Managing High Risks that Cannot be Mitigated

Tammy Newcomer Johnson and Michael Craghan, US EPA

Credit: Randy Lemoine

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Research Motivation

What should you do if you have a red risk that you cannot mitigate and cannot accept?
What do we mean by “Failure”?  

You will not accomplish a goal that is very important, and that has been determined to have high consequences for your organization.
Is your goal to maintain wetlands in the face of rising sea levels?
Is your goal to maintain coral reefs in warming, acidifying waters?

American Samoa in 2014 (left) and 2015 (right) before and after a coral bleaching alert

Credit: XL Caitlin Seaview Survey
Is your goal to maintain a fishery for a fish that requires colder water than your system will support?

Gradual Landscape Evolution:
Changing Species Assemblages seen from Long Island Sound Study Trawl Surveys

Adapted from LongIslandSoundStudy.net
What are the options for handling looming failure?

There is a lot you can control!

We are doing a historical, multidisciplinary analysis of failure and change.
Case Studies: Failure and Changing Course

- American Dust Bowl of the 1930s
- Dodd-Frank and the Financial Crisis of 2007-08
- Smart Shutdown Guidebook (Defense Acquisition U)
- Strategies for Managing a Successful Divestiture (PricewaterhouseCoopers)
- Downsizing, Decommissioning, & Divestment (World Bank)
- GAO: Terminating DOD Contracts & Retaining Value
- Coastal Adaptation Strategies: Case Studies (National Park Service)

Credit: George E. Marsh Album
Example in action: Current goal is road access to a barrier island that is repeatedly destroyed by hurricanes.

Fort Pickens Road, Gulf Islands National Seashore, FL
Millions of $$ are being spent to continually rebuild
Example in action:
Transitioning to a New Goal

Ferry service offers a more sustainable option for access

Credit: Blake Facey
<table>
<thead>
<tr>
<th>Risk management</th>
<th>Same goal, actively maintained</th>
<th>Same goal; no special action</th>
<th>Changed goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigate</td>
<td>Accept</td>
<td>Avoid</td>
<td></td>
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<table>
<thead>
<tr>
<th>NACCS</th>
<th>Preserve/Protect</th>
<th>Accommodate</th>
<th>Avoid (retreat)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk management</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Unmitigable risks</th>
<th>Protect (until failure)</th>
<th>Accept</th>
<th>Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk management</td>
<td></td>
<td></td>
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<tr>
<td>#</td>
<td>Approach</td>
<td>Description</td>
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<tr>
<td>----</td>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>accept</td>
<td>Business as usual until failure</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>accept–protect</td>
<td>Business as usual, but eventually will try to salvage the remaining benefits until failure</td>
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</tr>
<tr>
<td>3</td>
<td>accept–protect–accept</td>
<td>Business as usual with resilience activities from time to time to salvage business as usual until failure (compare with No. 8)</td>
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<tr>
<td>4</td>
<td>accept–protect–avoid</td>
<td>Business as usual, eventually will try to be resilient, eventually will change course</td>
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<tr>
<td>5</td>
<td>accept–avoid</td>
<td>Business as usual until a change of course</td>
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<tr>
<td>6</td>
<td>protect</td>
<td>Will try to be resilient until failure</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>protect–accept</td>
<td>Will try to be resilient for a while then hang on until failure</td>
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</tr>
<tr>
<td>8</td>
<td>protect–accept–protect</td>
<td>Episodes of resilience activities with intervals of inactivity until failure (compare with No. 3)</td>
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<tr>
<td>9</td>
<td>protect–accept–avoid</td>
<td>Will invest in resiliency for a while, then do nothing for a period until decide to change</td>
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<tr>
<td>10</td>
<td>protect–avoid</td>
<td>Will try to be resilient for a while, then change course</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>avoid</td>
<td>Will change course</td>
<td></td>
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</tbody>
</table>
The Role of Time

**Latent**
- Still no impacts up through the present (P)

**Gathering**
- As time goes by, damage is inflicted and repaired, although some of the damage will be cumulative.

**Converting**
- As time goes by, things get worse until the end arrives.

**Tipping**
- As time heads from T1 toward T2, the situation rapidly deteriorates. T1 and T2 are close enough in time for this to be considered “rapid”.

**Instantly**
- Things proceed along any prior course until failure suddenly arrives, whenever that occurs (days–decades from the present).
Accept Approach

Why choose it?

• No action is a reasonable choice
• Conditionally accept the risk until...
  – Defined passage of time
  – Anticipated trigger
Protect Approach

Pursue resiliency until failure

Why choose it?
• Delay impacts
• Deal with impacts better
• Benefits can be enhanced until failure
Avoid Approach

Abandon high risk goal

Why choose it?
• Stop putting resources in something that will fail
Avoid Provides Additional Options

High Risk Scenario

Original Goal
- Stay the Course
  - Imminent Failure

Avoid
- Change Course
  - Sustainability
  - Retreat
  - Disinvest

ACCEPT
- Business as Usual
  - Accommodate

PROTECT
- Resilience
- Mitigate/Transfer
- Preserve
- Delay

REALLOCATE
- Reinvest

New Goal
- Refocus
- Revamp

RETIRE
Conclusion: There are options for handling unmitigable risks

"The best time to plant a tree was 20 years ago. The second best time is now." Chinese Proverb
How to Avoid?

START
Do you have a diverse portfolio; Does your organization do more than one thing?

Yes

Does it make sense to narrow your work plan to what can be done and apply your resources to doing that?

Yes

What is the risk profile of your other organizational goals? Can they still be achieved? Does it make sense to put more resources on them?

No

Can you select a new goal that provides similar value towards your mission? Is this new goal a low risk?

No

Are new goals that support your mission also high risk? Can you broaden your mission and find a worthy new goal that is achievable?

No

Is it best to close up the shop? Have you done all the good you could do for that mission?

Yes

No

Yes

REALLOCATE

REFOCUS

REVAMP

RETIRE