WORKSHOP
MITIGATION AND ADAPTATION RESEARCH IN VIRGINIA

Virginia Tech
1872

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"If we stick to former paradigms we are bound to be defeated in every battle. The point is not to prepare plans and tools to avoid surprise, but to be prepared to be surprised."

- Lagadec, 2008

Wicked problem

- High levels of complexity and uncertainty
- Multiple interactions and feedback loops in the system
- Transboundary issues (across administrative borders)
- No simple and definite solution
- Just trading one problem for another
- Politicized due to high socio-economic cost
- Criticized as interfere with personal behaviors and choices
- Very long process from problem identification to possible solutions and often difficult to implement
- Cost, cost, cost…

Facing the reality...dealing with stressors

Repetitive and permanent impacts…
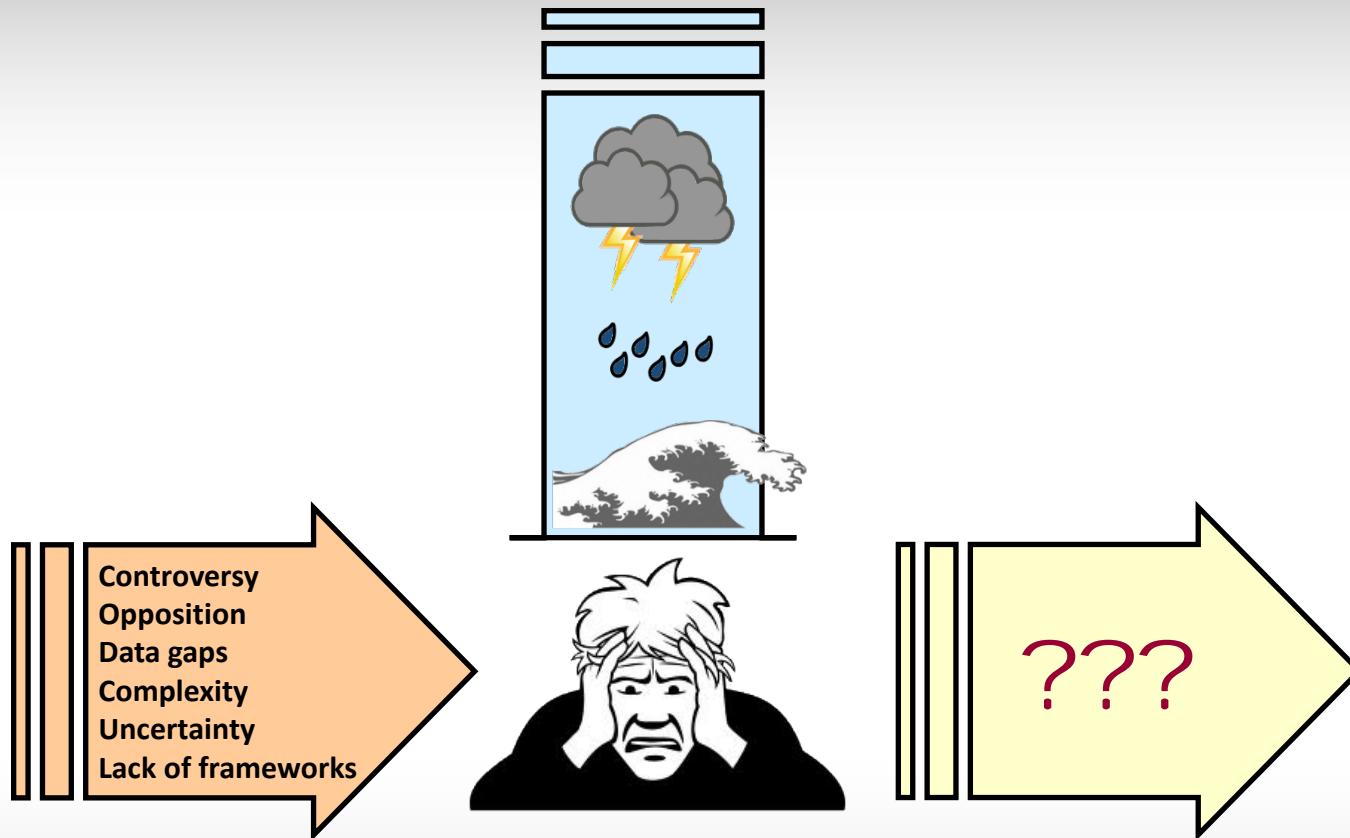

Psycho-social and economic damages
Indirect/secondary impacts
Recovery progress…
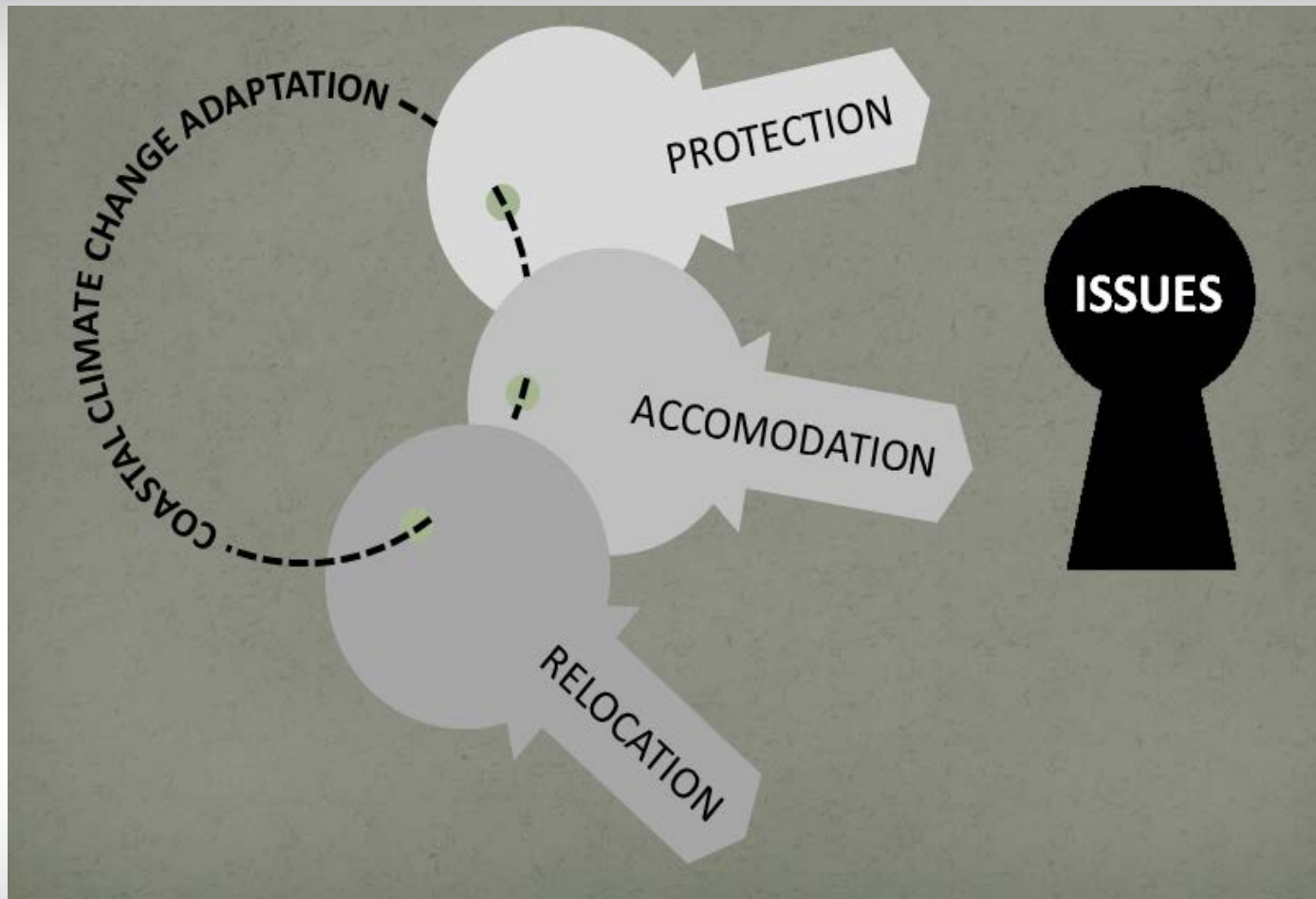
How to proceed?

Stress and trauma
Personal circumstances
Attitudes and perceptions

Decision-making

Controversy
Opposition
Data gaps
Complexity
Uncertainty
Lack of frameworks

???

Decision-making

Avoiding mistakes from the past

- Overconfidence in technology and engineering solutions
- Unsustainable coastal land use patterns
- Choosing only feel-good short-term adaptation options
- Avoiding wicked problems until they escalate
- Lack of accountability and inertia

Example: relocation as adaptation option

- Eventually, people and businesses will have to engage in strategic retreat from the shoreline - Mayor Paul Fraim

- People are in denial – Mayor Molly Ward

- We will not be able to protect everything

- Relocation?

Sandy survey (*Bukvic & Owen, 2015*)

- **Reasons prompting relocation**
  - Storms, hurricanes, related flooding (32% most preferred)
  - Sea-level rise (44% somewhat preferred)
  - Neighbors, friends, and family moved somewhere else (51% least preferred)
  - Due to health and safety of myself and my family (73% most preferred)
  - Recommendations from the local government (50% least preferred)
  - *Homeowners pay for property damage at their own cost (*42% most preferred)

- **Preferred solutions**
  - 1st levees/seawalls; 2nd natural barriers; 63% relocation less preferred
  - 75% the least preferred: *Nothing, the event like this will not happen again anytime soon*

- **Type of assistance**
  - 48% Offer to purchase home at pre-storm value, I will do the rest

Sandy survey (*Bukvic, Smith, Yang 2015*)

COASTAL POST-DISASTER STRESSORS
Feel stressed when thinking about:

1. Rebuilding and recovery
2. Recurrent hazards
3. Filing insurance claims
4. Loss of personal belongings
5. Mold and corrosion
6. Future in this community
7. Looting and crime
8. Moving somewhere else

COMMUNITY/DISASTER RECOVERY CONCERNS
Consider relocation in the future:

1. Insurance rate increase
2. Tax increase
3. Tidal inundation and frequent flooding
4. Crime increase
5. New FEMA advisory maps
6. City rebuilding requirements
7. Uncertainty when flooding will occur
8. Neighbors, friends, family move out
9. Strangers in the neighborhood
10. Construction crews and activities

Sandy survey (*Bukvic, Smith, Yang 2015*)

COASTAL DISASTER COMMUNITY BASED CONCERNS
Consider relocation in the future:

1. Crime becomes worse
2. We have two or more floods in next few years
3. Insurance cannot cover full reconstruction
4. Services and amenities do not restore their full function
5. We have one more flood in the next few years
6. School system deteriorates
7. I am offered financial compensation (buyout)
8. Businesses do not reopen
9. I am offered with comparable housing in similar community elsewhere
10. Neighbors, friends, and family move out
11. I am provided with free legal service
12. I receive assistance with finding a new job elsewhere
13. I can move together with my neighbors

Interviews (*2015*)

- **Data needs**
  - Scale, context, output, source
  - *"Science we can use"*
  - *"Ask us what information we need"*
- **Data visualization**
  - Photos, stories, user-friendly interactive tools
- **Conflicting priorities and horizons**
  - Help evaluating and comparing alternatives
 - Dealing with complexity, feedback loops
  - Finding $$$

New tools?

- To identify areas where in situ adaptation may be ineffective

- Inform policy and planning (land use, assistance…)

- To alert stakeholders, make wiser investments

- To explore opportunities and benefits

- To develop relocation tools/policy in a bottom-up fashion

- Perceptions differ – based on the experience and exposure

- To provide info proxy decision-support tools cannot

- To evaluate adaptation efforts

Where are we now?

- Adaptation – "governance concept directed at 'the problem of the future' (Rickards, 2010)

- Policy process ignores uncertainty and relies on outdated planning methods

- Anticipatory adaptation difficult – "when things go well, DM can manage without it, and when things go badly, it is to late to see beyond the needs of their noses" (Godet, 2000)

Science – policy gap
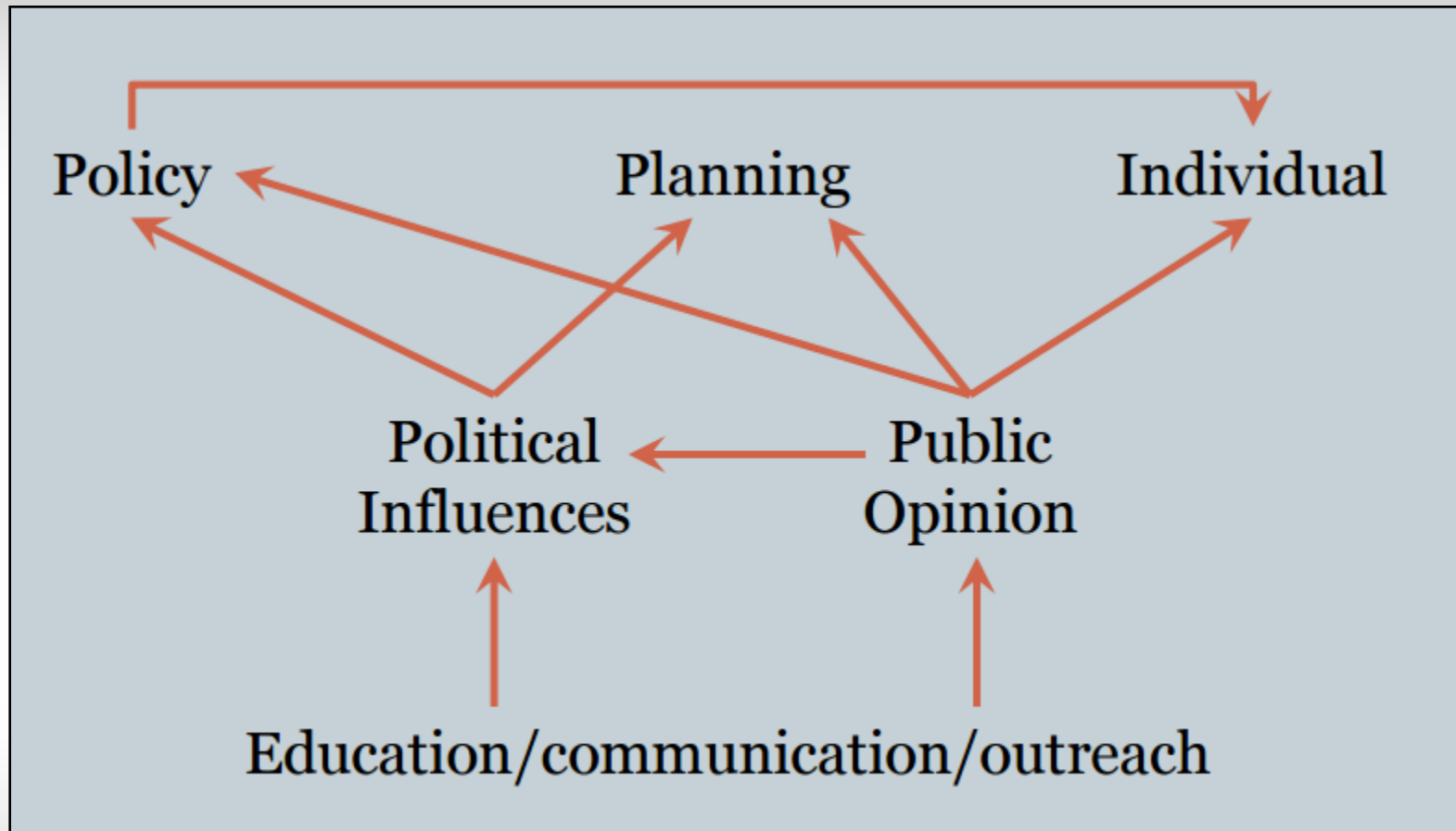
Targeting cognitive biases

"The instances involving a large group of stakeholders contemplating diverse and complex issues across multiple scales and decision-making arenas can lead to a *"protective stupidity"* or the inclination to stay on the erroneous course of action and judgments that avoid facing reality."

~Tuchman, 1985

Targeting cognitive biases

COMMUNICATION MYTHS (Moser and Dilling, 2007)

- "if only people understood the problem, they would change their behavior"
- "if we scare people, they will get it"
- "what we really need is a big disaster"
- "lets wait for a knight on a big white horse to lead us forward"
- "scientific uncertainty is the main obstacle to action"
- "appealing to people rational side is the best way to go"

People can handle the truth

PROS	Cheap, simple	Stainless steel, design	Carafe and cup option, grinds, tee
CONS	Poor reviews, leaks	Expensive, noisy	Expensive, big

People can handle the truth

PROS	No cost	Stay in community	Preserve asset
CONS	Lose investment	No access at times	Expensive, complicated
	DO NOTHING	**ELEVATE**	**RELOCATE**

Policy needs

- "I cannot believe that this will happen again"
- Science – policy gap
- Integration of objectives and data (tackling disciplinary divide)
- Coordinate and synchronize efforts with sustainable development, GHGs mitigation

"And what would we barricade? The whole Long Island to southern New Jersey area? Boston to Washington? The East Coast? Should people rebuild? Should the whole country pay for it? To help people rebuild in those places is to help put lives and investment in harm's way. It's foolish.
– Safina, 2012
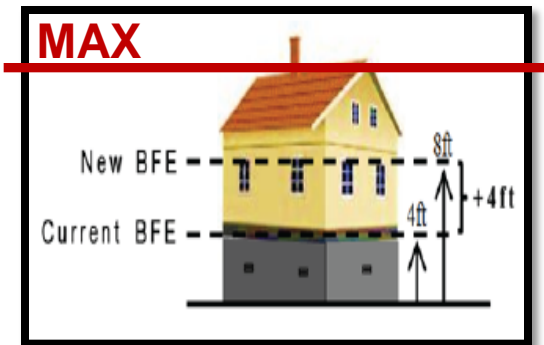
Research needs

- Cascading events – to prove everybody may be affected
- Black Swan/wild cards/surprise events/feedback loops – to prove everything is possible
- Thresholds – societal, community, household, personal
- Evaluation of cost and benefits – accounting for complexity, dealing with uncertainty
- COMMUNICATION: Simplify, personalize, know your audience

Shifting the paradigm

Tell me and I forget

Teach me and I may remember,

Involve me and I learn.

~Benjamin Franklin

Conclusions

- The major shifts in attitudes and actions, as well as the ability to "think the unthinkable" needed

- Policy and planning barriers to implementation should be identified and addressed

- No need to start anew - many policy mechanisms area already in place and just need makeover

- More research needed on *when, where, how,* and *who*

- Let stakeholders ask questions and articulate concerns

Thank you

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