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Risk-Based Climate Change Adaptation Plans

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Why risk-based plans

Risk management is about your organization: your goals; your context; your priorities; your decisions.

A risk management framework will help you:

- find risks that might be overlooked, avoid surprises
- assess risks differently than you would have
- find strategies that can address more than one risk
- make better decisions
- increase the odds of reaching your goals

You will also have a better understanding of your system, a reference, and a communication tool.

Being Prepared for Climate Change

A Workbook for Developing Risk-Based Adaptation Plans

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Where did the WORKBOOK come from ?

1. Everyone says do risk-based vuln. assessments and risk-based planning.

- Intergovernmental Panel on Climate Change, Summary for Policy Makers (2007)
- Government Accountability Office, GAO-09-534T (2009)
- National Research Council: Informing an Effective Response to Climate Change (2010)
- National Research Council: Adapting to the Impacts of Climate Change (2010)
- Interagency Ocean Policy Task Force / National Ocean Policy (2010)
- Interagency Climate Change Adaptation Task Force (2010)
- Interagency *National Action Plan: Priorities for Managing Freshwater Resources in a Changing Climate* (2011)
- EPA's *National Water Program 2012 Strategy: Response to Climate Change* (2012)
- The *National Fish, Wildlife and Plants Climate Adaptation Strategy* (2012)
- The *National Ocean Council Implementation Plan* (April 2013)
- Government Accountability Office, GAO-13-242 (2013)
- Executive Order 13653 (2013)

2. No one is doing it.

3. Why ?

W18-1

NO TRAFFIC SIGNS

*Series 2000 Standard Alphabets.

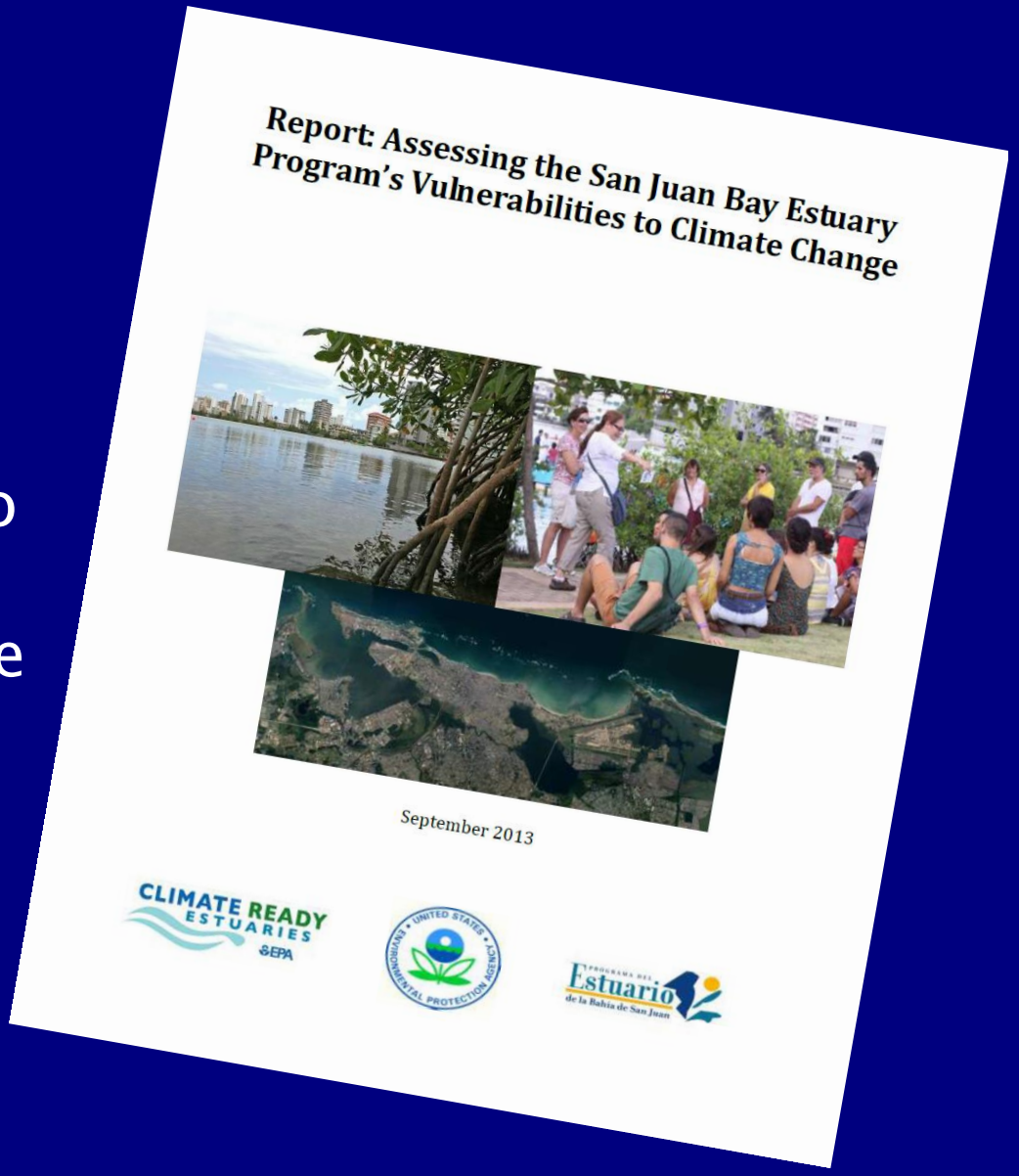
	A	B	C	D	E	F	G	H	J	K
	24	.375	.625	4 D	2.5	1.25	3.205	10.218	7.286	1.5
C	30	.5	.75	5 D	3.125	1.5	4	12.771	9.107	1.875
	36	.625	.875	6 D	3.75	1.8	4.807	15.327	10.93	2.25

COLORS: LEGEND — BLACK
BACKGROUND — YELLOW (RETROREFLECTIVE)

~~No one is doing it.~~

That was a very, very small exaggeration.

Within the last year, El Programa del Estuario de la Bahía de San Juan has a risk-based climate change vulnerability assessment !



Climate change vulnerability assessment

A place-based organization that manages environmental resources is probably looking at 100+ discrete risks from all climate change stressors.

How do you decide what to do if you don't have the resources to do everything you need to do?!

A risk-based approach to CC ?

An application of standard risk management to the climate change problems of a place-based organization.

Conceptual obstacles to risk-based planning, 1

Adaptation (incl. VA) is about an organization.
It is not about a place.

An island or a forest or a river may be changing but it isn't going to consider its future and make conscious adjustments.

It is human organizations that will adapt to any climate change impacts to an island a forest or a river.

Conceptual obstacles to risk-based planning, 2

What is a vulnerability assessment?

A VA is an understanding of how climate change will uniquely affect your organization. It is Part 1 of your organization's adaptation plan.

A vulnerability assessments is—

- not a compilation of climate projections
- not an impacts study

What makes a VA different is the introduction of organizational goals that are at risk because of CC.

Goals and organizations

What people want, is what is threatened by climate change. There will be no adaptation unless people want something that is at risk.

Organizations exist for a reason. They have missions, charges, charters, purposes, visions, strategic plans—they have goals.

> **Organizations** = groups, businesses, agencies, NGOs, communities, corporations, counties, etc.

When goals are threatened by CC then organizations can adapt so they could still achieve those goals.

Goals related to clean water:

- Control point and nonpoint sources of pollution and clean up of pollution
- Maintain and improve estuarine habitat
- Protect and propagate fish, shellfish and wildlife, including control of nonnative species
- Protect public water supplies and recreational activities, in and on the water.

from Clean Water Act §320, and the Estuary and Clean Waters Act of 2000

To have a risk-based plan you need risks (!)

Once you have a goal, then you can have a risk.

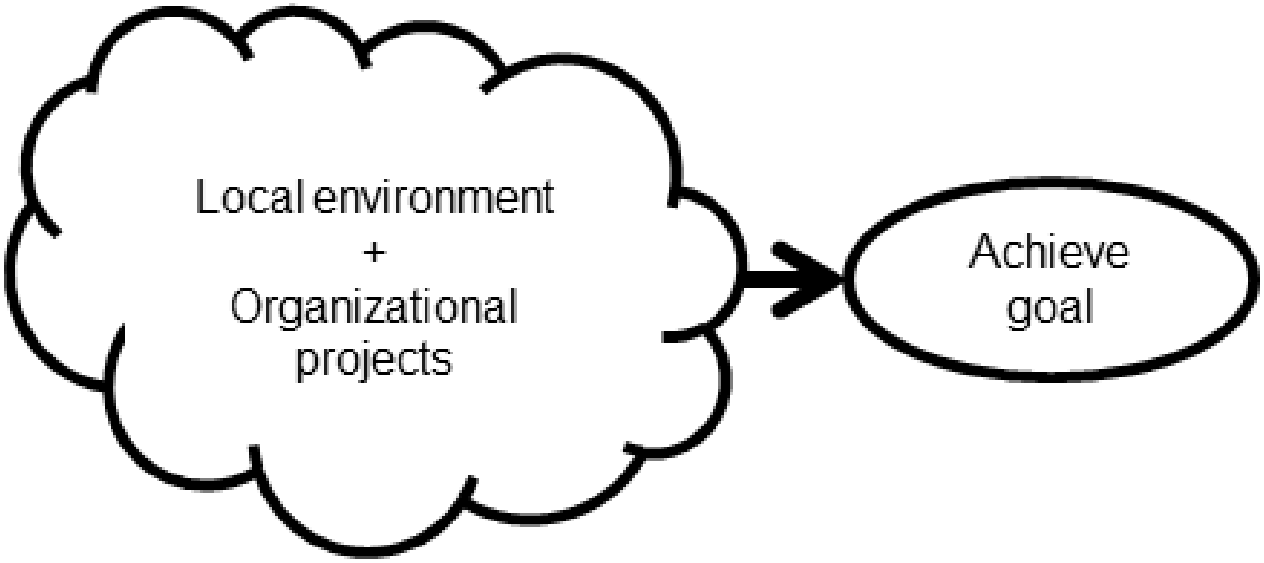
A climate change risk is the possibility of a given climate change stressor to affect the ability of your organization to meet its goals.

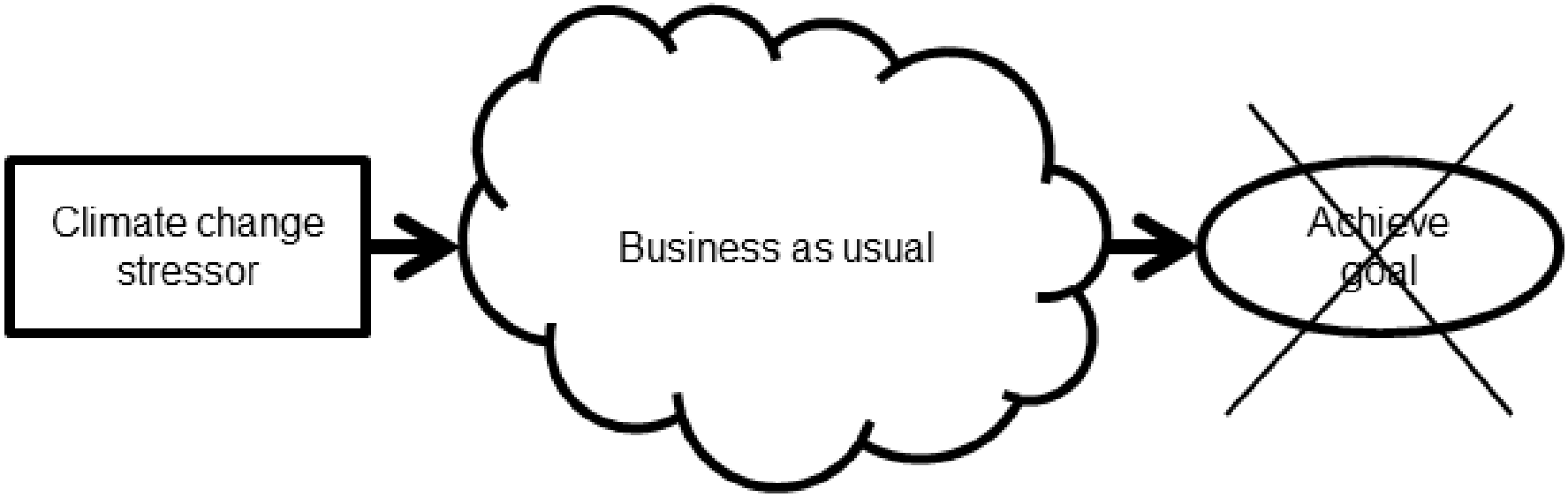
<u>To have a climate change risk, need</u>

1. Goals
2. Climate change stressors

Climate change stressors

- Warmer summers
- Warmer winters
- Warmer water
- Increasing drought
- Increasing storminess
- Sea level rise
- Ocean acidification


Local environment
+
Organizational
projects
Achieve
goal


Climate change
stressor
Business as usual
Achieve
goal

Risks

If there is any potential sequence (CC stressor, and what follows) for an unwanted consequence (not reaching your goal), then you have a risk.

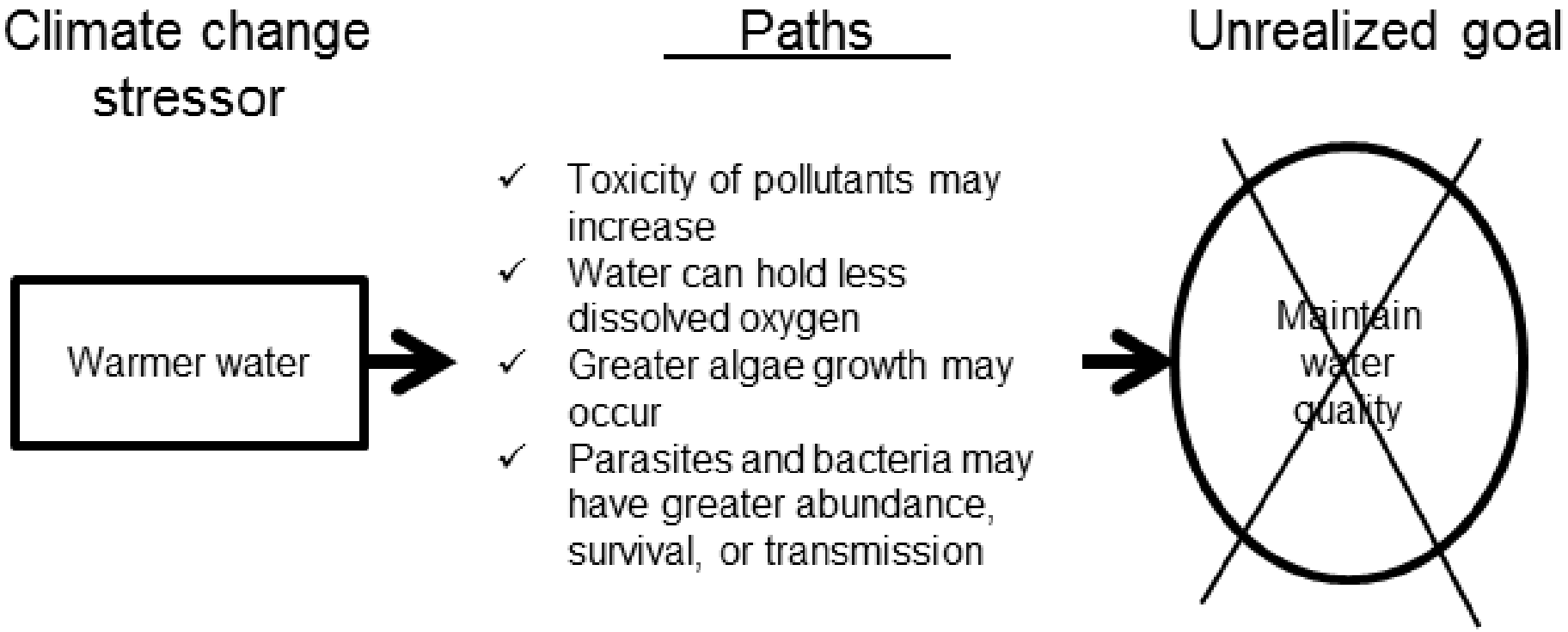
The risk develops/emerges along the path between the cause and the effect.

Risk identification template

Stressor X could _____ , and the result is that we might not attain Goal Y.

Risk identification template

Stressor X could _____ , and the result is that we might not attain Goal Y.



Place-based env'l orgs. will have lots of risks

If you have seven stressors and a few goals, and a few risks from each of those crosses, you can easily have 100+ risks.

$$7 \times 4 \times 4 = 112$$

CRE has a checklist with 116 risks related to the Clean Water Act goals.

San Juan Bay Estuary Program identified 167 risks in its vulnerability assessment.

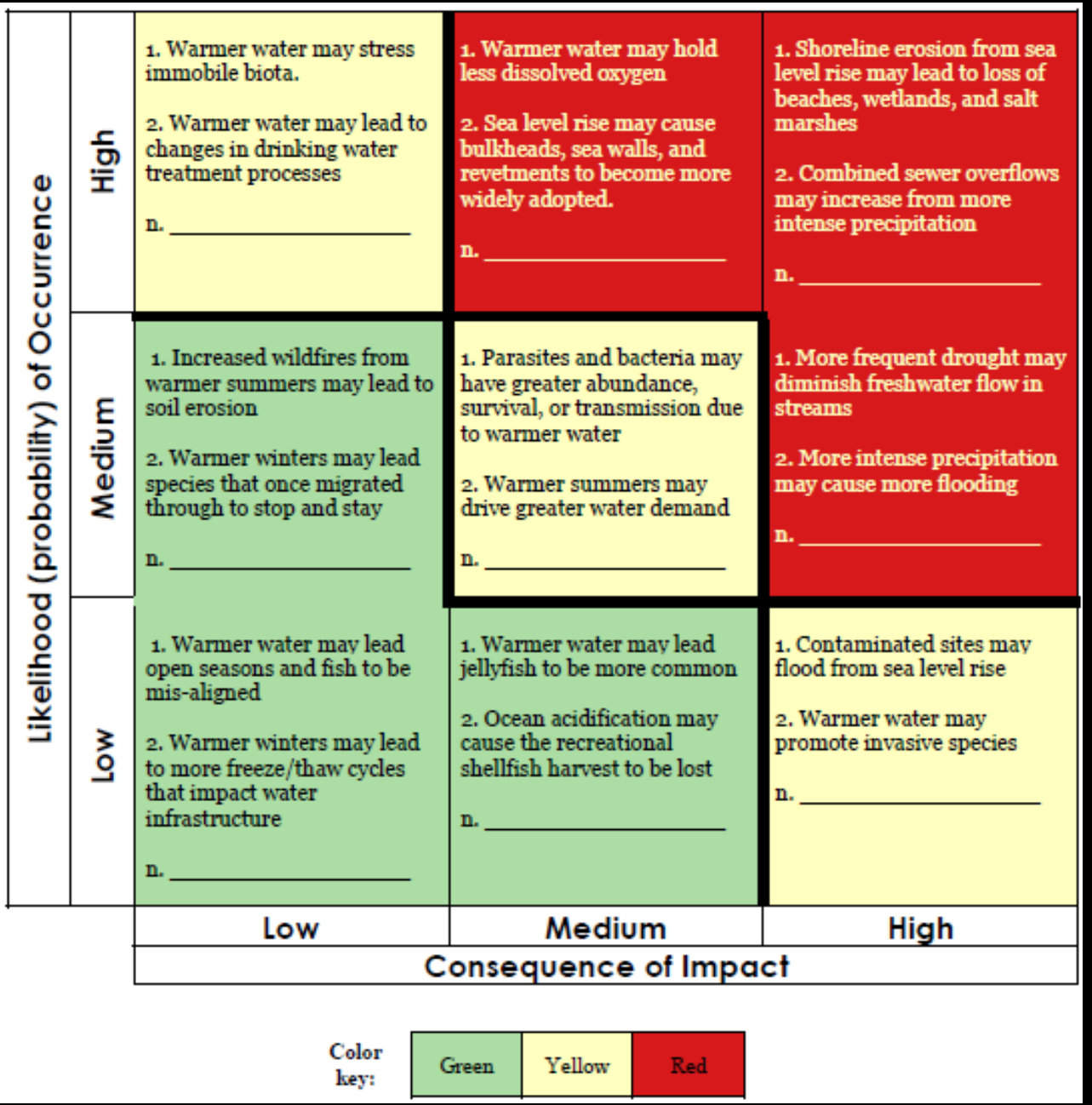
Risk analysis

All the identified risks are qualitatively assessed for—

• Likelihood	low | medium | high
• Consequence	low | medium | high
• Spatial extent	small | medium | large
• Time horizon	decades | 10–30 yrs | 0–10 yrs
• Habitat type*	user defined categories

Risk evaluation

An example consequence/probability matrix.



A risk-based CC vulnerability assessment

Q: How do you decide what to do if you don't have the resources to do everything you need to do?

A: Work on the biggest *risks !*

The ones that are highly likely to occur and will have high consequences when they do.

Prioritizing in an adaptation plan

Using a risk-based vulnerability assessment actually gives you a basis for prioritizing.

To date users never had good guidance on how to prioritize!

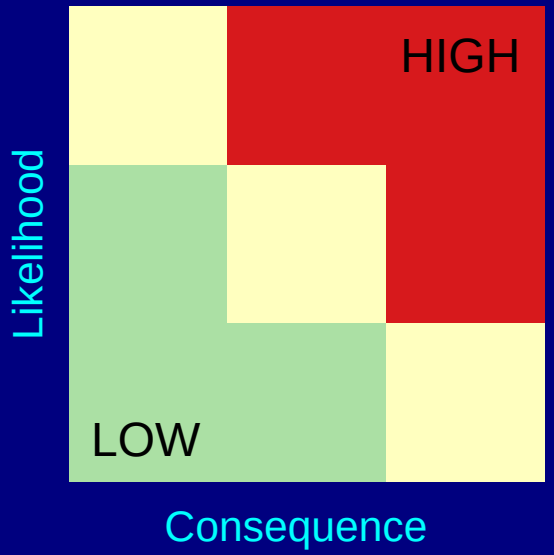
The leading guides to climate change adaptation say to just get started on something, or just decide what you want to do, or go after low hanging fruit, or choose robust projects, or look for projects with co-benefits, etc.

Work on the biggest risks

The CRE Workbook advises that you should not choose to work on *any* good thing.

In your VA you identified a set of risks which are highly likely to occur and will derail you if they do.

You can't ignore high risks.
You must adapt to them.



Do not prioritize interesting low-impact risks.

Pay attention to the risks that matter *!!!*

How do you decide what to do?

Once you know what risks to work on, the questions become: What actions? How do you decide?

Part 2 of risk-based planning is an action plan:

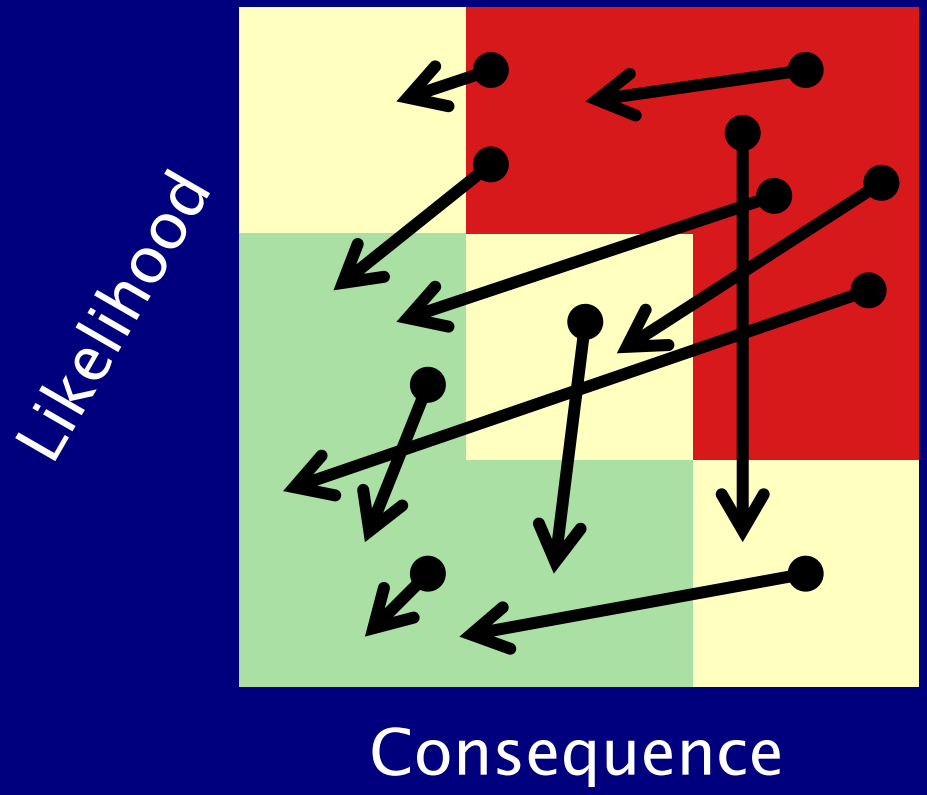
- Finding adaptation actions that could work
- Selecting the actions you will implement
- Writing and carrying out a plan

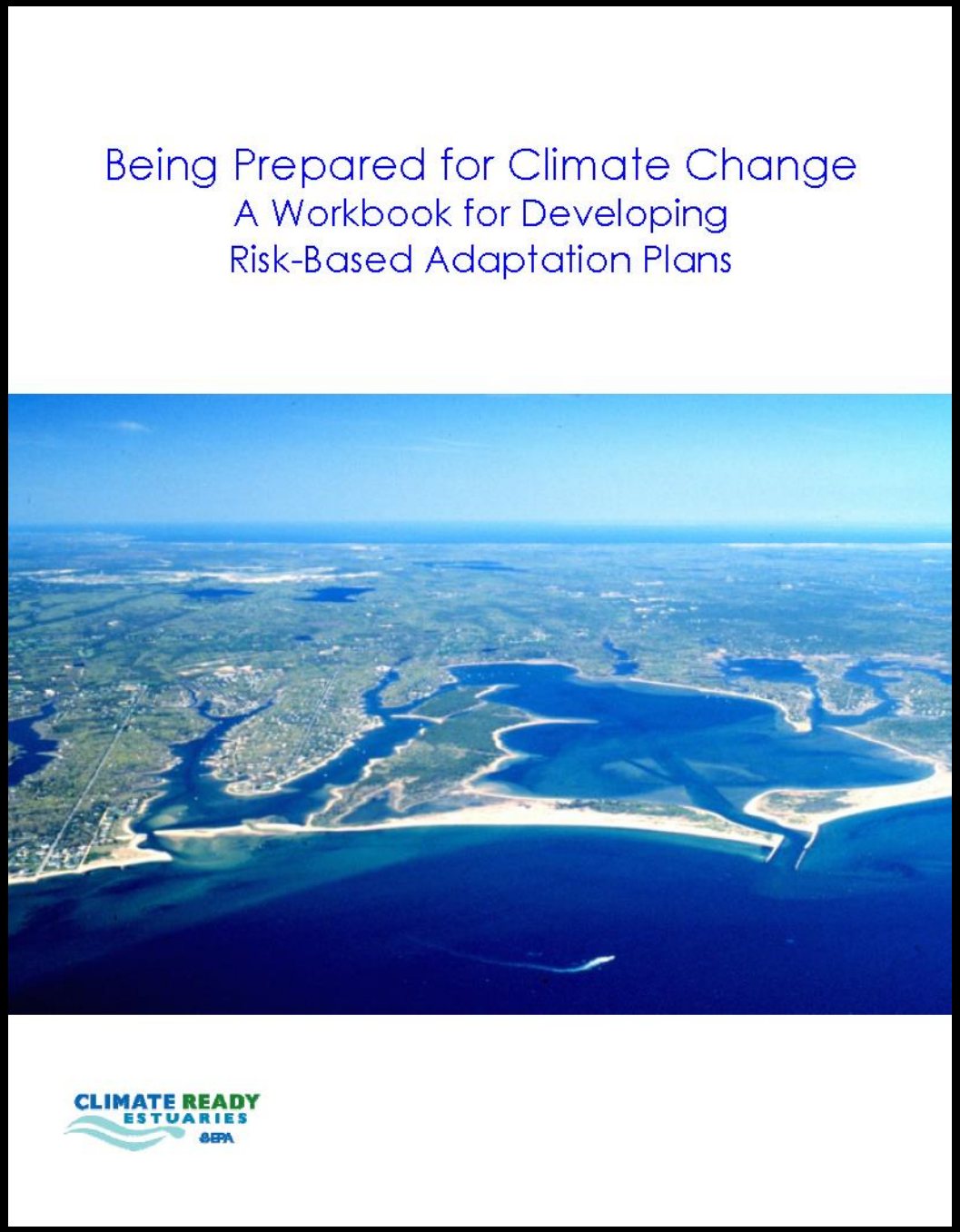
Making it all work can be complex, but risk-based decision making suggests:

actions that reduce the most risk, and don't have bad side effects, rise to the top of the list.

Which actions?

Actions that actually reduce risks. The more risk reduction an action gets you, the better it is.





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