



Community-Based Adaptation Planning: Resilience, Vulnerability and Action

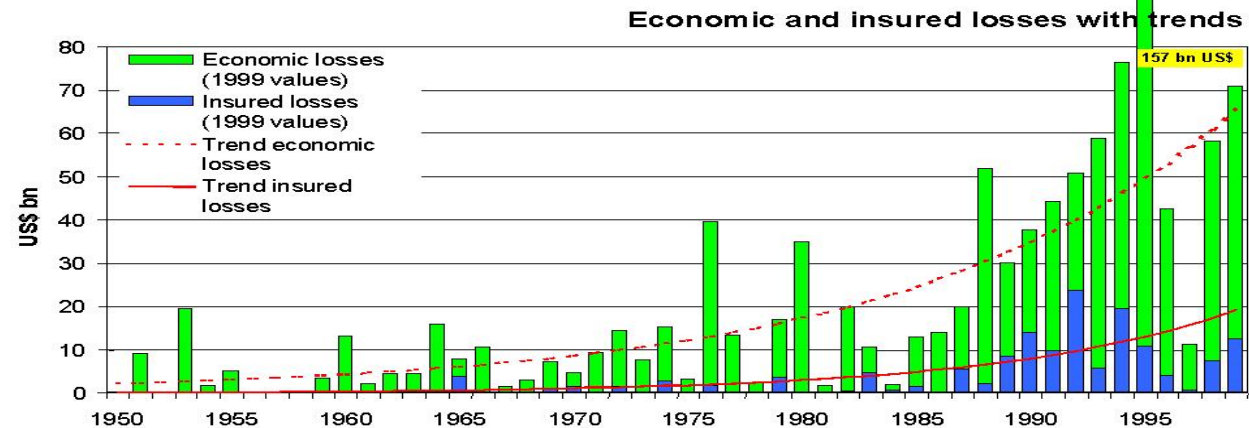
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Disasters and Coping

Fig 1. Great Natural Disasters 1950 - 1999

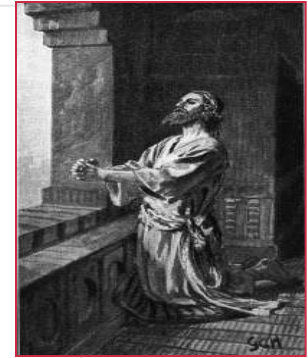
Far exceeding 100 deaths and/or US\$ 100m in claims



© Munich Re 2000

In 2003, natural catastrophes resulted in more than 50,000 deaths and over US\$ 60 B in economic losses
 Source: Munich Re

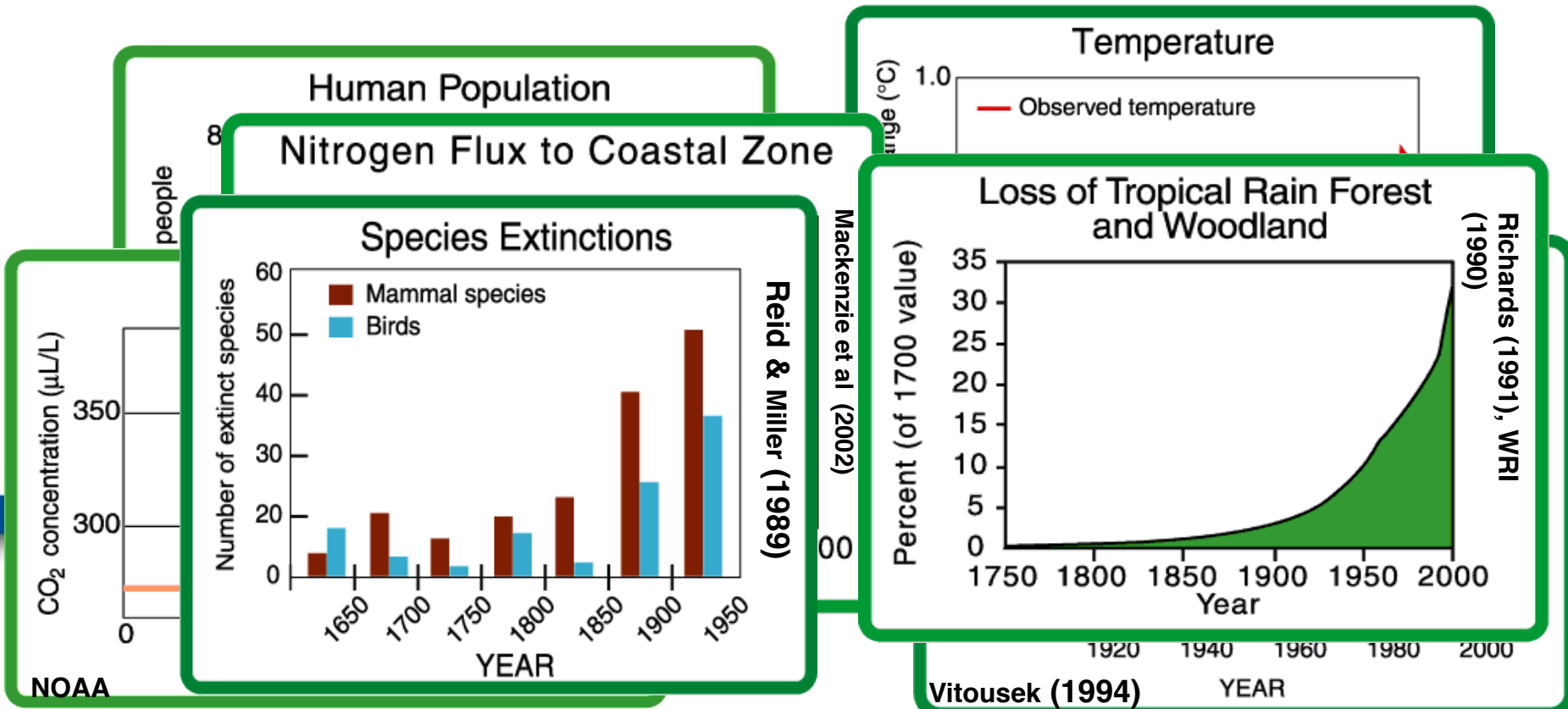
On December 10, 2003, the UN General Assembly passed two detailed resolutions calling on governments and UN agencies to work more actively to reduce the risks of disasters



What is Global Change?

- Global Change is more than Global Climate Change
- It has natural PLUS human/social dimensions
- A constellation of changes, many global in domain

For example, we see large changes in:





Climate Change and Uncertainty

“Are we worrying too much about what we are doing to the environment and not enough about what the environment can do to us?”

(Barrows, 2003: pg. 119)



Complexity and Conflict

“Social and ecological systems are sufficiently complex that our knowledge of them, and our ability to predict their future dynamics, will never be complete. We must work to reduce uncertainties when possible, improve assessments of the likelihood of various important future events, and learn.”

-*Nature and Society*, a report to the National Science Foundation (NSF), Nov. 2000



Problem

A Global Environment and Development-Related Crisis
but we cannot prove there is a crisis. How do we get
our act together in time?

- Environmental Impact Assessment (*outward thinking*)
- Vulnerability Assessment (*Inward thinking*)

Vulnerability – do we mean the same thing?



Engineering:

The vulnerability increases with the number of people affected by the impact of a natural hazard,

(Vrijling et al. 1995)

Geographic (exposure):

Number and priority of elements at risk that are going to be affected by the impact of a given event. Elements at risk can be people, infrastructure, environment, processes or any other aspect of livelihood.

Vulnerability – do we mean the same thing?

United Nations:

“... a Human condition or process resulting from physical, social, economic, and environmental factors which determine the likelihood and scale of damage from the impact of a given hazard“ (UNDP, 2004)

Social Development:

“Vulnerability (in contrast to poverty which is a measure of a current status) should involve a predictive quality: it is supposedly a way of conceptualizing what may happen to an identifiable population under conditions of particular risk and hazards.

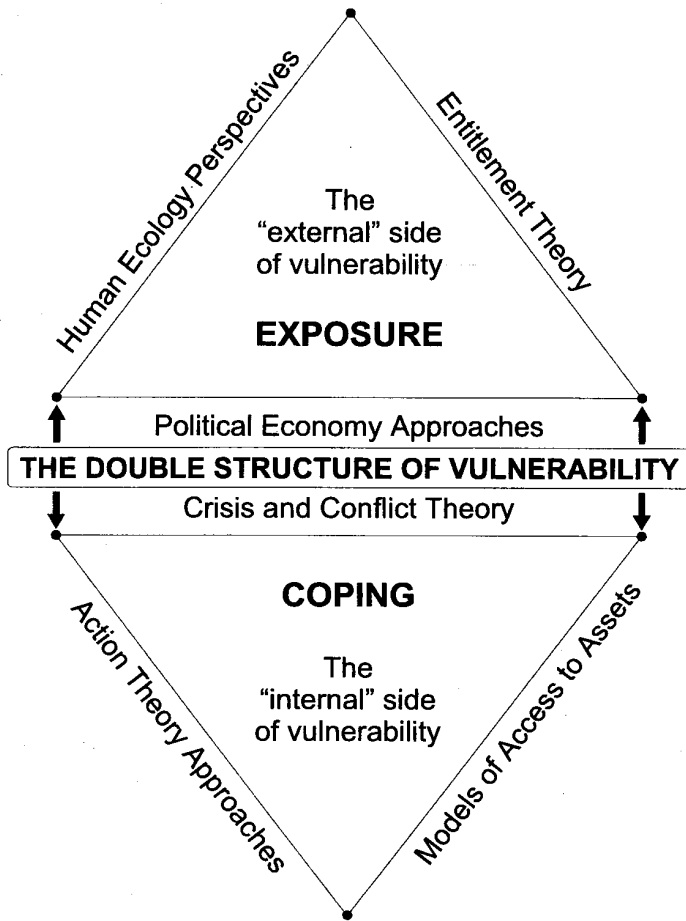


Figure 6. A conceptual model for vulnerability analysis
 Source: Bohle (2001, 4)

Blaikie et al. 2001: Vulnerability is the characteristics of a group in terms of its capacity to anticipate, cope with, resist, and recover from the impact of a (natural) extreme event.

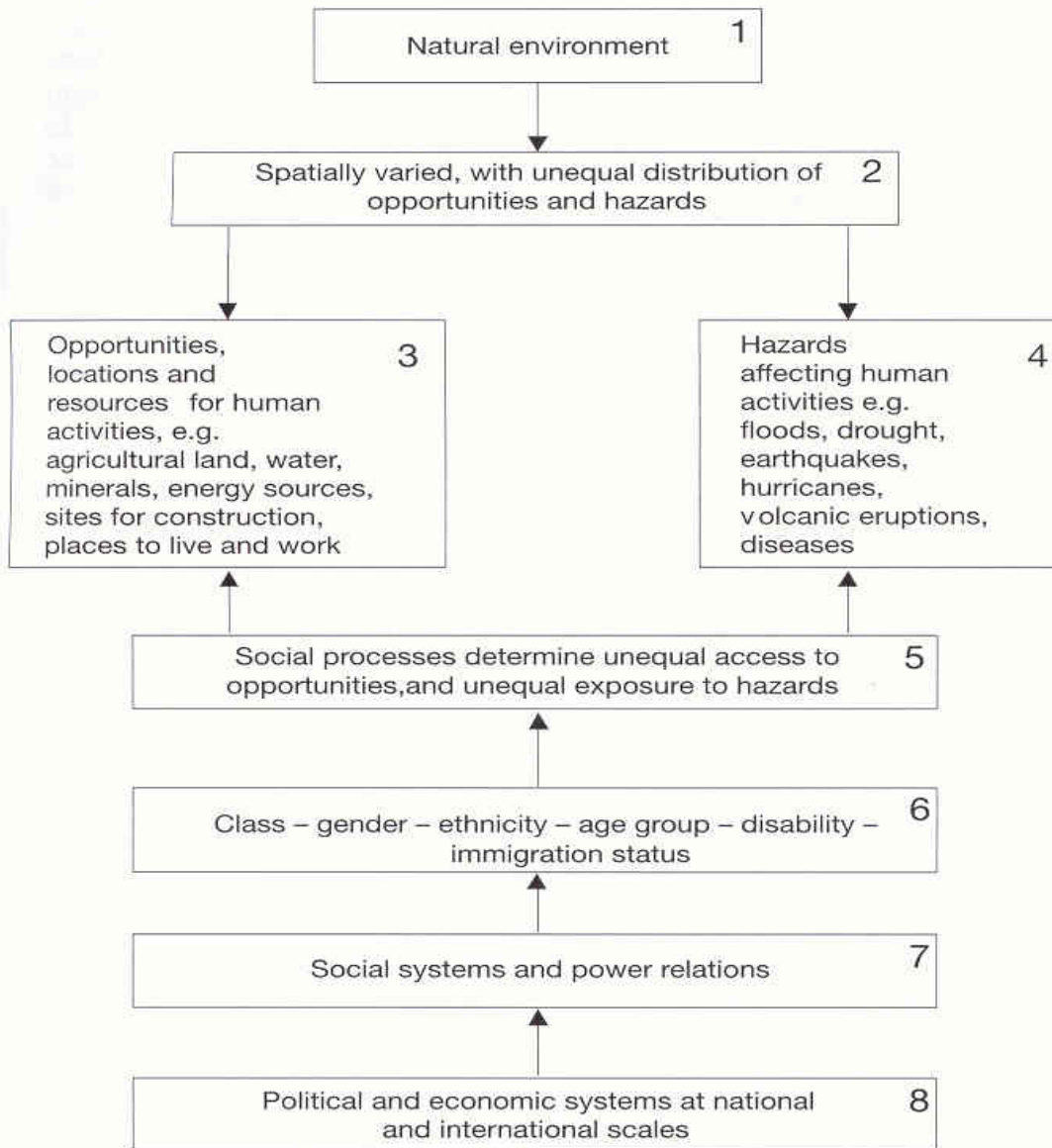


The double meaning of vulnerability has been made clear (Bohle, 2000)

perhaps better:

exposure = vulnerability

coping = resistance



Social Dimensions of Risk: ‘VULNERABILITY’

Source: Wisner, et al., 2004

THE PROGRESSION OF VULNERABILITY

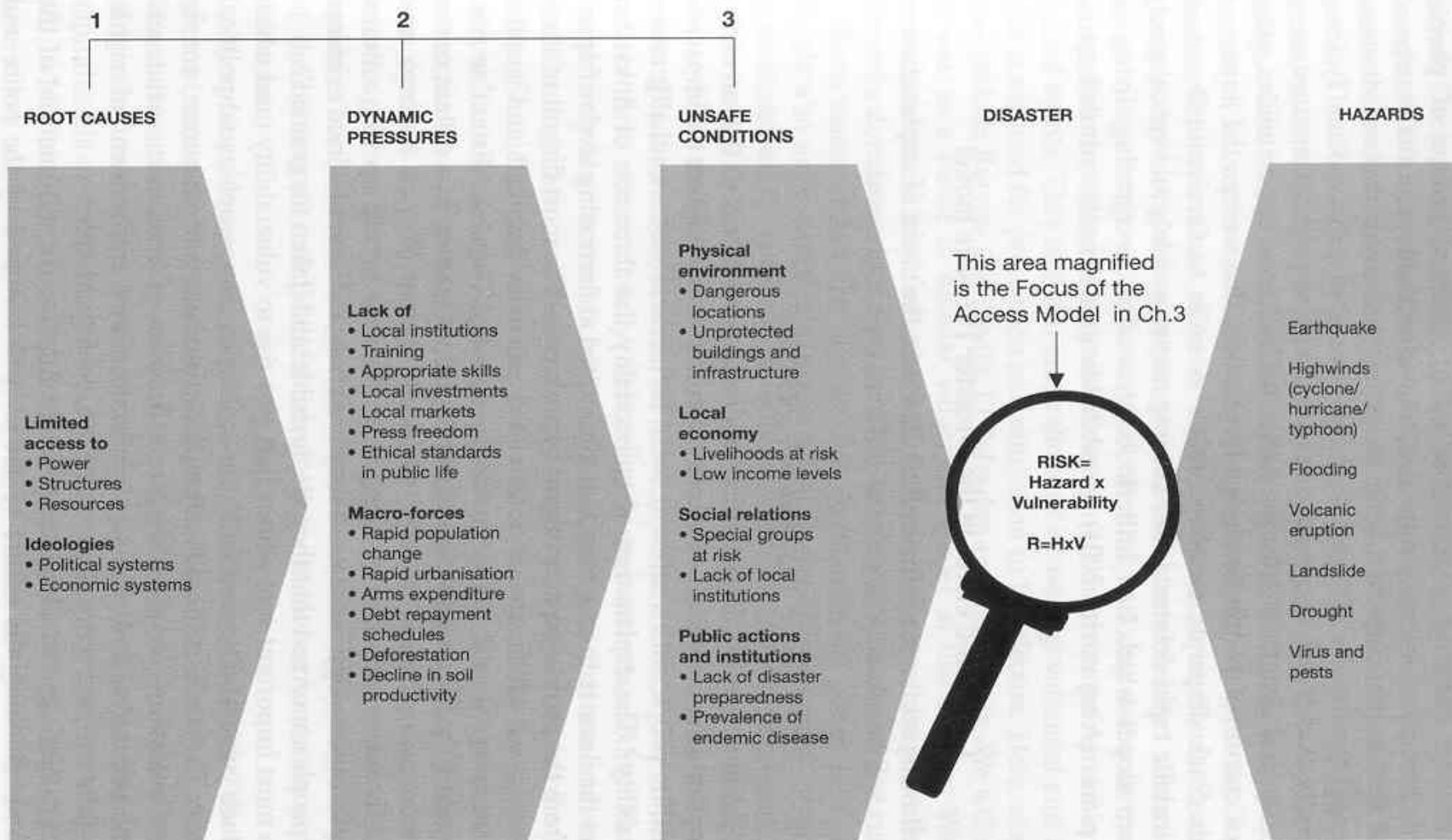
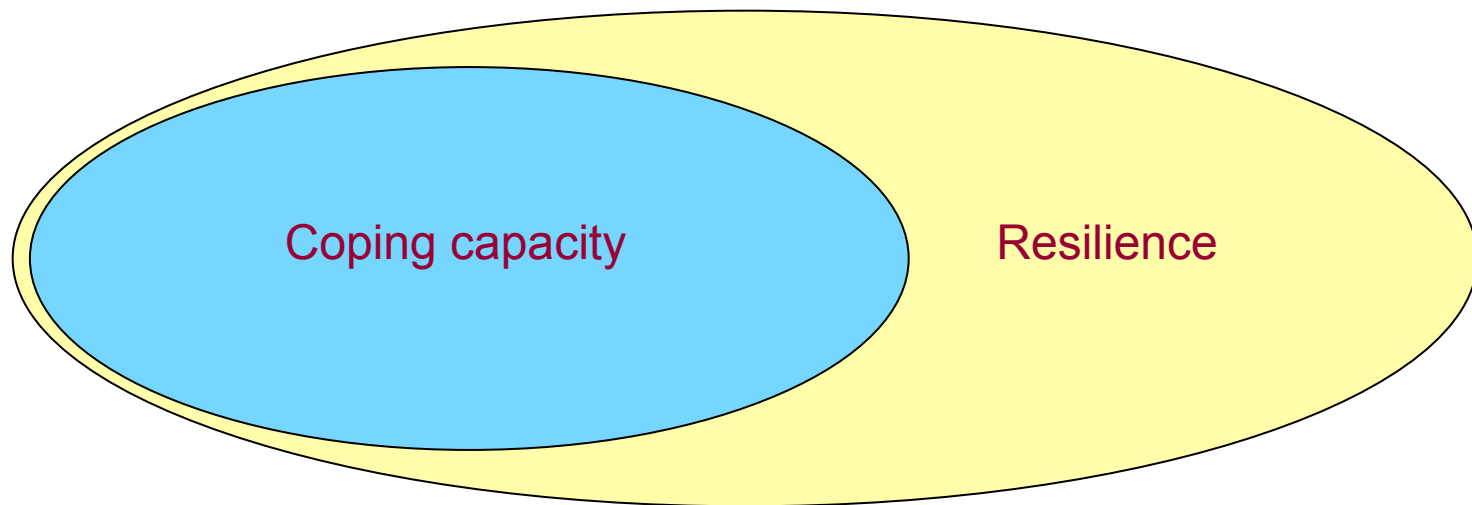


Figure 2.1 Pressure and Release (PAR) model: the progression of vulnerability

Resilience Approach

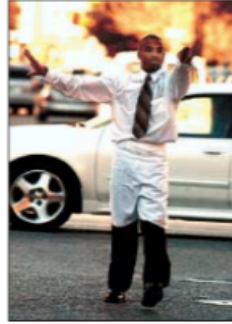






Waiter directs traffic after critter knocks out power

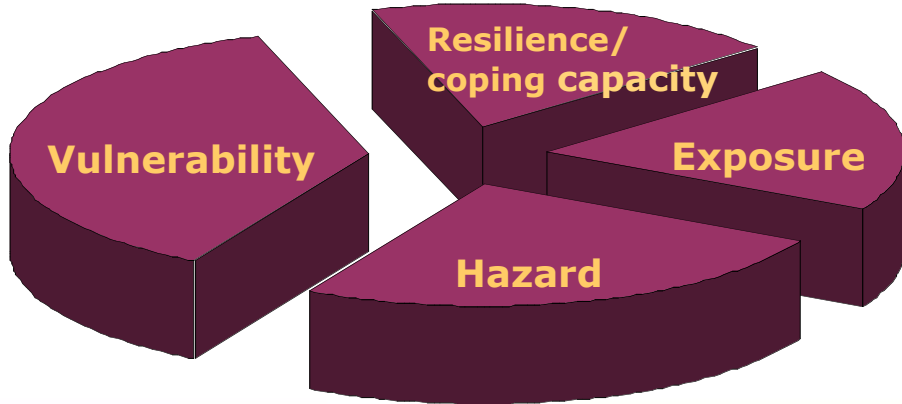
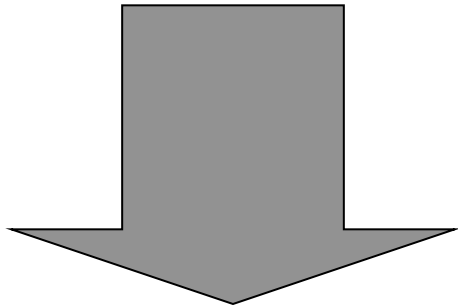
Special *of the* Day!



Jaikaran leaves lunch crowd to direct traffic after the power went out before an appreciative police officer arrives to take over.

Practical examples:

- “Waiter directs traffic” (Winnipeg Free Press, Nov 19/04)
- Many companies building redundancy into their records after the 9/11 event
- Manitoba building a second transmission line from the North
- Bangladesh: Living with the Floods



Components of Risk



Trend

Growing interest in how the environment shapes human development and the need for anticipatory action:

- Considers the interaction between the environment and humans
- Public Stewardship
- Planners, administrators and people's awareness of environment as a key control of quality of life



Barriers

Relative disinterest from government and voters:

- Anticipatory studies
- Contingency planning
- Adaptive strategies

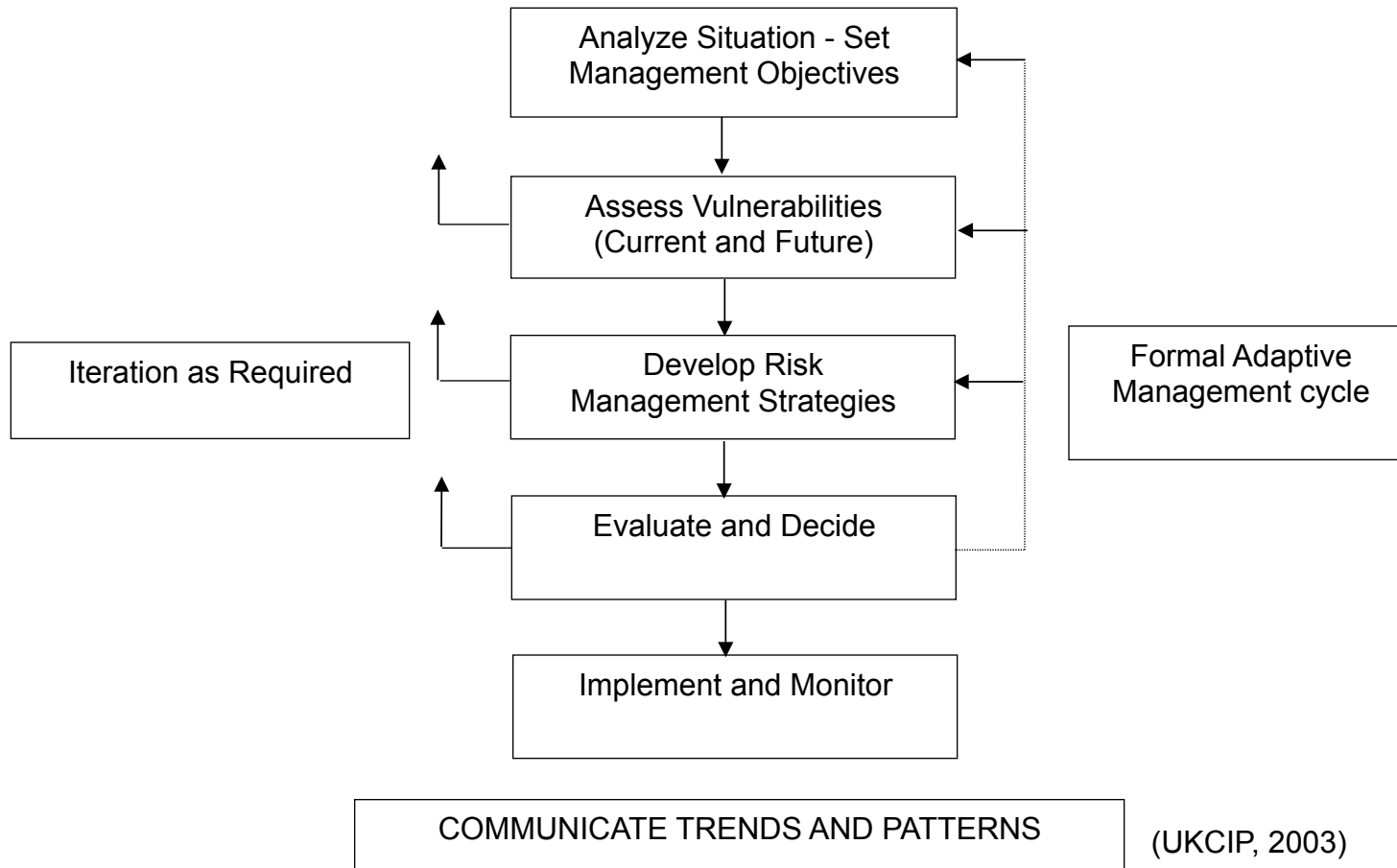


Solution

Study how the environment can affect humans and plan for development that includes vulnerability reduction and improvement of flexibility and adaptability (reduce disaster)

- Local Planning
- Regional Linkages
- Global Information Sharing

Climate Change and Adaptive Planning



Step 1: Analyze situation

A. Bio-Physical Factors:

- Key (potential) risks and hazards
- Impacts and Indicators (cumulative)
- Physical uncertainties and gaps in knowledge, information

B. Socio-Economic Considerations:

- Affected economic activity, socio-cultural values (Regional/local linkages)
- Indicators or social impacts that are of concern (values)
- Social issues, concerns, patterns and trends both short and long-term

C. Policy and Institutional Considerations

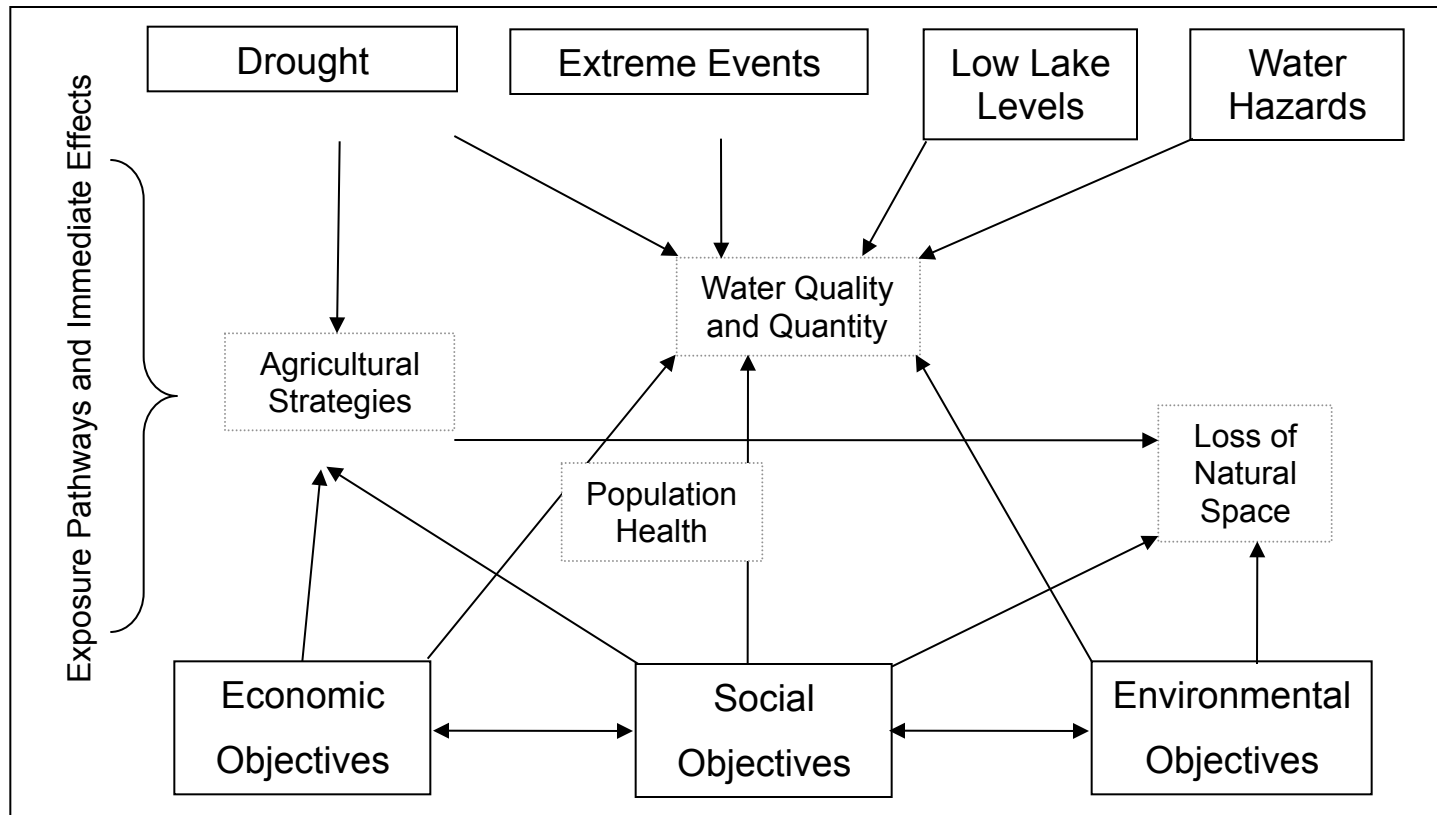
- Define existing policy and regulatory framework and constraints and timeline
- Identify the institutions, jurisdictions and stakeholders (authority and mandates)
- Identify available resources and capacity

See Step 1 Table

Step 2: Setting Management Objectives

	Management Objectives	Performance Measures	Required Data, Tools and Info
Environmental	<ul style="list-style-type: none">•How to Ensure sustainable water resources•Flood Resilience	<ul style="list-style-type: none">•water quality and quantity•Magnitude•probability	<ul style="list-style-type: none">•Water monitoring and sampling•Inventories•Quantitative/qualitative
Economic	<ul style="list-style-type: none">•Maintain Agriculture tax base•Maintain tourism and recreation use	<ul style="list-style-type: none">•Hazards and yields inventory•Property values•Business diversity	<ul style="list-style-type: none">•Municipal tax rolls•domestic./international exports•Tourism jobs, profits
Social	<ul style="list-style-type: none">•Aesthetics•Environmental friendliness•Demographic adjustments	<ul style="list-style-type: none">•Sustainability/value measures•Recreational use•Suitability to demographics	<ul style="list-style-type: none">•Communication•Taxes•surveys•Census info

Step 3: Assess Vulnerabilities



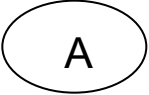
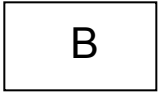
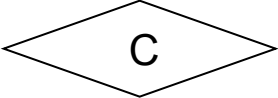

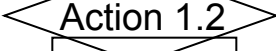


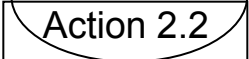
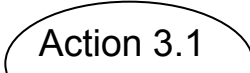


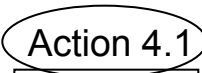


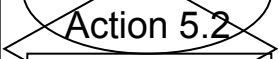


Step 4: Develop Risk Management Strategies

Brainstorm and categorize individual actions



- ways to meet each management objective
- ways to address each vulnerability pathway
- Try to identify *no regrets* options

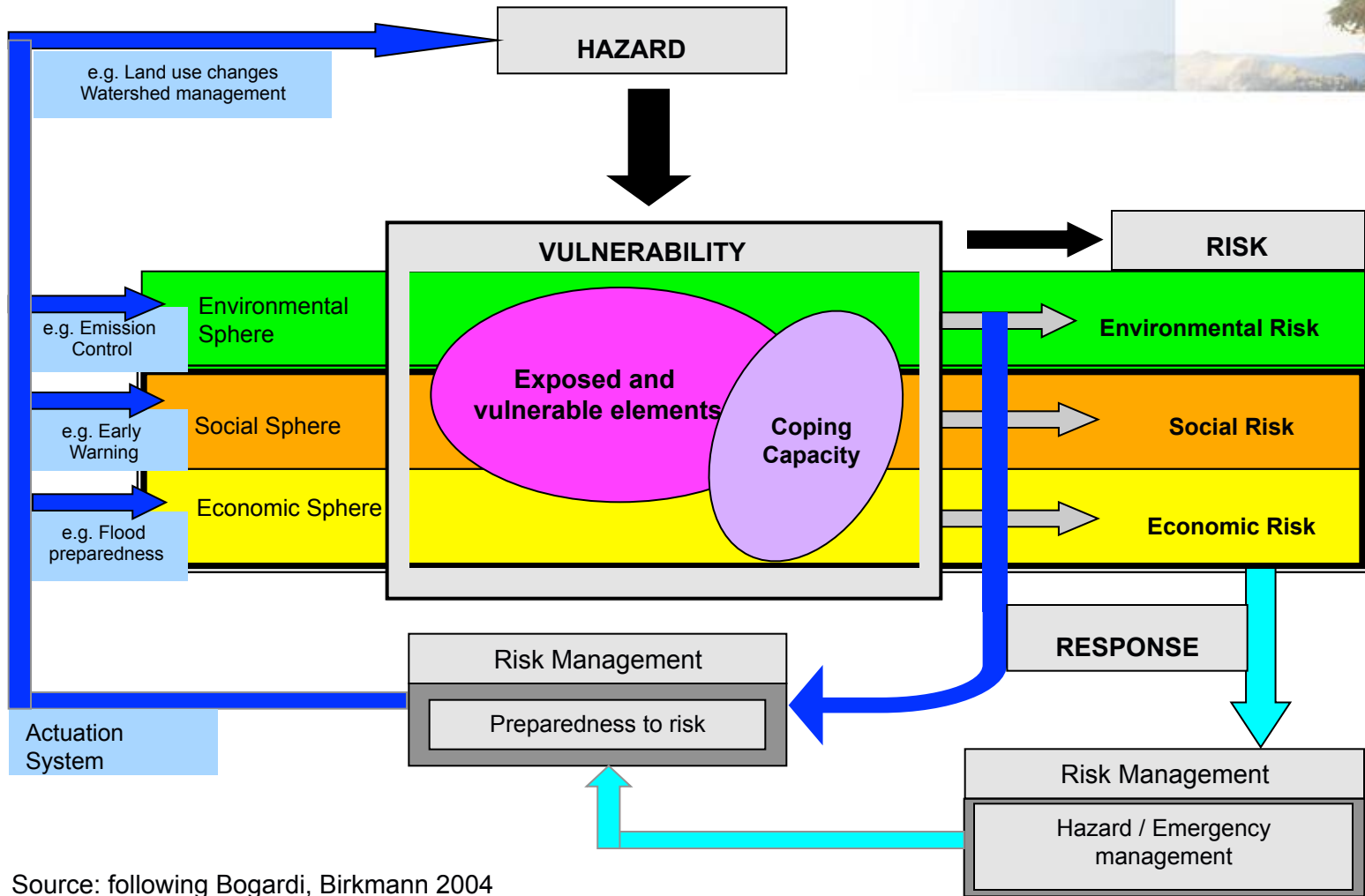
Alternate strategies as logical, internally consistent sets of actions

- Start with a status quo strategy
- Develop alternatives: by budget level, theme (diversify, transition, intervention)

Strategies	Category 1 (Water Conservation)	Category 2 (Flood Mitigation)	Category 3 (Emergency Preparedness)	Category 4 (Land-Use Planning)	Category 5 Economic Development
<div style="text-align: center;">  <p>A</p>  <p>B</p>  <p>C</p> </div>	<div style="text-align: center;">  <p>Action 1.1</p>  <p>Action 1.2</p>  <p>Action 1.3</p> <p>Action 1.4</p> </div>	<div style="text-align: center;">  <p>Action 2.1</p>  <p>Action 2.2</p> <p>Action 2.3</p> </div>	<div style="text-align: center;">  <p>Action 3.1</p>  <p>Action 3.2</p>  <p>Action 3.3</p> </div>	<div style="text-align: center;">  <p>Action 4.1</p>  <p>Action 4.2</p> </div>	<div style="text-align: center;">  <p>Action 5.1</p>  <p>Action 5.2</p>  <p>Action 5.3</p>  <p>Action 5.4</p> </div>

Step 5: Evaluation and Decision-Making

Management Objectives	Strategy A	Strategy B	Strategy C
Environmental	Trade-offs Across Strategies 		
Social			Trade-offs across Objectives 
Economic			



Source: following Bogardi, Birkmann 2004



Comments or Questions?

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