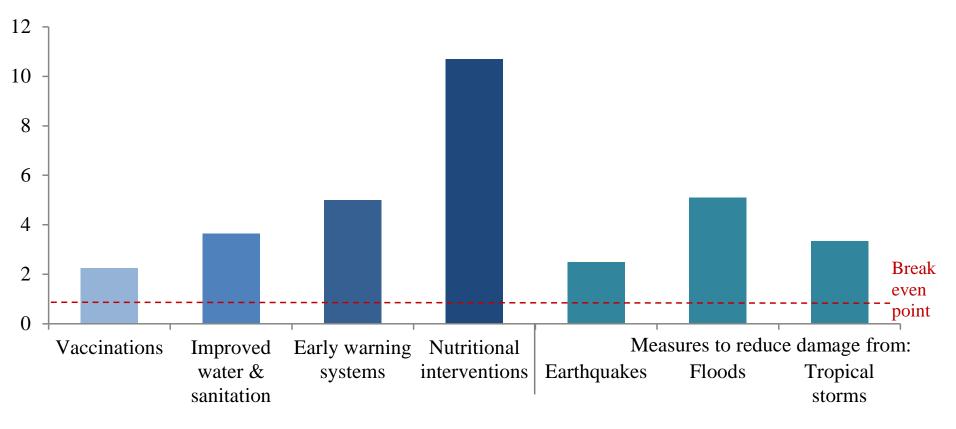
### World Development Report 2014

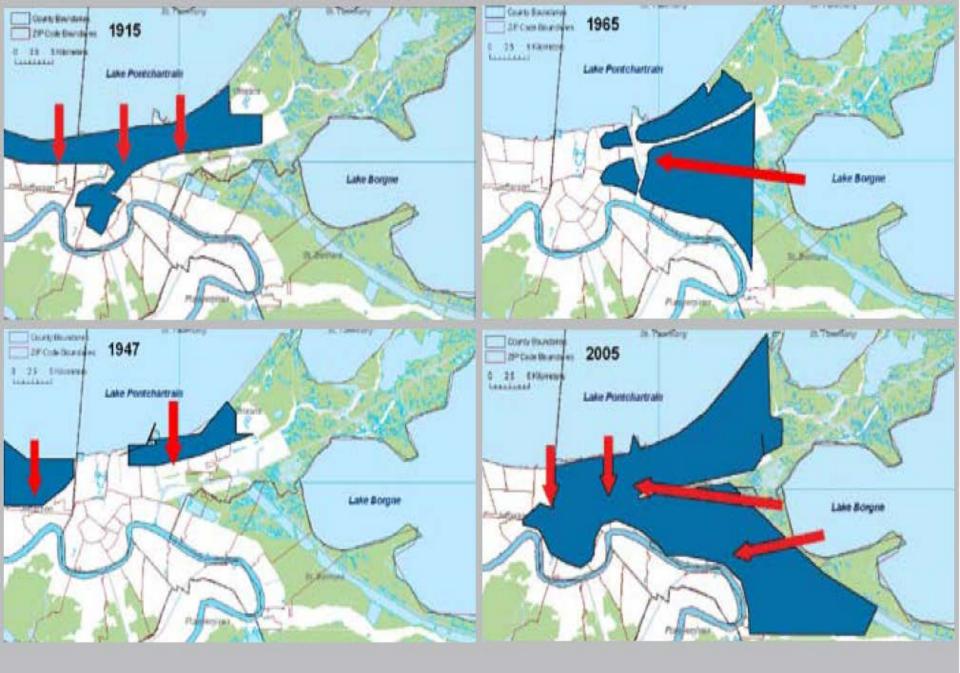
## **Risk and Opportunity** Managing Risk For Development

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	wumbai	23,100	204	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	KACH	866	1/1	11 70100	
15	Guavaquil	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—Kitakvushu	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	/3	0.14%	20	Xiamen	4,486	33	0.22%	

nature

climate change

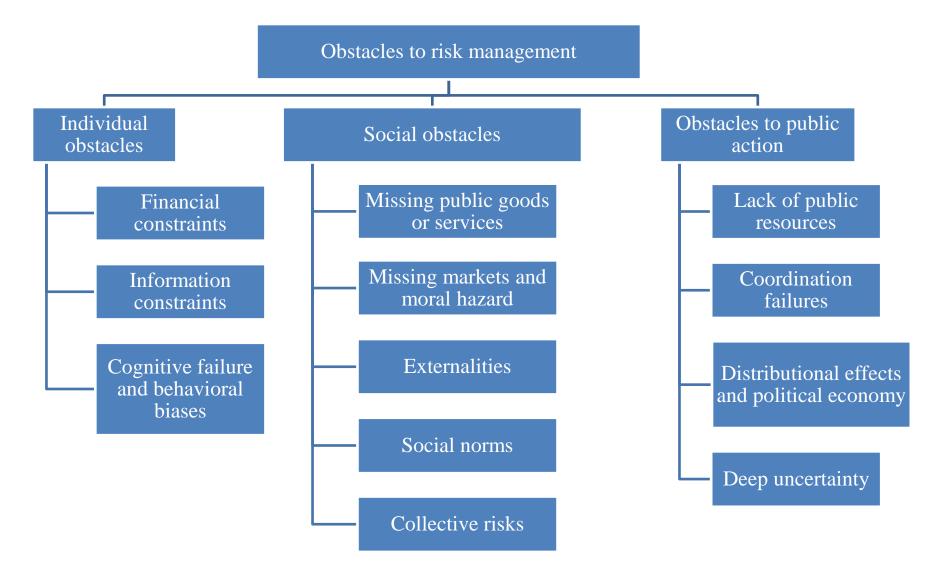
A comparison with a ranking by exposure is proposed in the Supplementary Information.

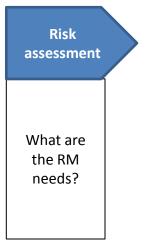
#### Future flood losses in major coastal cities

LETTERS

PUBLISHED ONLINE: 18 AUGUST 2013 | DOI: 10.1038/NCUMATE1979

# Identifying obstacle to risk management to design policy responses





## 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 !





Risk assessment	Incentive	Incentive assessment				
What are the RM		tives leading to riate RM?				
needs?	Because of market failures?	Because of government failures?				

### **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?

Risk assessment	Incentive	assessment	Information access assessment	Behavior assessment	
What are the RM		ives leading to riate RM?	Are decision-	Are behavior biases	
needs?	Because of market failures?	Because of government failures?	makers ill informed?	impairing RM?	



Risk assessment	Incentive	assessment	Information access assessment	Behavior assessment	Resource assessment
What are the RM	Are bad incentives leading to inappropriate RM?		Are decision-	Are behavior biases	Are resources and access to
needs?		Because of government failures?	makers ill informed?	impairing RM?	resources too limited?

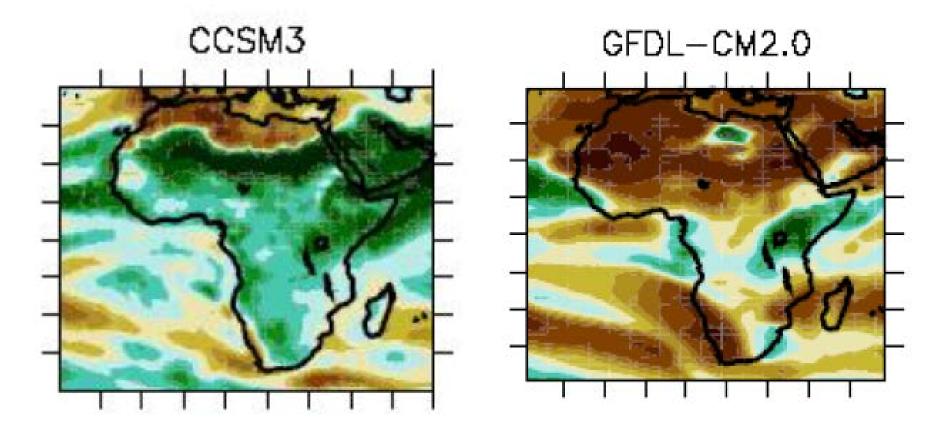
# Infrastructure for risk management are critical...



... but efficient only if incentives are correct

Risk assessment	Incentive	assessment	Information access assessment	Behavior assessment	Resource assessment	Policy design
What are the RM	Are bad incentives leading to inappropriate RM?		Are decision-	Are behavior biases	Are resources and access to	What policies should
needs?	Because of market failures?	Because of government failures?	makers ill informed?	impairing RM?	resources too limited?	be implemented ?

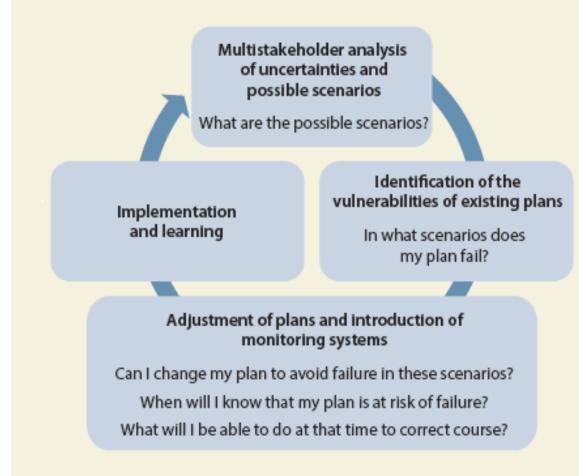
### "Deep uncertainty"



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

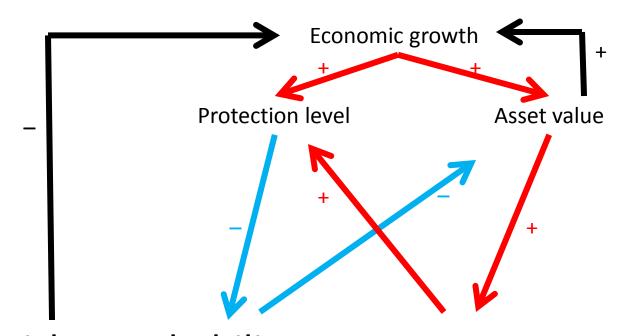
**DIAGRAM 2.2** An iterative process of decision making to prompt robust action in the face of uncertainty



Source: WDR 2014 team.

Risk assessment	Incentive	assessment	Information access assessment	Behavior assessment	Resource assessment	Policy design
What are the RM	Are bad incentives leading to inappropriate RM?		Are decision-	Are behavior biases	Are resources and access to	What policies should
needs?	Because of market failures?	Because of government failures?	makers ill informed?	impairing RM?	resources too limited?	be implemented ?
	Introduce norms and regulation (e.g., land use plans) Create market instruments (e.g., risk-based insurance premium)	Build institutions Build capacity Improve vertical and horizontal coordination Correct bad incentives Introduce redistribution instruments (e.g., buy-out programs).	Improve data collection and distribution Launch communica tion campaign Introduce norms and regulations	Launch education and communication campaign Introduce norms and regulations (e.g., building norms)	Provide public goods and services Build markets Provide public support for low-income and vulnerable households Provide international aid focused on prevention	Adopt multi- stakeholder iterative decision-making Choose robust and flexible solutions Consider worst-case scenarios Invest in monitoring systems Regularly revise policies
	Policy space					Decision-making approaches

### Accounting for second-order effects a risk framework



Policy Research Working Paper 6216

risk = probability x consequences

BACKGROUND PAPER TO THE 2014 WORLD DEVELOPMENT REPORT

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

Stéphane Hallegatte