

Considering Climate Change in Hazard Mitigation Planning for Coastal Massachusetts Communities

Seth Tuler and Thomas Webler
Social and Environmental Research Institute
664 Main Street, Suite 47
Amherst, MA 01002
www.seri-us.org



Funding: MIT Sea Grant

The context

- MA coastal communities are vulnerable to many hazards
 - Large populations and economically important.
 - Already stretched in dealing with hazards.
- Climate change expected to exacerbate hazards
- Hazard mitigation planning
 - HMPs revisions required every 5 years (FEMA, MEMA)
 - Estimate future hazards based on past
 - No requirement to address climate change
 - An opportunity to integrate climate change adaptation into local community planning

The context

- But, few communities address climate change in HMPs in a serious way
- Barriers to planning for hazards and climate adaptation
 - Limited access to information and expertise
 - Lack of coordination and communication
 - Insufficient staff time and resources
 - Limited funding
 - Not perceived as important or urgent
 - Lack of agency guidance and checklist mentality
 - (NRDC has petitioned FEMA to change guidance)

The context

- Calls to develop planning tools and processes for climate change adaptation
 - Facilitate local assessments.
 - Adopt risk-based approaches.
 - Build awareness and support learning.
 - Help decision makers understand what all those maps and models *mean?*
 - Integrate climate (and other) science and local knowledge.
 - Bring climate change into other, routine planning activities.

What do we know from other risk policy contexts?

- Integrate analysis and deliberation (NRC 1996).
 - Can be generative, not just additive
 - Better decisions
- Stakeholder participation (NRC 2008).
 - Builds legitimacy / support
 - Improves decisions
 - Builds capacity
- Social dimensions of risk and risk perceptions.

Project goals

- Demonstrate the feasibility and usefulness of an analytic-deliberative process (VCAPS) that links climate change planning and hazard mitigation planning.
 - Plymouth, MA
 - Boston, MA
 - New Bedford and Fairhaven, MA
 - Compare with “business as usual”
- Develop a package of resources to support climate change adaptation planning in coastal communities.
- Support the work of networked coastal managers and professional extension staff.



We call it the

*“Vulnerability, Consequences, and Adaptation Planning
Scenarios”* (VCAPS) Process

Elements of the process

- Help people think about climate hazards...
 - Structure discussions using conceptual frameworks
 - Analytic-deliberative process
 - Causal structure of hazards
 - Vulnerability (sensitivity, adaptive capacity, resilience)
 - Utilize visualization techniques
 - AKA “influence diagrams” or “causal pathway diagrams”

Elements of the process

- Efficiently...
 - Reasonable (and flexible) demands on time and resources
- To produce “useable knowledge.”
 - Focus on what is relevant to participants and decisions
 - Co-construction of scenarios
 - Allow exploration of (local) complexities and uncertainties

The typical VCAPS process

University of Massachusetts Boston
ScholarWorks at UMass Boston

Urban Harbors Institute Publications

Urban Harbors Institute

5-26-2010

New Bedford/Fairhaven Municipal Harbor Plan

Fort Point Associates, Inc.

Apex Companies, LLC

Urban Harbors Institute, Uni

FXM Associates

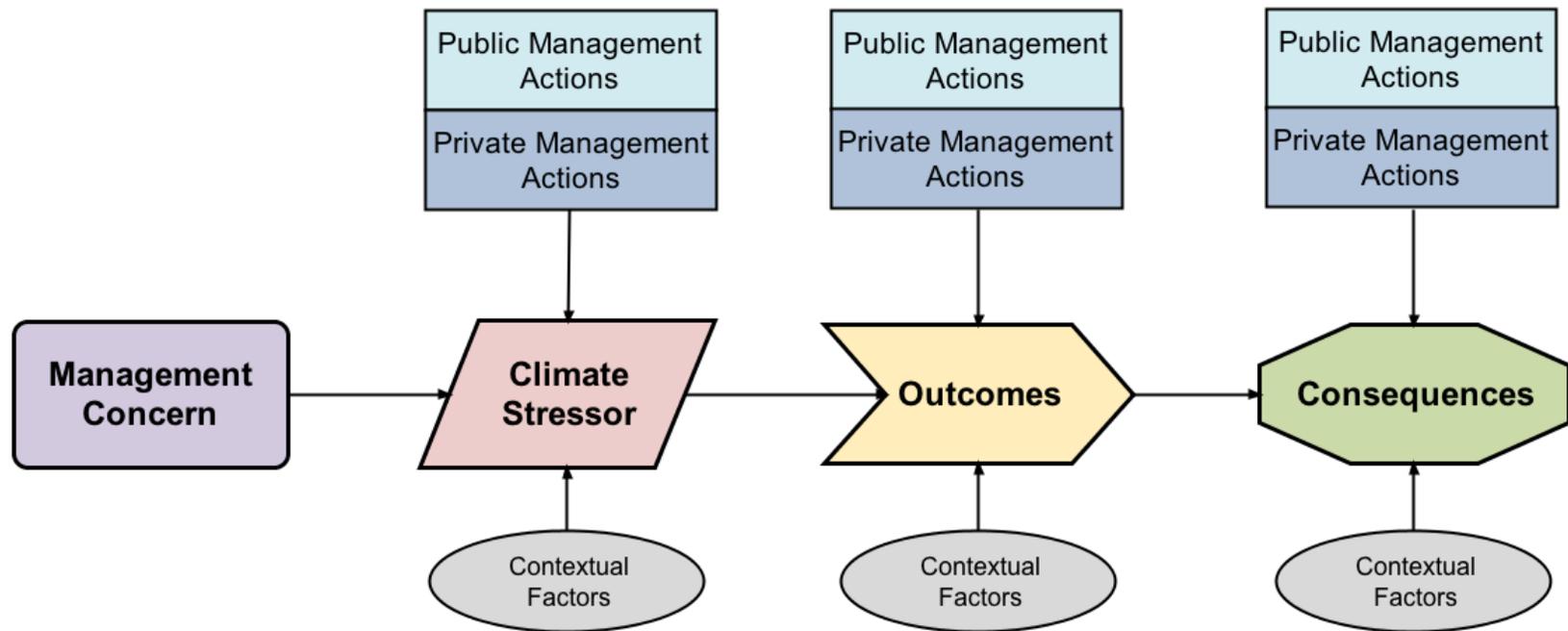
**OLD COLONY PLANNING COUNCIL
MULTI-HAZARD
PRE-DISASTER MITIGATION PLAN

PLYMOUTH
COMMUNITY ANNEX**

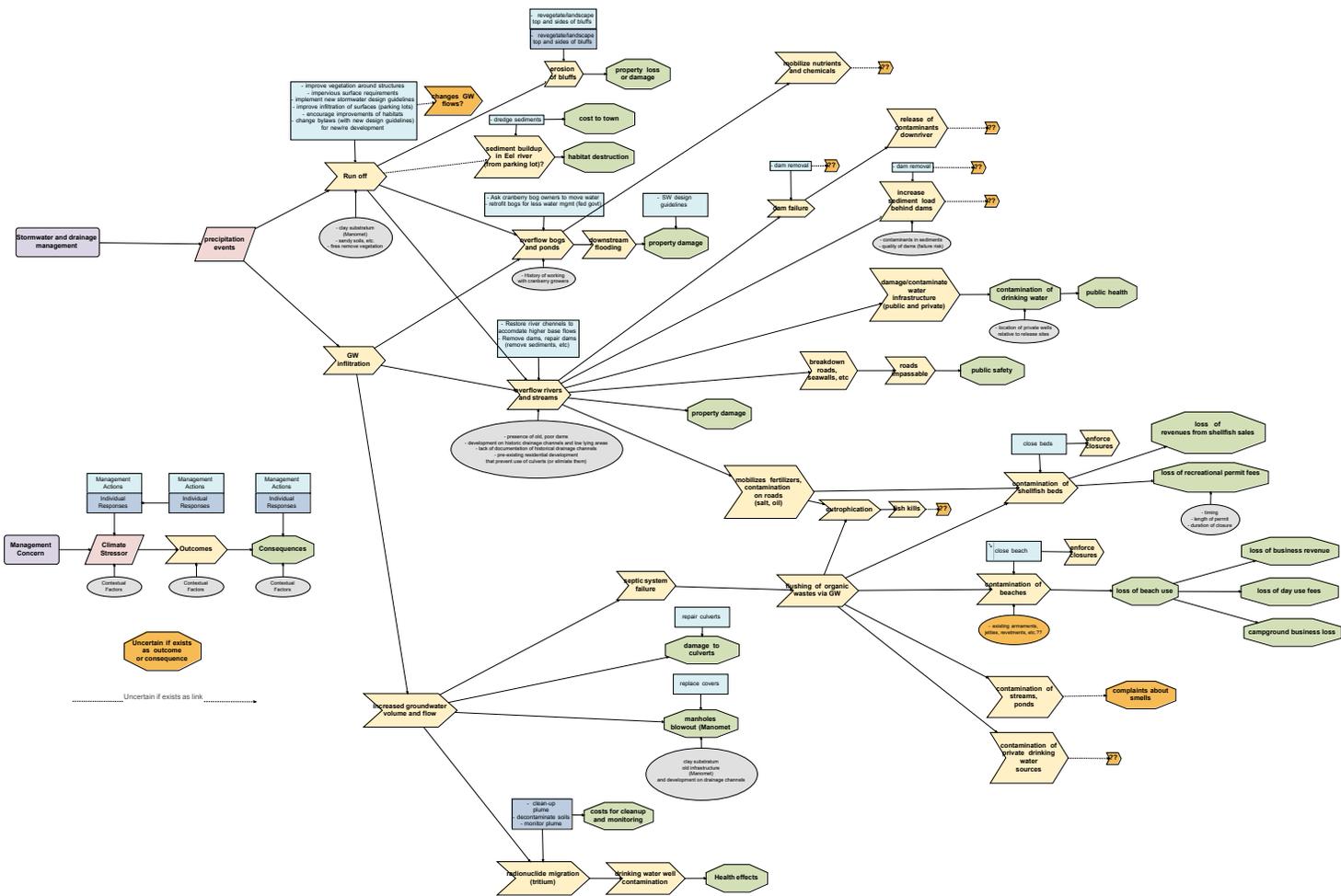
Diagram current system responses to existing hazards or conditions.



VCAPS diagram / building blocks of scenarios



Linking local climate stressors, consequences, vulnerabilities, and mitigation strategies



Results of VCAPS process

- Qualitative description of current system responses to existing hazards or conditions.
- Qualitative description of how current system responses will change under new conditions, including thresholds (e.g., 1 foot SLR).
- Identification of new responses that may emerge under new conditions.
- Identification (and perhaps prioritization) of strategies for preventing or mitigating consequences.

Is VCAPS feasible and useful?

- Plymouth, MA
 - HMP objectives modified as a result of VCAPS
 - Spurred interest in developing shoreline management plan
- Boston, MA
 - Incorporated results into HMP
 - Attached as appendix to HMP
- New Bedford and Fairhaven, MA
 - Stimulated thinking and learning
 - Included as input to vulnerability assessment and HMP

Is VCAPS feasible and useful?

Conceptual frameworks help organize ideas and information (never resistance to using).

“VCAPS provides the structure that allows for a focused discussion.”

Is VCAPS feasible and useful?

Stimulates thinking and conversation about how to manage consequences.

“One advantage of focusing on the hazard rather than on the actions...if you focus on an action and it proves undoable for whatever reason, it comes full stop, but if you focus on the hazard and have a very clear understanding of the hazard, that simply means you go back to the diagram and identify another intervention point.”

Is VCAPS feasible and useful?

Real-time diagramming is helpful for generating discussions and integrating knowledge.

“People bring in very different backgrounds, very different sets of experiences all trying to communicate around what can be a very complex area, so [diagrams] being very visual and going from one step to another, very cause/effect oriented, they level the playing field for everyone there.”

“The flip side is that at the end the diagram is so complex that the finished product is hard to read.”

Is VCAPS feasible and useful?

VCAPS builds awareness

“What VCAPS enabled us to do was engage all these other actors, beyond the particular departments that are already involved in climate change. It enabled us to spread that message to other city departments and even state agencies...”

Is VCAPS feasible and useful?

VCAPS informs planning and decision making

“I would say that it brings to light - as a regulator – what I should be thinking about when looking at new proposed projects and how they should be designed with regards to more frequent storms and sea level rise.”

Obstacles to use of VCAPS / A-D processes

Lack of mandate; FEMA may not approve plans that do not closely follow guidelines.

“These plans are built off the template from the FEMA model and it became challenging to incorporate all of the information that was gleaned from the process about the individual hazards into the plan.”