply

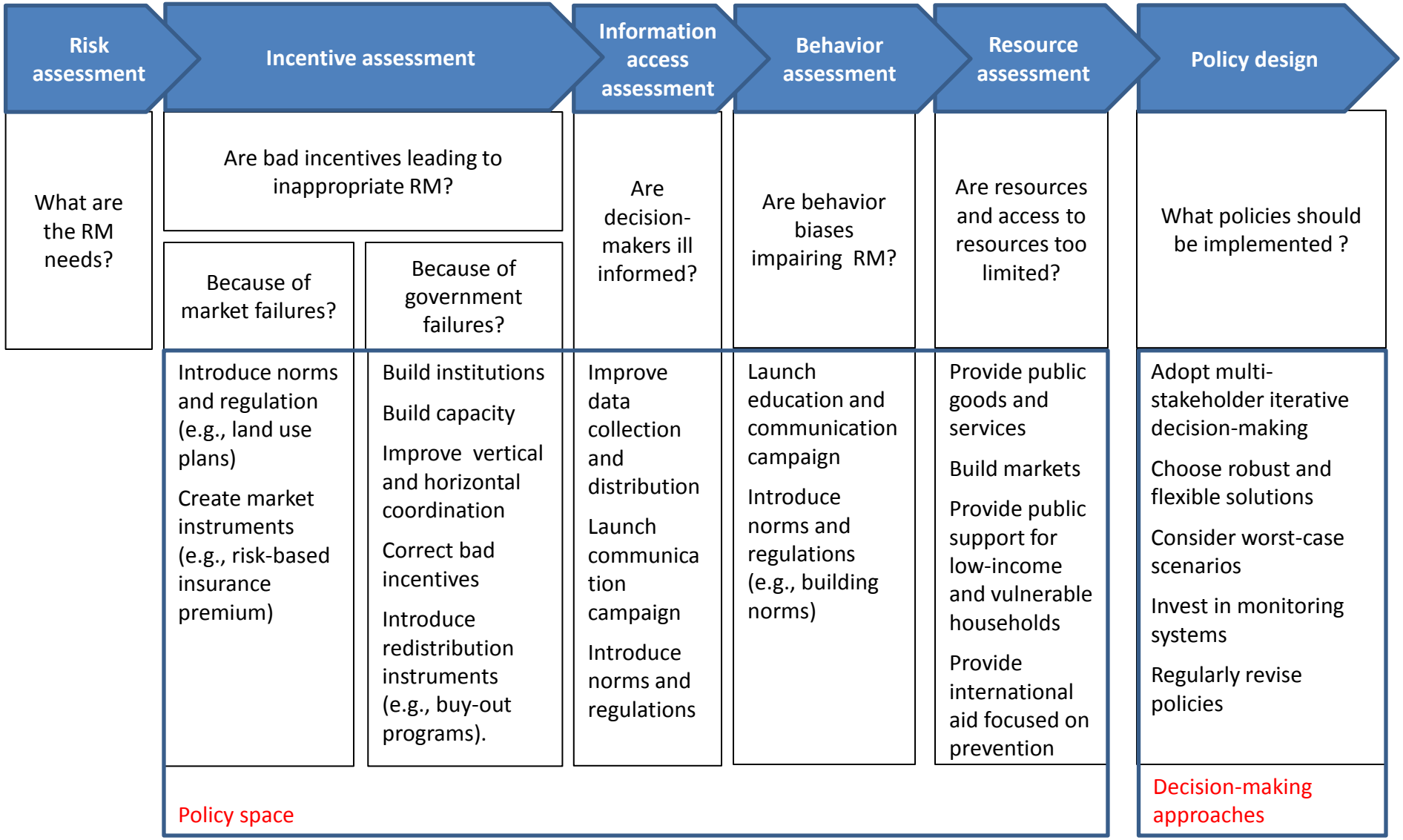
Strategies for more flexible and robust solutions

DIAGRAM 2.2 *An iterative process of decision making to prompt robust action in the face of uncertainty*

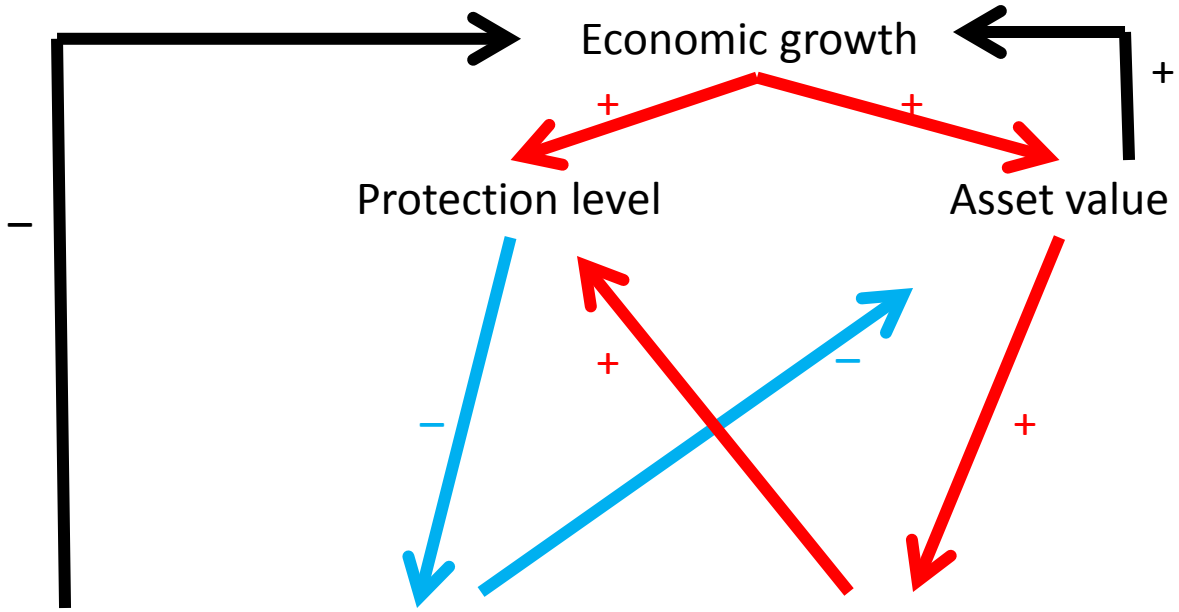


Source: WDR 2014 team.

A roadmap to design risk management policies



Accounting for second-order effects - a risk framework



risk = probability x consequences

Policy Research Working Paper 6216

Background Paper to the 2014 World Development Report

An Exploration of the Link between Development, Economic Growth, and Natural Risk

Stéphane Hallegatte