

A BEND IN THE RIVER

TRANSITIONING TO A TIME
OF *PERMANENT* CHANGE



AGWA Alliance for Global
Water Adaptation
alliance4water.org

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HOPE IN A TIME OF GREAT TRANSITIONS



Qinghai Province, Tibetan Plateau, China





WHY IS AGWA HERE?

AGWA focuses on long-term sustainability — how do we

technical knowledge: science, engineering,
finance, economics — synergies, best practices

enabling policy: can we help high-level
decision makers understand and assist?

Co-chairs: World Bank and Stockholm International Water Institute (SIWI)

Membership: global, ~950 individuals

<http://alliance4water.org>
<http://AGWAGuide.org>

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WHAT ARE THE CLIMATE CHALLENGES?

climate extremes / disasters|
super droughts & floods|
tropical cyclones|



|steady, creeping climate change
|climate “weirding”
|transformation



traditional & purely technical solutions are no longer real solutions

FOR HUMANS, CLIMATE CHANGE IS ABOUT WATER

An aerial photograph of the Dujiangyan Irrigation Facility in Sichuan, China. The image shows a long, low dam structure spanning a wide river, with a large reservoir behind it. The surrounding landscape is hilly and green.

SUSTAINABLE

Dujiangyan Irrigation Facility
256 BC, Sichuan, China

An aerial photograph of the Hoover Dam in Nevada, USA. The image shows a massive concrete dam structure with a large reservoir behind it. The surrounding landscape is arid and rocky.

NOT SO MUCH

Hoover Dam
1937 AD, USA

FOR WATER, CLIMATE CHANGE IS ABOUT INFRASTRUCTURE & ECOSYSTEMS

TOGETHER, WE HAVE A CRISIS IN HOW WE MAKE DECISIONS ABOUT WATER

CLIMATE CHANGE CHALLENGES HOW WE MAKE LONG-TERM SOLUTIONS

To manage water reliably, we have always looked *backward* for guidance.

WE CARELESSLY MADE 100
(200, 300) YEAR DECISIONS

That era is over too. The past doesn't tell us much about the future anymore.

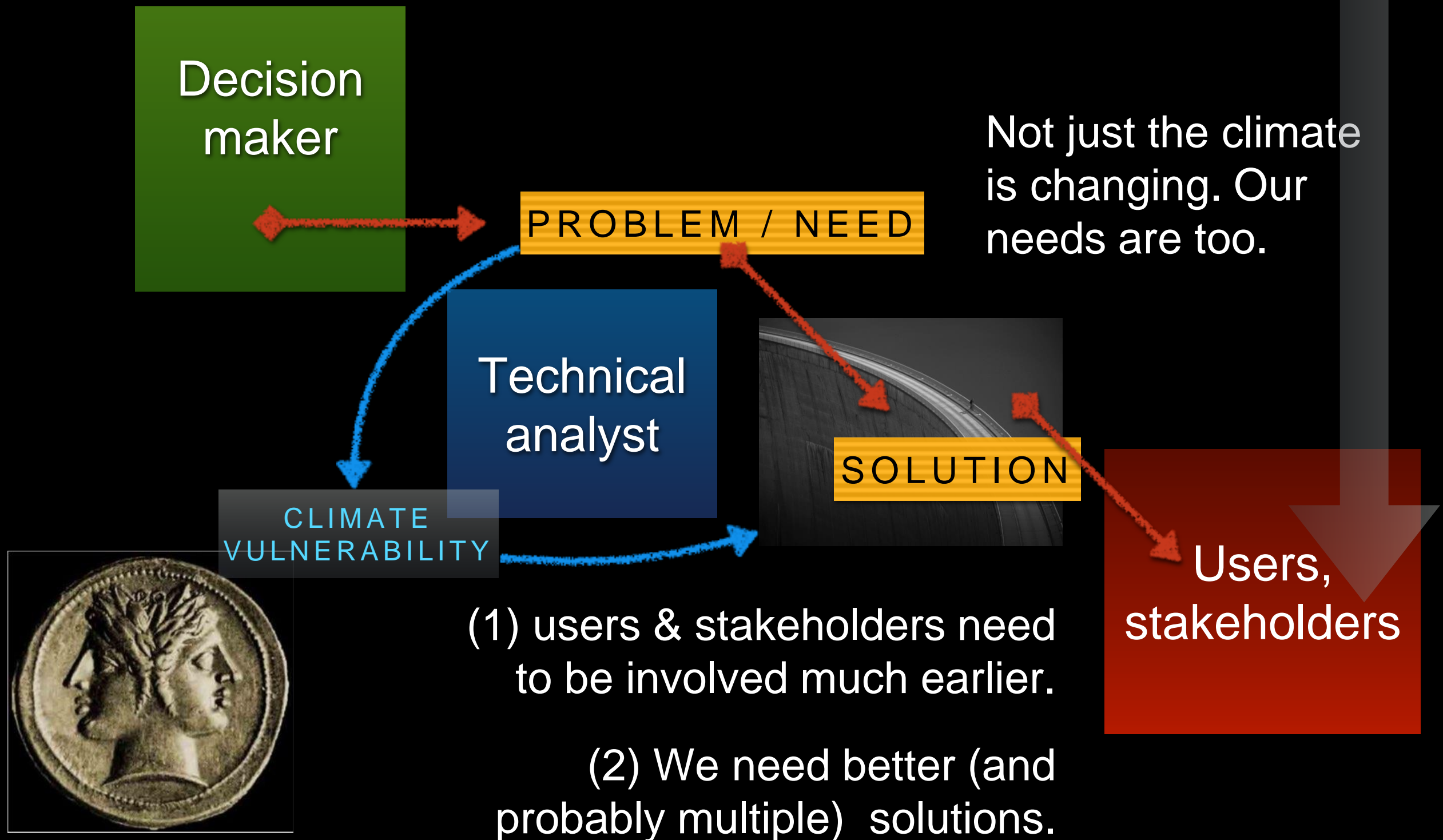
SCIENCE & ENGINEERING
CAN'T PROVIDE PRECISE,
ACCURATE DETAIL ABOUT
WHAT WILL HAPPEN — OR
HOW QUICKLY

Janus, the Roman god of
transitions and journeys —
looking into the future &
past

Our challenge is to envision a range of
probable futures.

IF NECESSARY, WE CAN
MAKE SHORTER DECISIONS
THAT HELP US KEEP
OPTIONS OPEN

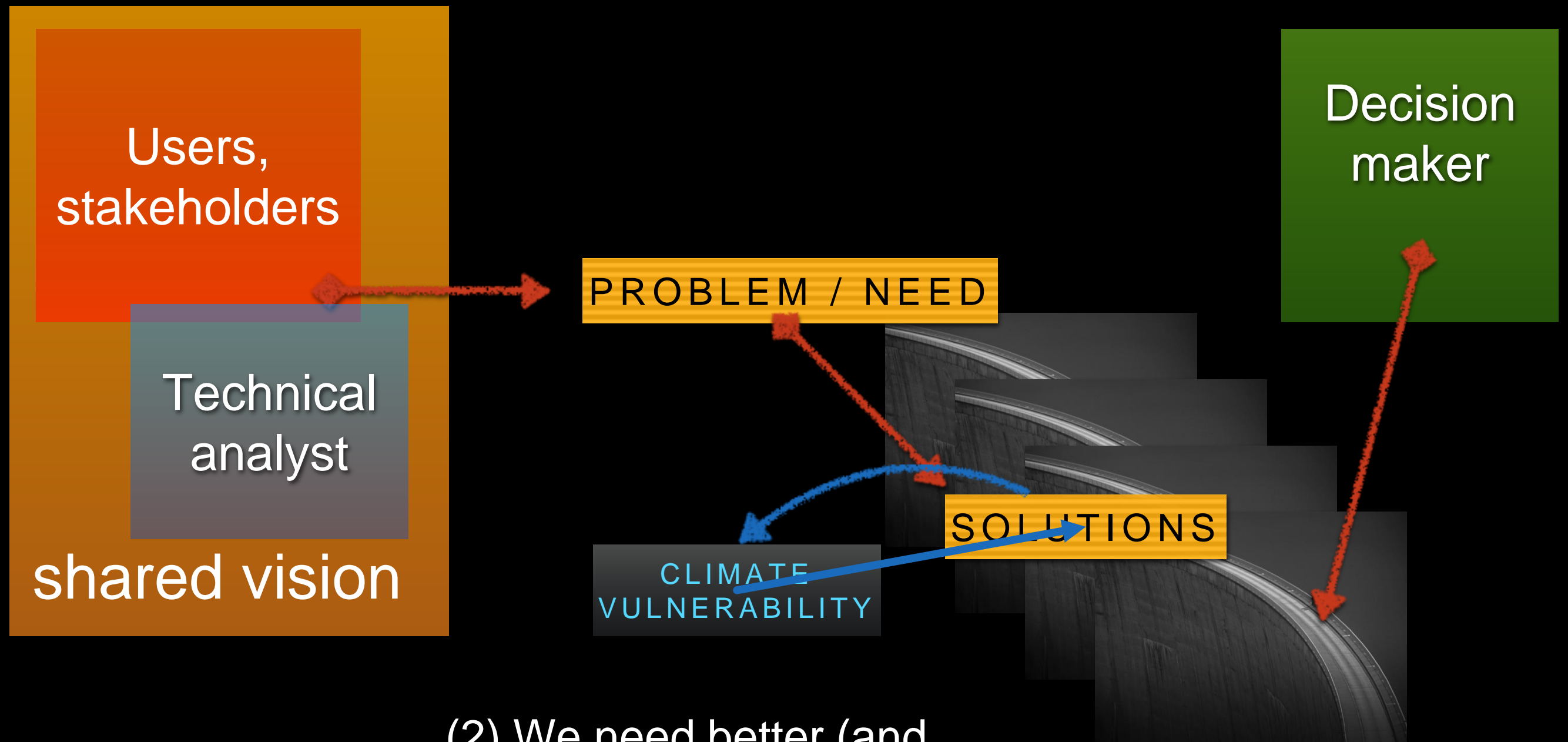
HOW WE USUALLY MAKE LONG-TERM WATER DECISIONS



HOW DO WE GET THERE?

<http://AGWAGuide.org/EEDS>

(1) users & stakeholders need to be involved much earlier.



(2) We need better (and probably multiple) solutions.

HOW WE DEFINE VULNERABILITY DEFINES OUR SOLUTIONS

TOP-DOWN ASSESSMENT

1. Use GCMs to define the water risks
2. Inform stakeholders of GCM output
3. Hope the GCMs are correct

MOST ADAPTATION
SINCE ~1995

4. Test & compare alternate solutions, pathways
3. Develop robust, flexible solutions
2. Use GCMs and other climate data to explore risk tolerance
1. Have stakeholders, decision makers define problem

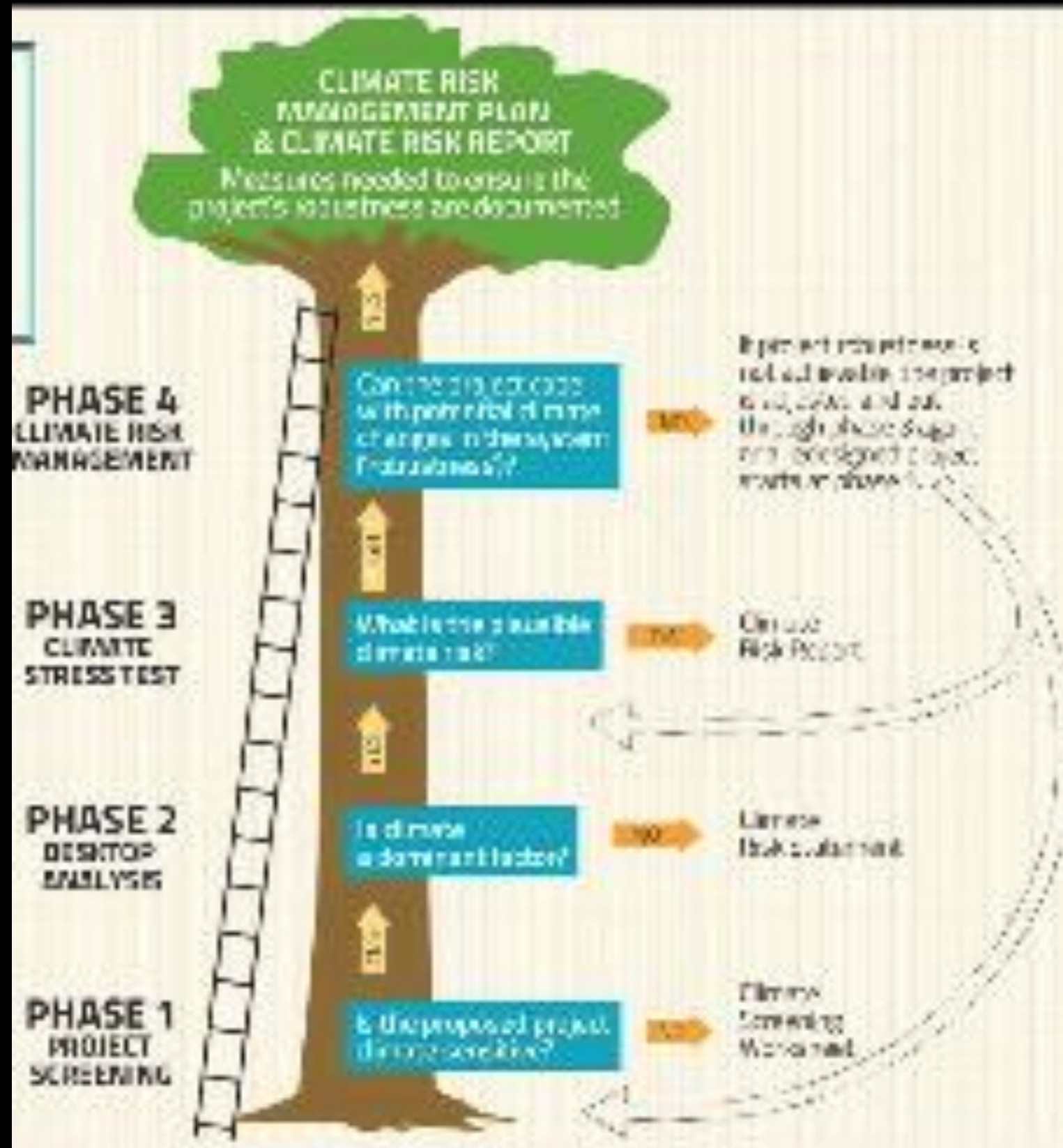
SINCE ~2010

BOTTOM-UP ASSESSMENT

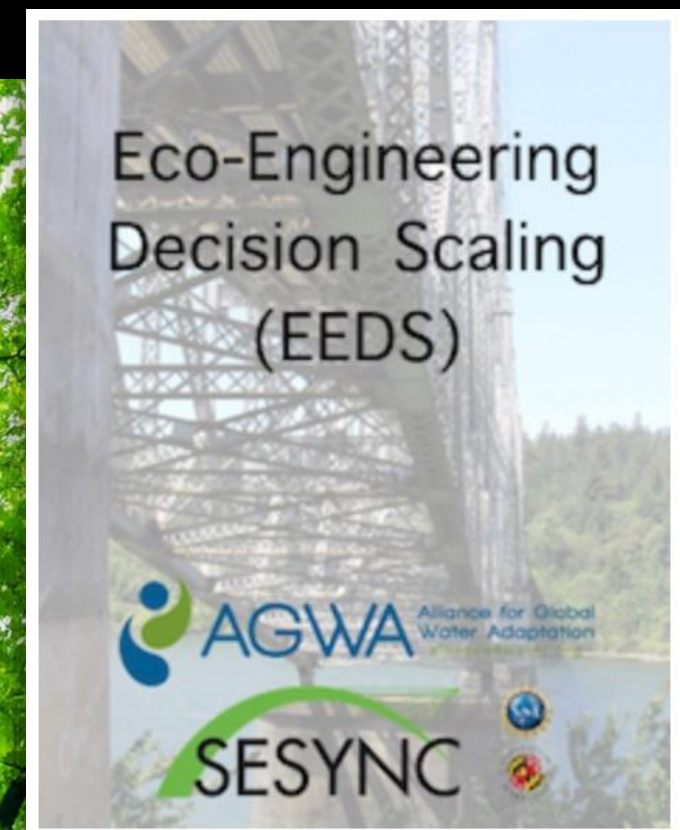
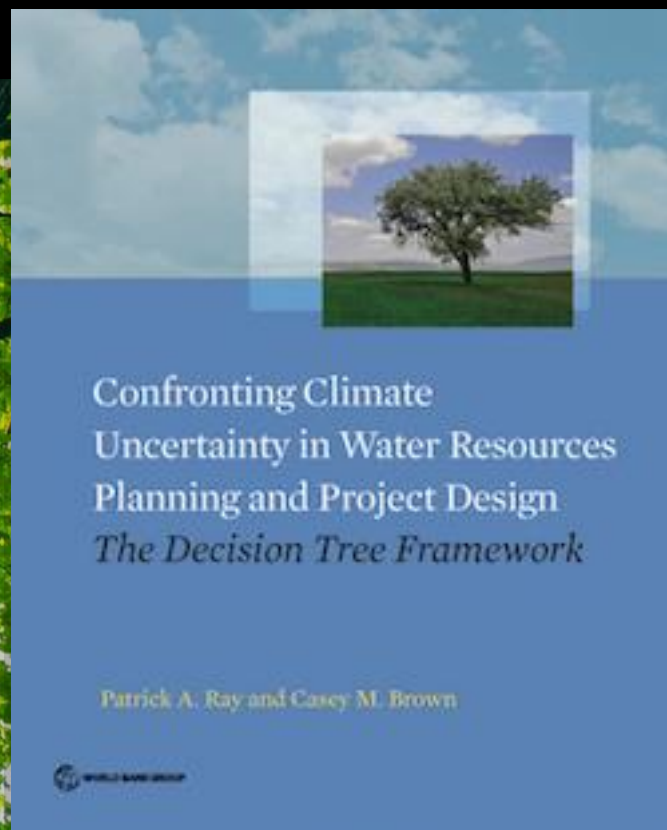
THE TRANSITION HAS BEGUN

Bottom-up approaches:

- Use existing decision making processes
- Define problems broadly, for broader solutions
- Work with rather than against uncertainty
- Helps the technical analyst to bridge knowledge & governance gaps



THREE METHODOLOGIES, ONE CORE APPROACH



Publishing 1 November 2016:
US Army Corps of Engineers,
Rijkswaterstaat (NL), Deltares,
University of Massachusetts @
Amherst

<http://AGWAGuide.org/risk/>



CRIDA: CONNECTING FOUR CIRCLES

SHARED VISION

stakeholder,
decision
maker needs

DECISION SCALING

robust
solutions

performance
indicators

stress
tests

- efficiency
- net present value
- productivity

ecological
limits

flexible
solutions

ECO-ENGINEERING

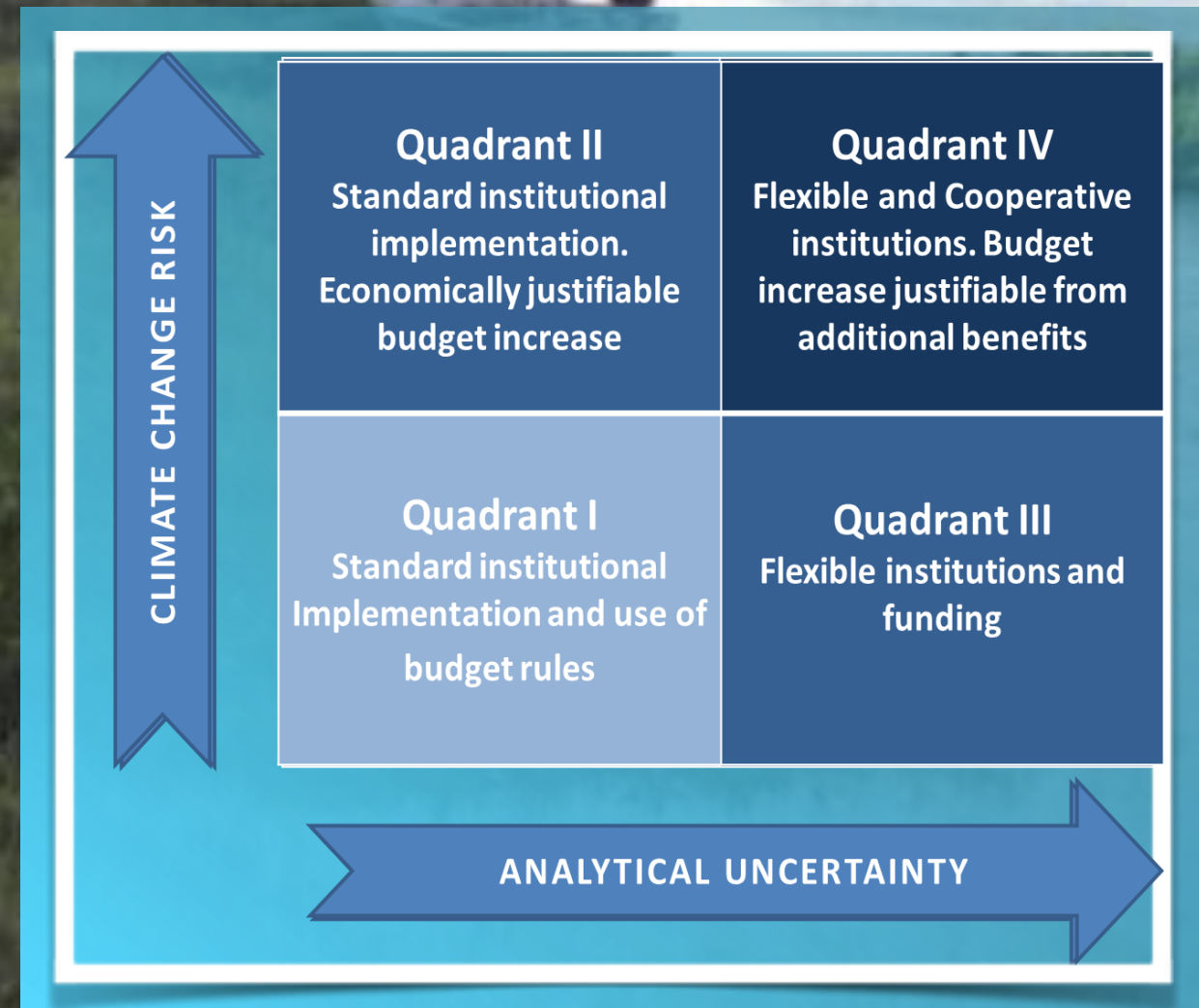
ADAPTATION PATHWAYS

SETTING STRATEGY: THE LEVEL OF CONCERN

Users,
stakeholders

Technical
analyst

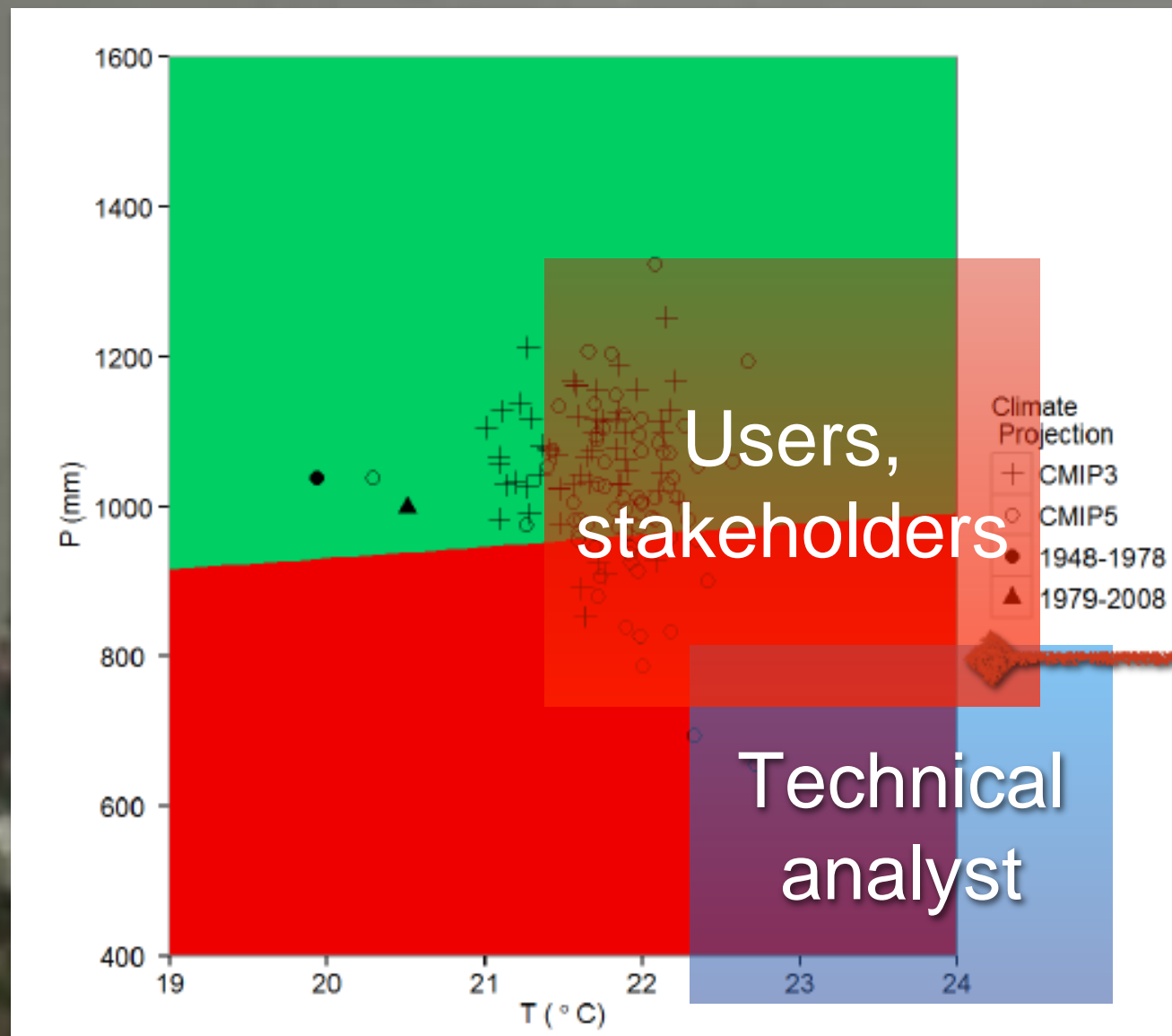
Decision
maker



Two key elements are then used to act on this strategy

KEY ELEMENT 1

DECISION SCALING: DEFINING ROBUST SOLUTIONS



- Users / stakeholders define system failure
- Can mix many forms of climate data: GCMs, modeled data, paleo data, TEK, hypothetical situations

PROBLEM / NEED

“PERFORMANCE INDICATORS”

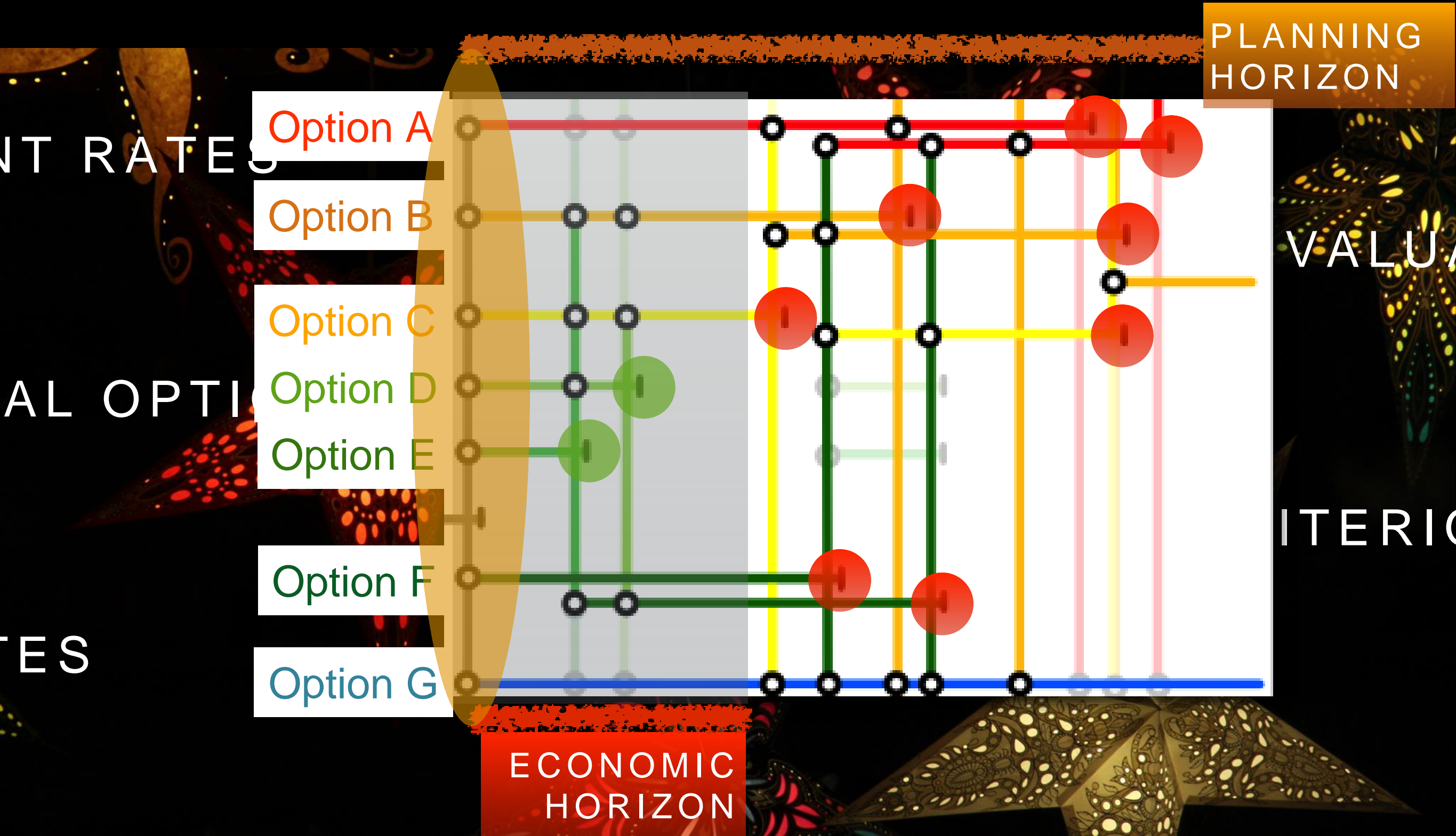
“STRESS TEST”

RISK TOLERANCE

[HTTP://AGWAGUIDE.ORG/EEDS/#DS](http://agwaguide.org/eeds/#DS)
[HTTPS://YOUTU.BE/WORTE_2H_R8](https://youtu.be/worte_2h_r8)

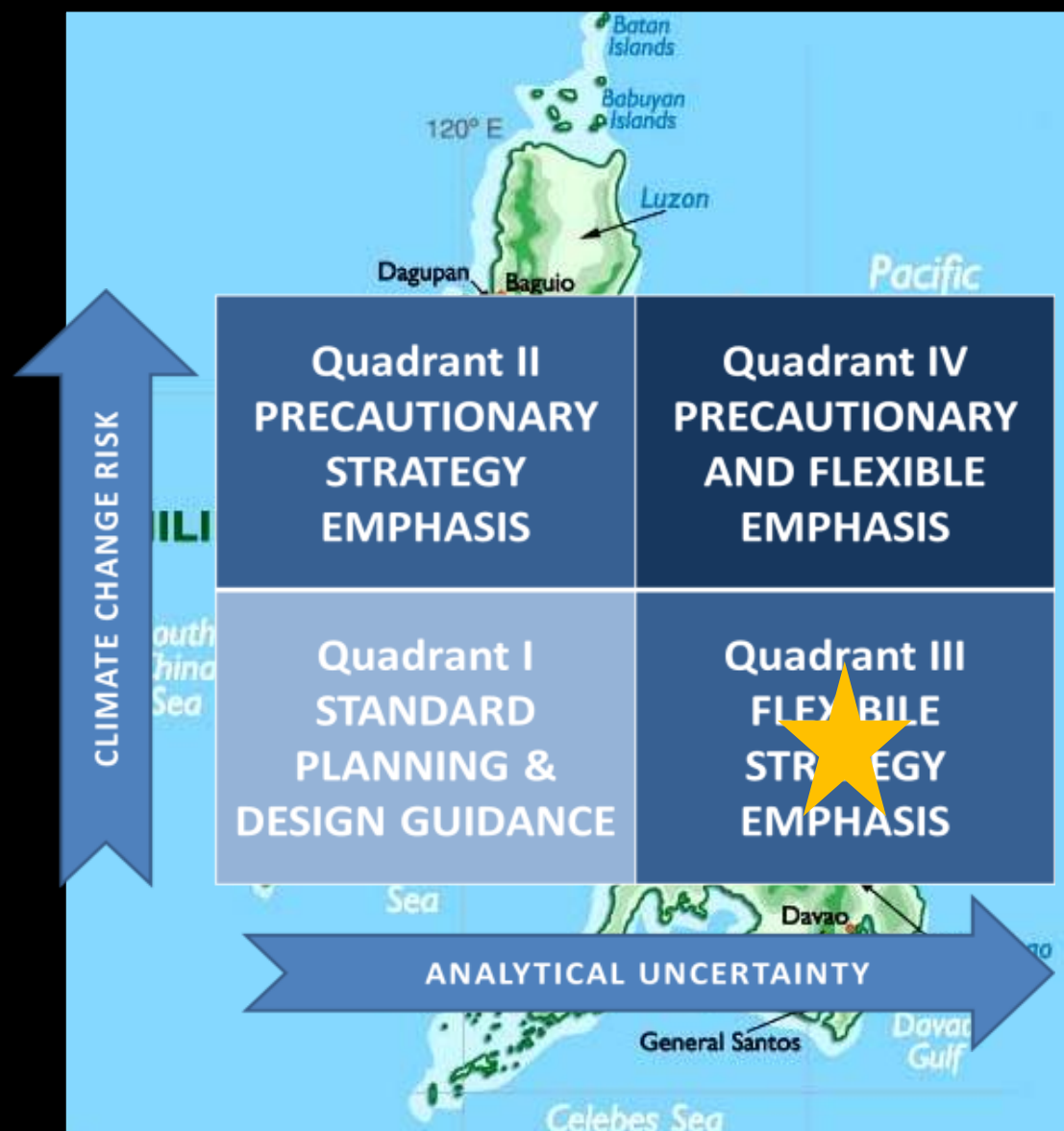
ELEMENT 2

ADAPTATION PATHWAYS:
DEFINING FLEXIBLE SOLUTIONS

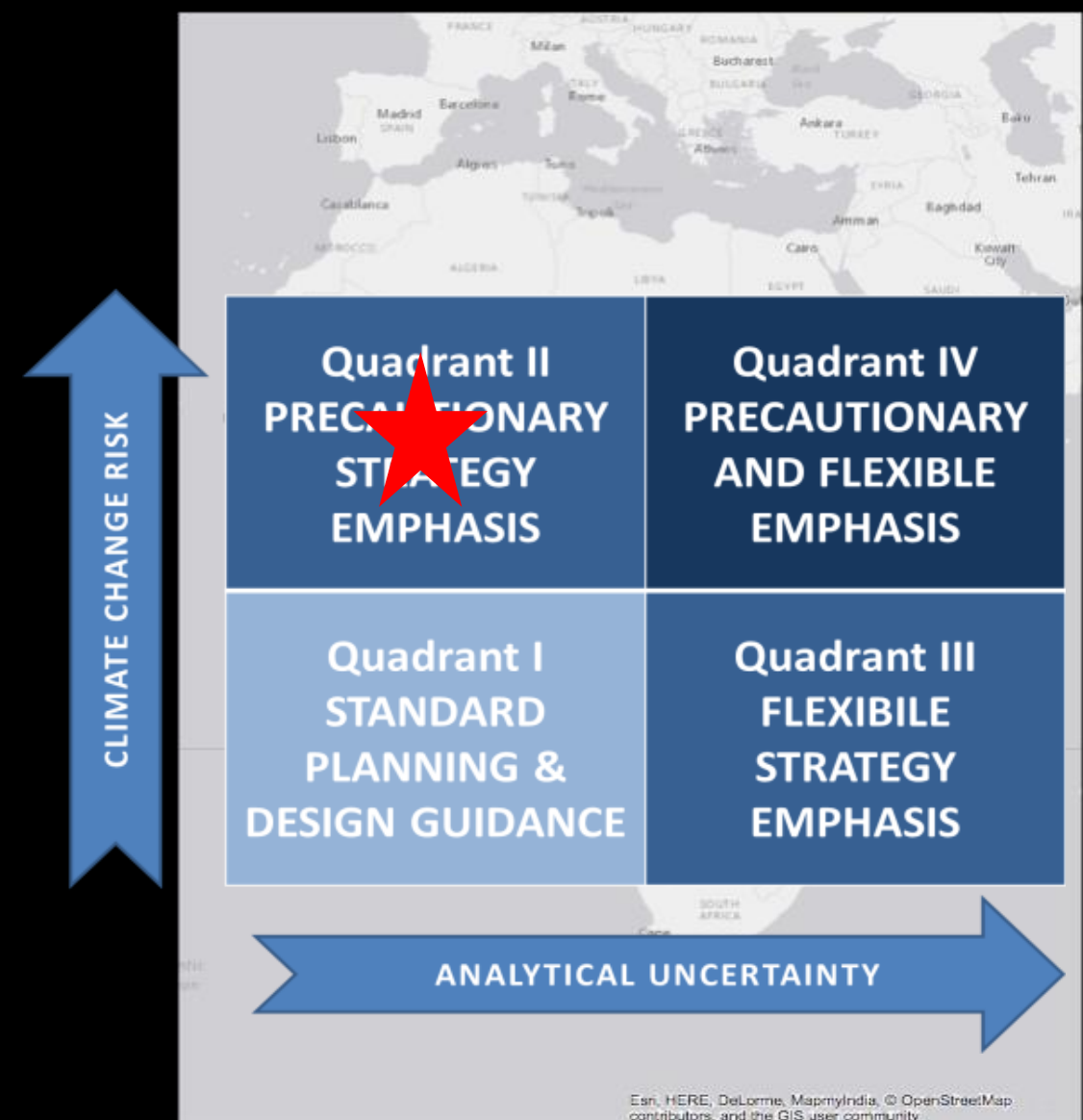


TWO EXAMPLES: MILLENNIUM CHALLENGE CORPORATION

Water Supply in Central Cebu, Philippines



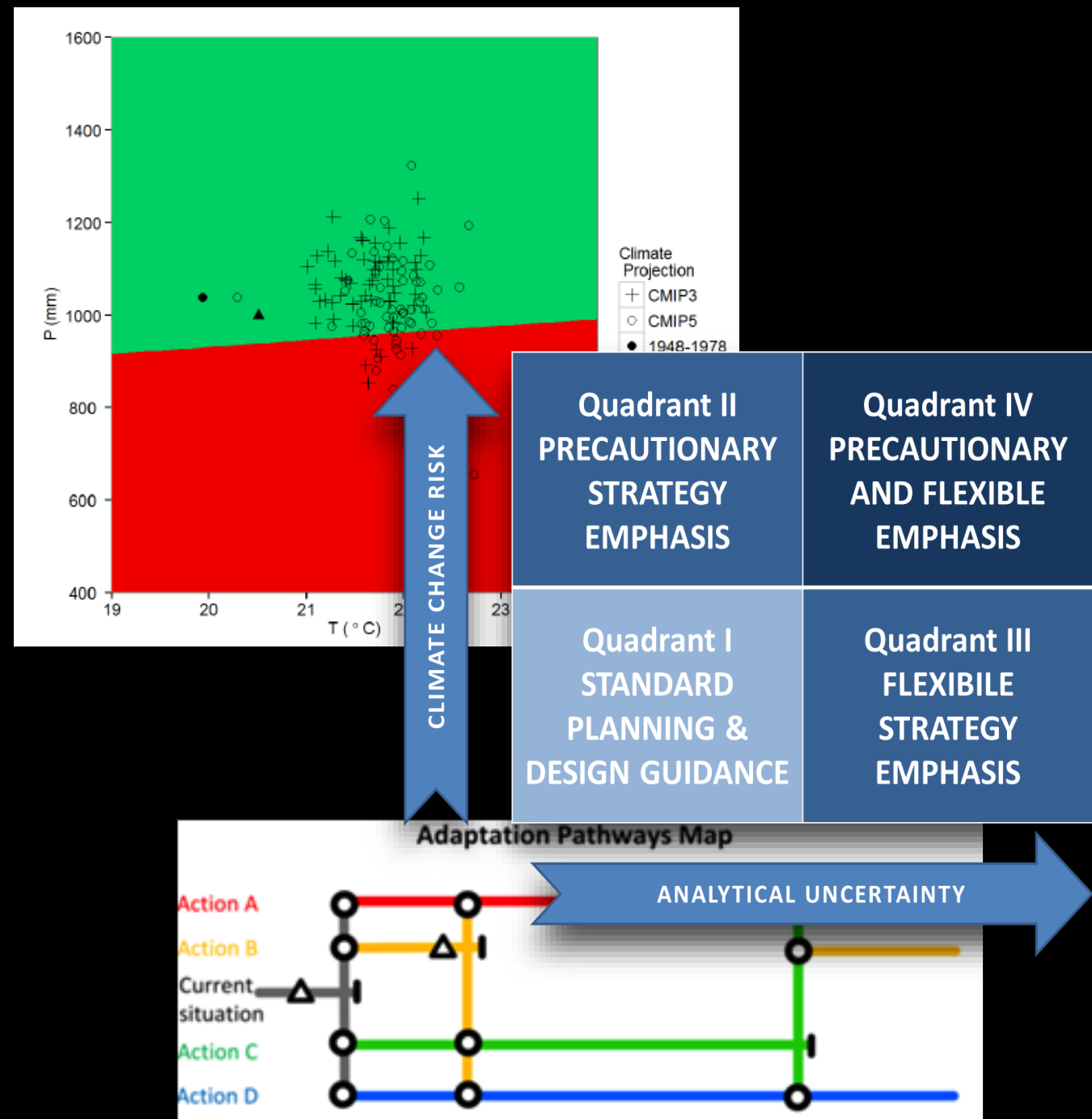
Ioland Water Treatment Plant, Zambia



WHAT DOES CRIDA ADD TO TRADITIONAL PLANNING?

Publishing November 2016

- A “mother document” to guide adoption
- Early, repeated engagement with users & stakeholders for a shared vision
- Strong linkages between technical, user, and decision maker groups
- A broad vulnerability assessment
- Guidance on the strategic direction
- Adaptation pathways for flexibility
- Guidance on economic evaluation & institutional capacity



FINANCING RESILIENCE

Launched May 2016: Water Climate Bond Standard

<http://AGWAGuide.org/greenbonds/>

ARTICLES GENERAL

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San Francisco Makes History With New Water Bond

The city is leveraging the power of green bonds by issuing the first certified under the Water Climate Bonds Standard to help fund projects to repair the city's aging water infrastructure, including the stormwater and sewer systems.

WRITTEN BY
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Climate Bonds



THANK YOU!



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