

# Adaptive leadership for climate adaptation: A review of the approach and assessment of applicability to the maritime infrastructure sector

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*Innovative Technologies for a Resilient Marine Transportation System*  
**Transportation Research Board**

4-25-14

# Overview

## 1. Ports, port stakeholders, and storm impacts



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## 2. The climate change challenge

## 3. Resilience strategies across the stakeholder cluster



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## 4. From identification to implementation

**TAKES LEADERSHIP**

# 1. Ports, port stakeholders, and storm impacts

# Ports: Critical, complex, constrained

**Critical - Economic engines at every scale**

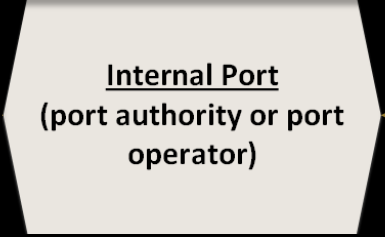
**Complex – Multiple stakeholders across space and time**

**Constrained - Dependent on specific and environmentally-sensitive locations**

*(Asariotis and Benamara 2012; Notteboon and Winkelmanns 2003; EPA 2011; AAPA 2013)*



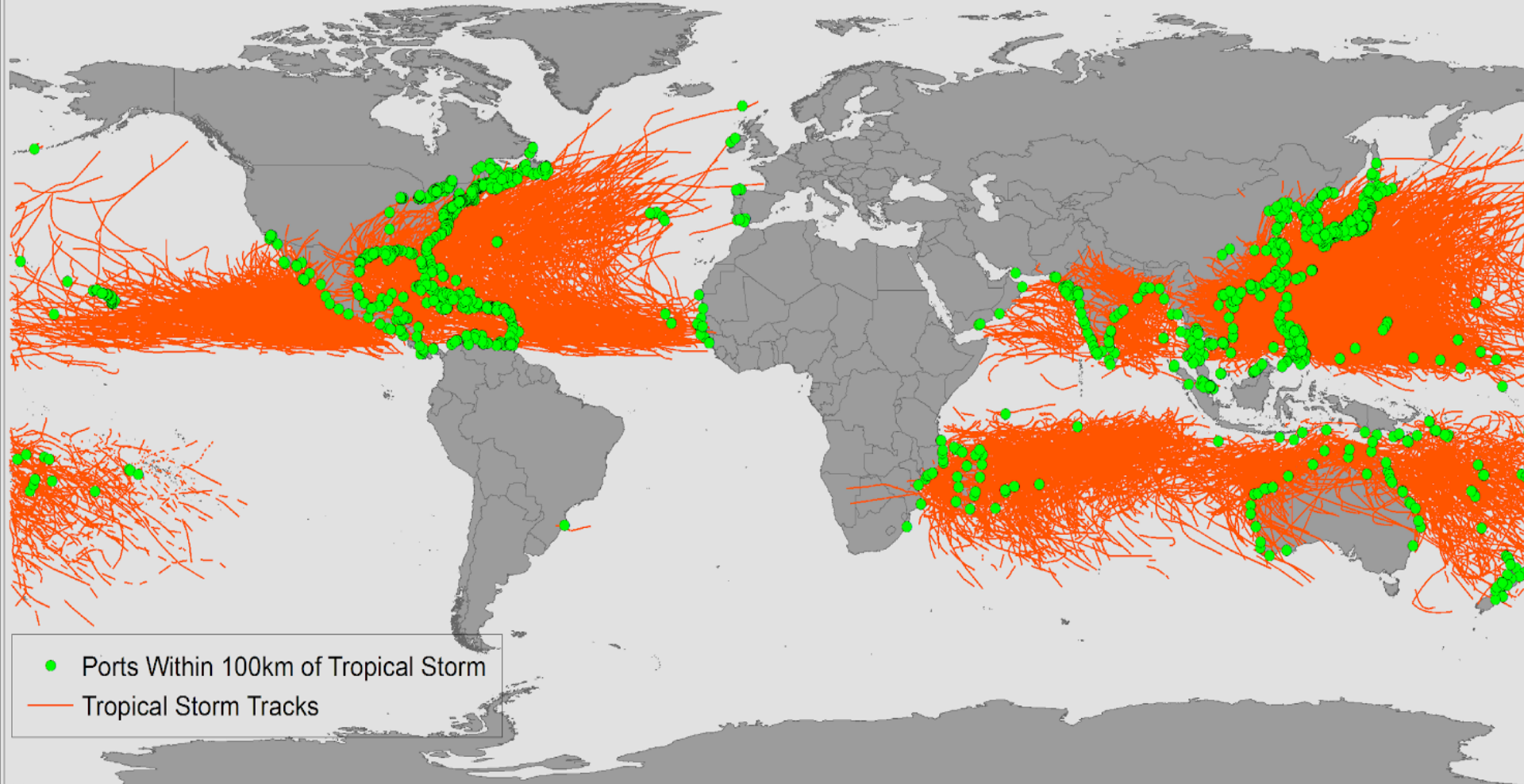
# Complex seaport stakeholder cluster



Internal Port  
(port authority or port operator)

# Ports located in harm's way

## Ports Within 100km of Tropical Storm Tracks 1960-2010



Becker, A., et al. (2013), "A note on climate change adaptation for seaports: A challenge for global ports, a challenge for global society." *Journal of Climatic Change*.

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# Cascading consequences for port stakeholders



## 1) Direct damages

(e.g., structures, equipment, freight, land, etc.)



## 2) Indirect costs

(e.g., lost wages, business interruptions, cleanup costs)

We're now just ten days away from the beginning of the 2006 Hurricane Season, and rotting chicken still remains untouched in various pools on abandoned sites throughout a West Gulfport neighborhood surrounding Regnault Avenue.

"It's nine months now. They say, 'Well, you ought to be used to it by now.' You ain't gonna get used to that smell. My gosh," said resident Gary Tatum.

The meat had been stored at the Port of Gulfport. Katrina washed it in to yards covering an eight block span. The meat in the yards has been picked up, but the meat in hard-to-see areas has not.

## 3) Intangible consequences

(e.g., quality of life, environmental damages, loss of essential services)

## 2. The climate change challenge



# Climate change challenges



Doubling of Cat 4 and 5 tropical storms  
1-in-100 year storm event of today

Sea levels to rise 0.7  1.9 meters by 2100

1-in-3 year storm event of 2100  
Inland flooding

**WHAT CAN WE LEARN?**

Identify vulnerabilities

**WHAT CAN WE EXPECT?**

**RESILIENCE**

Identify, assess & select strategies

*Prepares, resists, recovers, and adapts to successfully function under the stress of disturbances (USACE)*

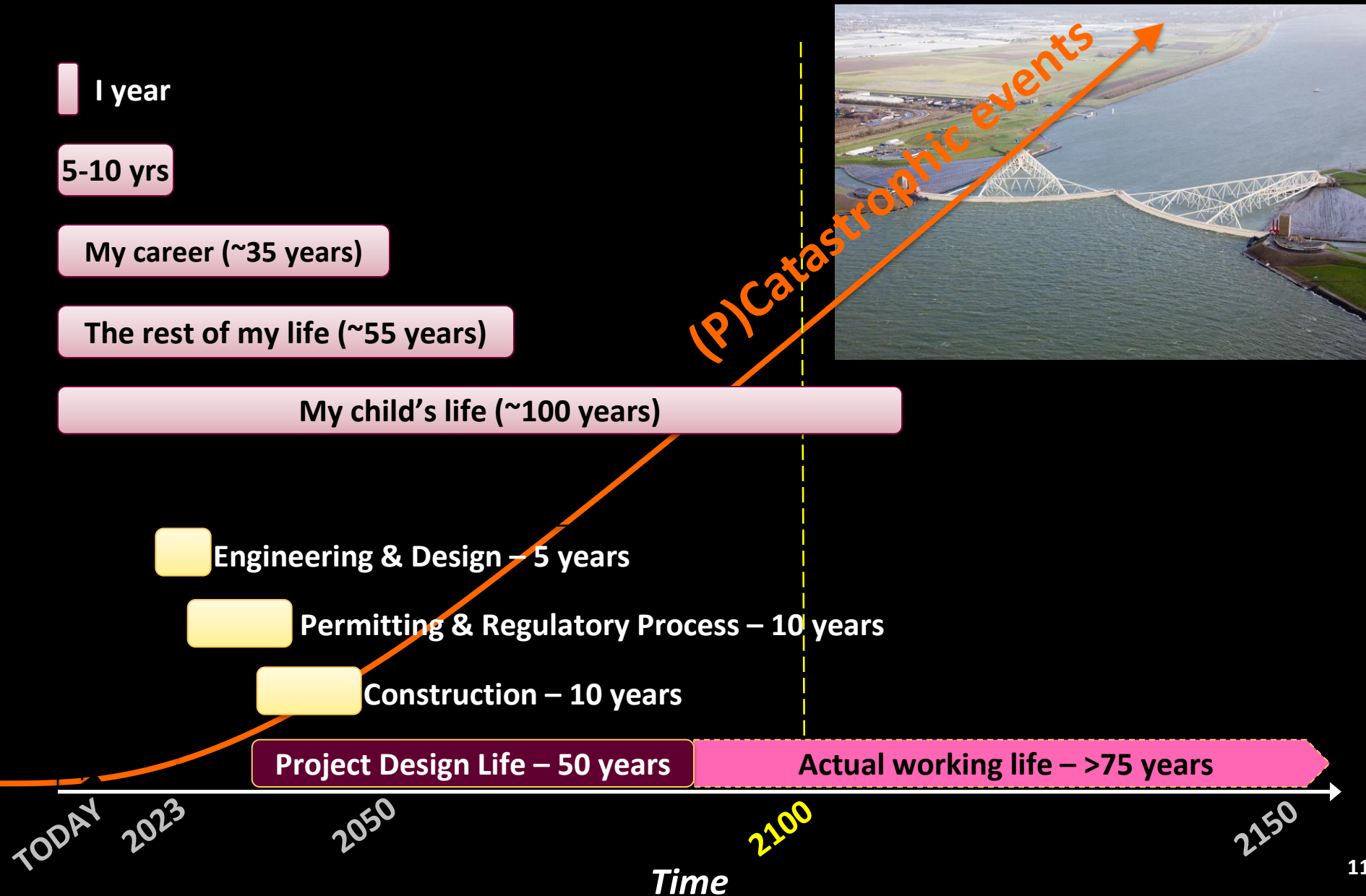
Revise & share lessons learned

Monitor & evaluate

Implement strategies

**WHAT CAN WE DO?**

# Stakeholders need a fundamental shift...



### 3. Resilience strategies across the stakeholder cluster

# 128 port resilience strategies (identified in Gulfport and Providence)



4. From identification  
to implementation

TAKES LEADERSHIP

*(“Leit”: Indo-European -- TO GO FORTH AND DIE)*

*Port stakeholders*

*Status Quo  
Resilience  
Incentives?*

*Common  
incentive?*

Internal Port

Economic  
&  
Contractual

Academia  
&  
Research

Public Policy

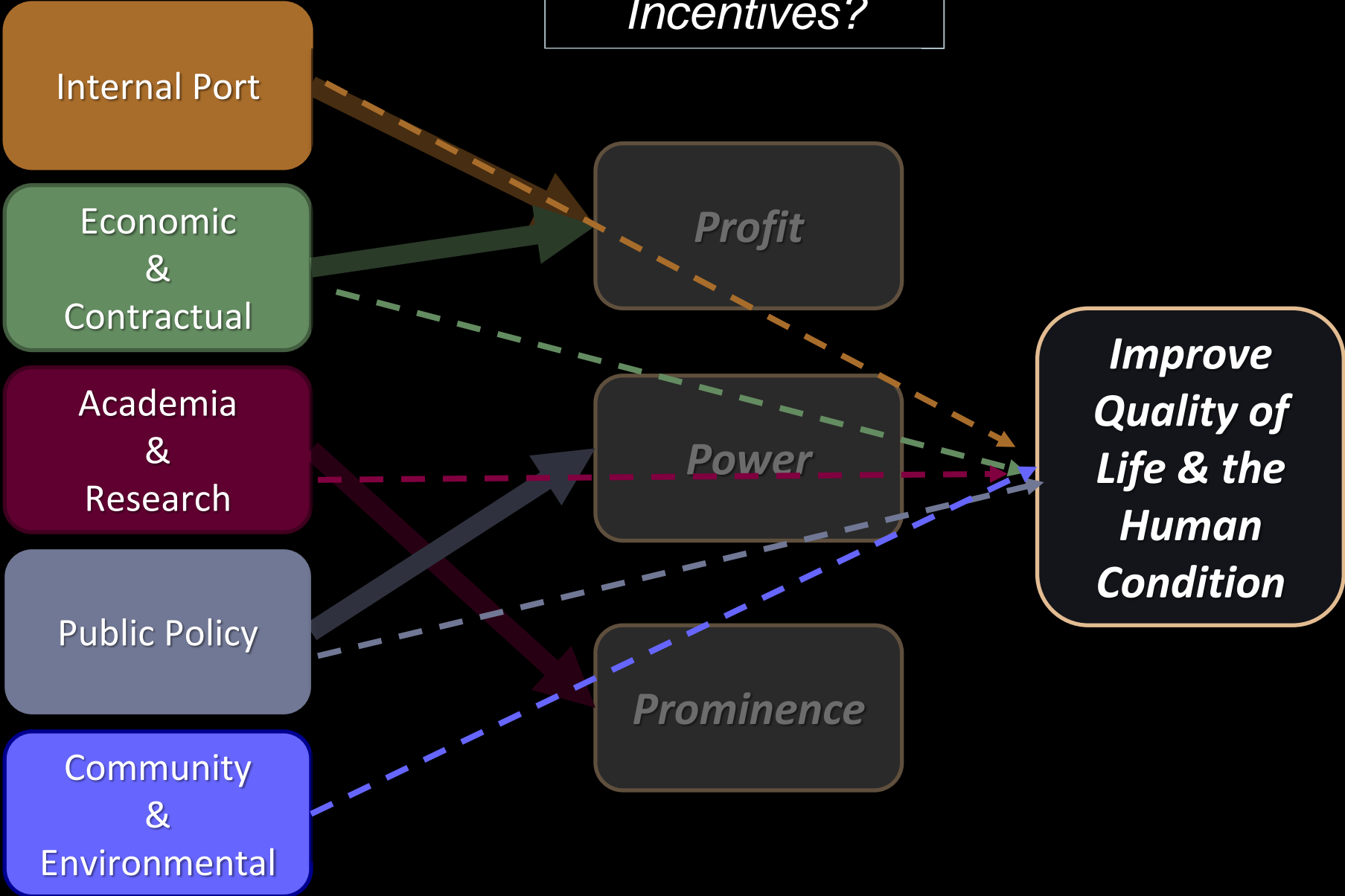
Community  
&  
Environmental

*Profit*

*Power*

*Prominence*

*Improve  
Quality of  
Life & the  
Human  
Condition*



# Leadership

- Ambiguous in climate change adaptation
  - “...the how, by whom, and under what conditions they can be implemented is not specified” (Heller & Zavaleta, 2009)
- Leadership scholars in *other* fields (e.g., mgmt) have made important distinctions between leadership work and...
  - Management work (Gilmore & Krantz, 1990; Kotter, 1990; Rost, 1998)
  - Authority work (Bion, 1961; Rice, 1965; Heifetz, 1994)
- Can CCA benefit from *Adaptive Leadership* (Heifetz, 1994, 1998, 2004, 2009)
  - An activity from any position
  - Challenging the status quo
  - Requiring more questions than answers
  - Done by the people and organizations most at risk, not outsiders

Adaptive Leadership honors the perspectives  
of the stakeholders who need to adapt



# Why Adaptive Leadership (AL) for long-term resilience?

- Successful environmental adaptation cannot occur without locally based, technically competent and politically supported leadership.
  - AL offers a vision for orchestrating this perspective while addressing the naivety that skill and policy is sufficient
- AL creates a forum for...
  - Distinguishing technical and adaptive challenges for each stakeholder
  - Eliciting and valuing all perspectives
  - Diagnosing the tangible and intangible losses those stakeholders face
  - Discovering opportunities in the challenges

# Emerging needs...

- 1) In what ways is adaptive leadership training suited to address the unique challenges posed by climate change for critical maritime infrastructure (e.g., long lifespan of infrastructure, multi-stakeholders, lack of clear incentives for leadership, disincentives built into system, etc.)
- 2) Where do different kinds of stakeholders see CCA efforts beginning?
  - Who do they think needs to act first?
  - What is their reason for not acting first?
  - What worries them the most about CCA initiatives?

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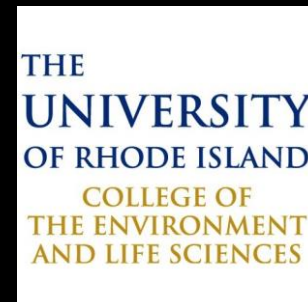
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*Funding support from  
URI Research Development Office*



- *1a) What are the common meanings and usages of the term “leadership” in the organizational literature generally 1b) and the climate adaptation and resilience literature more specifically?*
- *2a) What are the common characteristics of workshops/programs that are or could be building leadership toward climate adaptation (USAID, Coastal Resources Center, RIVAMP, etc.) 2b) and how do these characteristics map to the meanings and usages identified in Question 1 ?*
- *3) In what ways is current leadership training suited to address the unique challenges posed by climate change for critical maritime infrastructure (e.g., long lifespan of infrastructure, multi-stakeholder nature, lack of clear incentives for leadership, disincentives built into system, etc.)*

# Next Steps

Three resources:

Money, Time, Political capital (or relationships)

- Review of cross-sector leadership literature
  - What drives private organizations to invest MTP when they will not receive an immediate return?
    - What drives private orgs to develop internal capacity on CCA
  - What drive public orgs to invest MTP when they will not receive an immediate return?
    - What drives public orgs to develop internal capacity on CCA
  - What drives collaboration between public and private organizations when the ROI is not near-term?
  - What kind of leadership provokes innovation when there is no marketplace competitor?
  - What can serve as long-term incentives for change to the status quo now?
  - Can we bring these ideas back to the stakeholders?

# Leadership:

## The action of leading a group of people

Oxford English Dictionary as both “the action of leading a group of people or an organization” and “the state or position of being a leader” (OED, 2014).

More than “taking action,” more than “making a business decision”

The initiative in an action; an example for others to follow

Be a reason or motive for (someone):

Be in charge or command of:

Organize and direct:

Set (a process) in motion:

- Being a leader is a risk (look at Al Gore)
- No clear steps to becoming a leader
- No clear incentives for leadership
- In a complex stakeholder system, whose responsibility is leadership?

Good leadership was also said to provide key functions for governance, such as building trust, managing conflict, linking actors, initiating partnerships among actors, compiling and generating knowledge, and mobilizing broad support for change (Folke et al., 2005).

Stakeholder	Costs	Resources	Other incentives
Internal Port	<ul style="list-style-type: none"> <li>Money</li> <li>Staff time</li> <li>Changes or damage to existing infrastructure</li> <li>Planning required</li> </ul>	<ul style="list-style-type: none"> <li>Economic power and pressure</li> <li>Prominence in community</li> <li>Knowledge of system</li> <li>Professional networks</li> </ul>	<ul style="list-style-type: none"> <li>Political and economic pressure from funding sources/government</li> <li>New or earmarked funding sources</li> <li>Internal pressure</li> </ul>
Economic/Contractual	<ul style="list-style-type: none"> <li>Money</li> <li>Staff time</li> <li>Loss of future investments</li> </ul>	<ul style="list-style-type: none"> <li>Economic power and pressure</li> <li>Professional networks</li> </ul>	<ul style="list-style-type: none"> <li>Pressure from networks or funding sources</li> <li>Political pressure</li> </ul>
Academia/Research	<ul style="list-style-type: none"> <li>Reputation</li> <li>Resource allocation</li> </ul>	<ul style="list-style-type: none"> <li>Staff time</li> <li>Collaborative networks</li> <li>Knowledge/ Information</li> <li>(Semi-)Exclusive focus</li> </ul>	<ul style="list-style-type: none"> <li>Pressure from funding sources</li> <li>Public interest</li> <li>Publicity</li> </ul>
Public Policy	<ul style="list-style-type: none"> <li>Need to provide funds for recovery/rebuilding/planning</li> <li>Staff time</li> <li>Image/reputation</li> </ul>	<ul style="list-style-type: none"> <li>Money</li> <li>Political power</li> <li>Political will</li> <li>Enforcement</li> <li>Creation of rules/legislation</li> </ul>	<ul style="list-style-type: none"> <li>Public opinion</li> <li>Pressure from private interests</li> <li>Money</li> <li>Publicity</li> </ul>

## Classes of Stakeholders

(i.e., those entities to whom managers should pay attention)

- (1) the stakeholder's power to influence the firm,
- (2) the legitimacy of the stakeholder's relationship with the firm, and
- (3) the urgency of the stakeholder's claim on the firm.



# Classes of Stakeholders

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# Tim's Thinking beyond here

- What drivers/incentives have promoted interdependent thinking between...
  - private orgs
  - public orgs
  - public and private orgs
- What drivers/incentives have promoted sacrifice for a **common purpose**...
  - btwn & within private orgs
  - btwn & within public orgs
  - between public and private
- How would inaction by the stakeholder system today hurt you in 50 years?

**Building stakeholder leadership for seaport climate adaptation:  
Toward a framework for incentives for taking leadership and recognizing  
interdependence**

**CASE STUDY APPROACH**

**Step 1: Identify stakeholders**

**Step 2: Identify drivers (profit, political capital, survival, etc.)**

**Step 3: How would inaction hurt your organization? / ID ramifications  
of inaction for stakeholders**

**Step 4: ID shared purpose**

**A review of approaches and assessment of applicability to the maritime  
infrastructure s**

# The leadership vacuum



*What is leadership?*

*Incentives?*

*“Leadership???”*

*Who makes it happen and how?*

# Traditional incentives may not work...

Show what incentives are for different stakeholder groups and why they are not appropriate for long-term planning.

Internal stakeholders - profit, create jobs

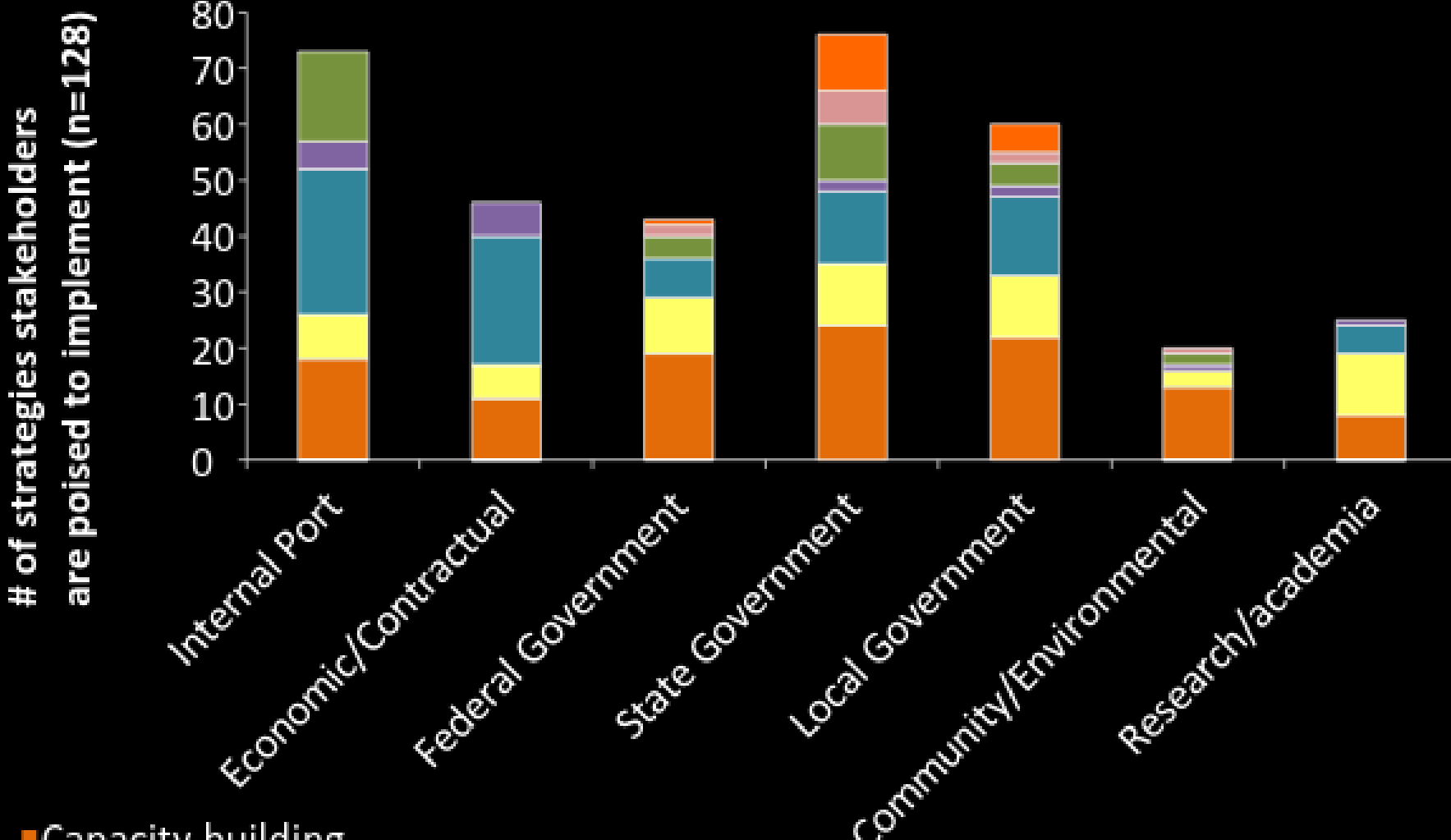
Public policy - driven by political cycles (4 years)

Economic/contractual - profit

Research/academia - may be good incentive structure here? Though little power to act.

# Leadership

- Often cited as a necessary criteria for climate adaptation
- Ambiguity in definition of leadership in relation to climate change adaptation
  - “In the case of many recommendations, the how, by whom, and under what conditions they can be implemented is not specified” (Heller & Zavaleta, 2009)
- “Successful environmental adaptation cannot occur without locally based, technically competent and politically supported leadership” (Smit & Pilifosova, 2003)
  - Allows for multiple stakeholders to assume a leadership role



- Capacity building
- Research (inc. risk assessment, forecasting improvements, and projections)
- Emergency preparation, response, and recovery
- Private sector and insurance policies
- Constructions and design
- Long range planning efforts
- Capacity building

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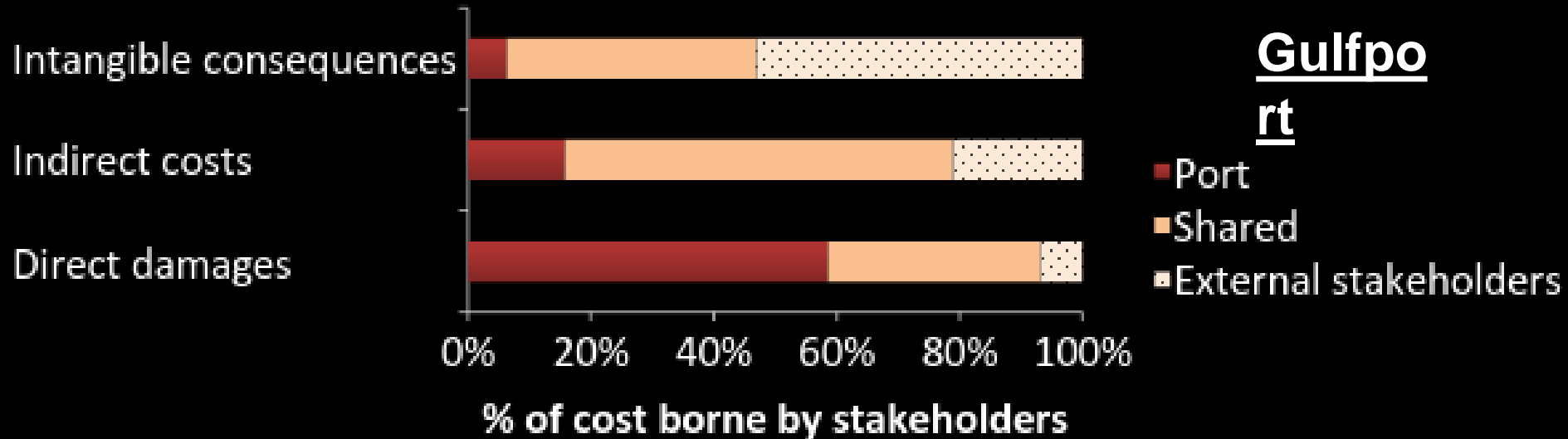
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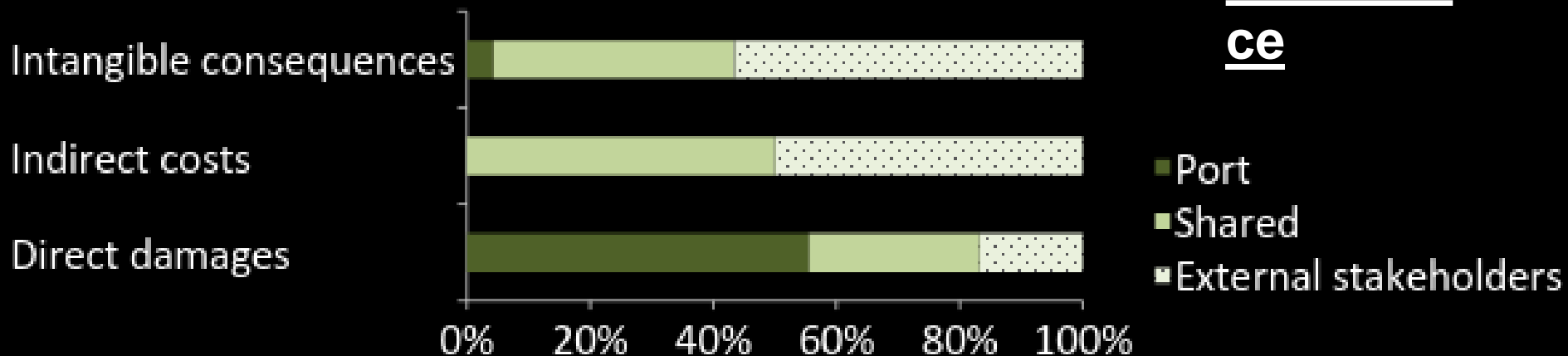


# External stakeholders bear high % of costs

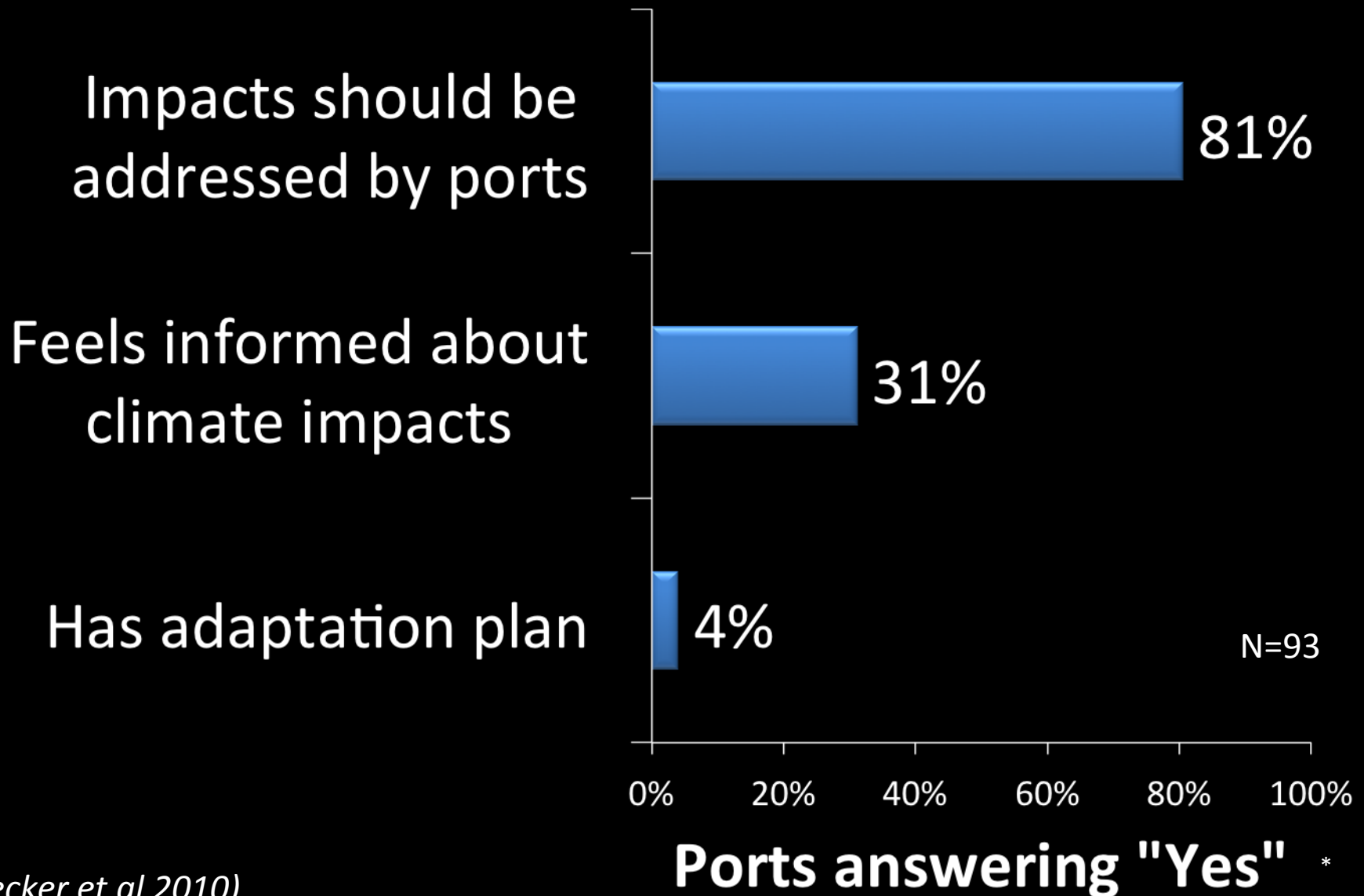
## Gulfport



## Providence



# Ports concerned, but little action thus far



## Next Steps

- Survey of stakeholders
  - What are the drivers to invest time, money resources, etc.?
- Review of leadership literature
  - What drives people to invest when they will not receive an immediate return?
  - What can serve as long-term incentives?
  - Can we bring these ideas back to the stakeholders?

# ? = Barriers to Adaptation

Leadership

*(Lack thereof and/or misdirected)*

Resources

*(Lack thereof)*

Information

*(availability, accessibility, credibility, etc.)*

Participation

Values and beliefs