Decisions for the Decades:

A serious game on long-term decision making

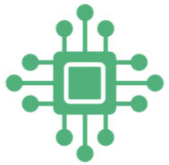
Gegham Qalajyan via Getty Images

RAND CORPORATION

Seattle Public Utilities

Quantitative information is indispensable for managing many of society's most pressing policy challenges

Climate change



Governing technology

Inequality and inequity

Threats to democracy

Managing risk

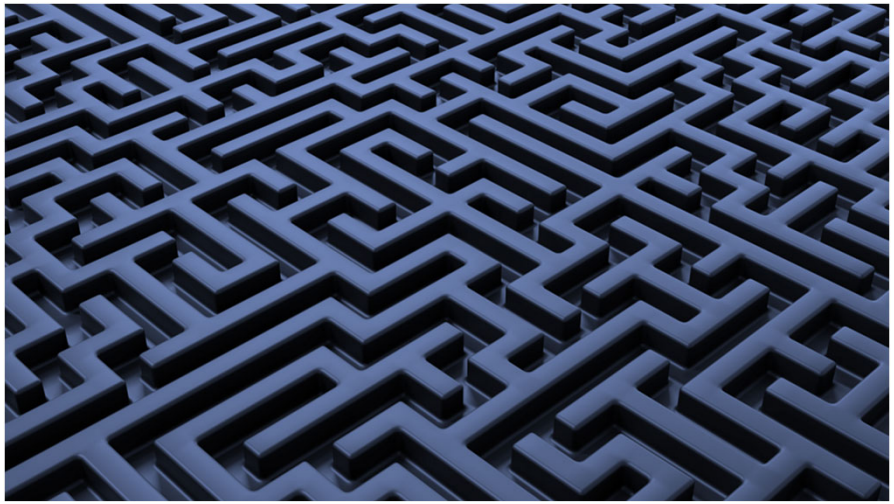
But the available information is often uncertain, incomplete, and contested

“Serious games” can help improve risk management

Powerful methods now exist to help manage risk under conditions of deep uncertainty

Data and argument alone are insufficient for effective risk communication

Serious games provide a compelling means to help disseminate new methods for risk management



Decisions for the Decades

How do we make smart long-term decisions?

RAND CORPORATION

THE WORLD BANK

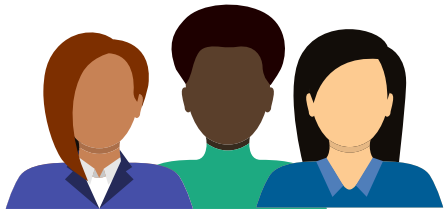
RED CROSS/RED CRESCENT CLIMATE CENTRE

International Federation of Red Cross and Red Crescent Societies

The Netherlands Red Cross

Special thanks to Pablo Suarez and Janot Mendler de Suarez (Red Cross / Red Crescent Climate Centre)

Your role….



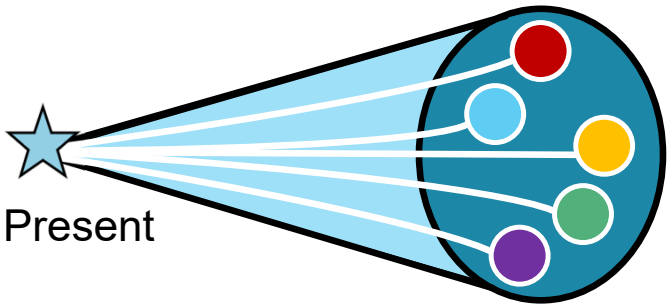
The principal planner

of a city

within a larger region

Your objective….
prepare your community for the future

The Cone of Uncertainty



- What will the future bring?
- Will it be different from the past? In what way?
- What investment decisions should we make?
- Will we be prepared?

Credit: WUCA and Denver Water

The Set-up

Making Decisions

City decisions are independent

- Use individual *City* boards and black beans

Regional decisions require teamwork

- Use single *Region* board and white beans

CITY BOARD

If you roll a flood: lose 1 bean

Earn 1 Prosperity Point per bean, ***but only if no crisis***

If you roll a drought: lose 1 bean

How to win

Winning City

- **Fewest crises**
- Only 1 city winner per region
- Tiebreaker within region: city with most prosperity

	2. INVESTMENT DECISIONS				3. OBSERVATIONS	4. RESULTS	
Decade	**FLOOD Protection (0–9)**	**INVESTMENT & DEVELOPMENT (1–10)**	**DROUGHT Protection (0–9)**	Choose **Insurance?**	**Annual Precipitation**	**# Crises**	**# *Prosperity Points***
1							
2				Yes / No			
3				Yes / No			
4				Yes / No			
				TOTAL:			

REGION BOARD

If you roll a flood: lose 1 bean

Earn 1 Prosperity Point per bean, ***but only if no crisis***

If you roll a drought: lose 1 bean

How to win

Winning Region

- **Most Prosperity**
- Tiebreaker: Region with fewest crises

	2. INVESTMENT DECISIONS				3. OBSERVATIONS	4. RESULTS	
Decade	**FLOOD Protection (0–9)**	**INVESTMENT & DEVELOPMENT (1–10)**	**DROUGHT Protection (0–9)**	Choose **Insurance?**	**Annual Precipitation**	**# Crises**	***# Prosperity Points***
1							
2				Yes / No			
3				Yes / No			
4				Yes / No			
				TOTAL:			

Steps of the Game

1. Receive scientific information
2. Make decisions
3. Record weather observations
4. Tally results

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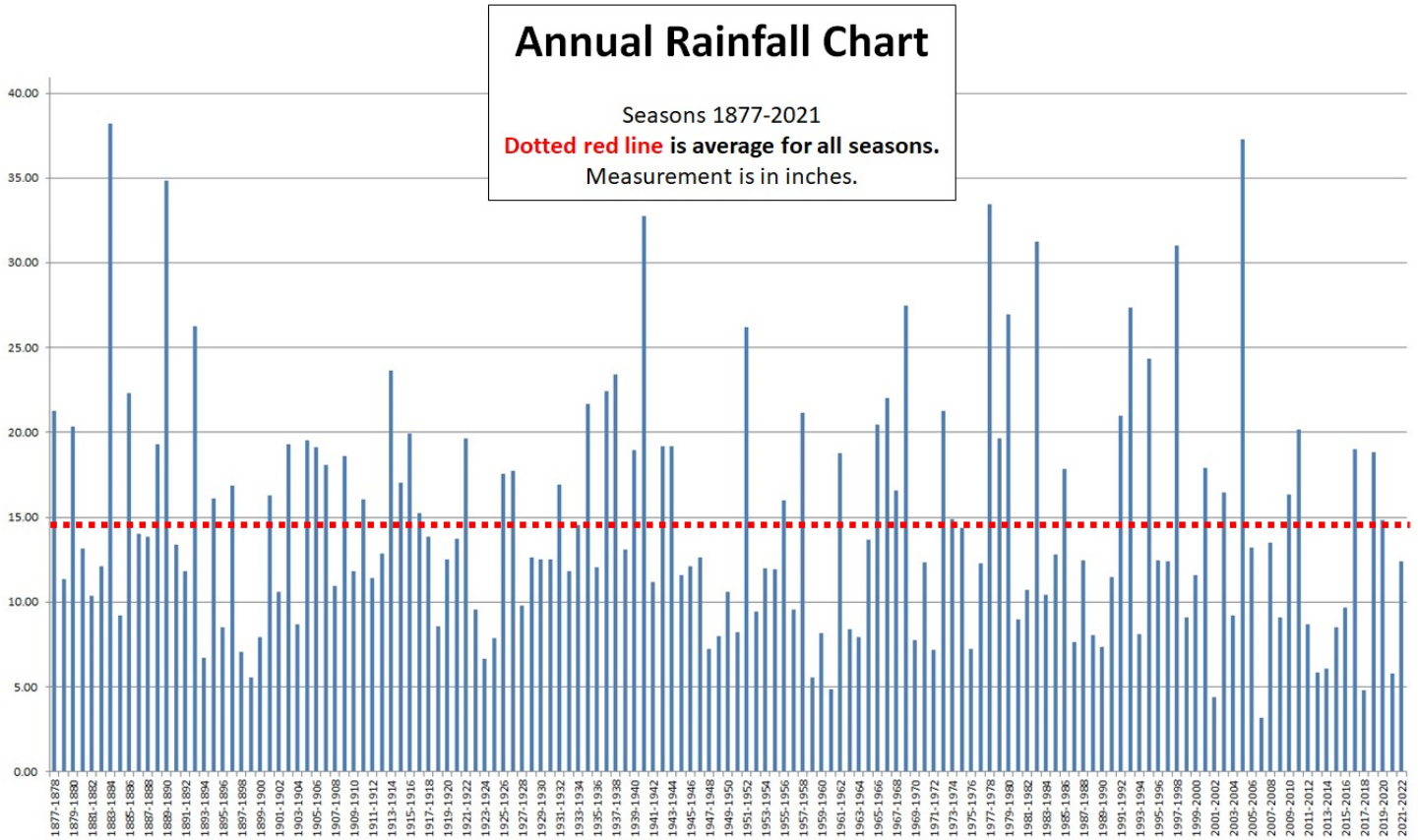
1 Scientific Information



1 Scientific Information

Your source of information

? = **Flood**

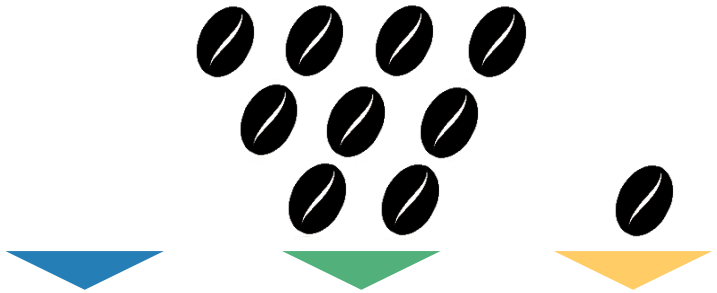
? = **Drought**

2 Make decisions

Allocate resources for each decade (10 beans total)

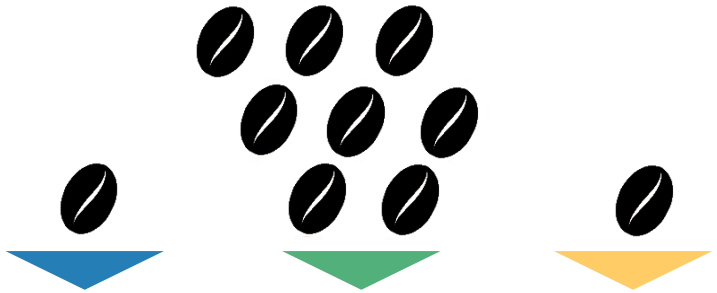
Decade	2. INVESTMENT DECISIONS				3. OBSERVATIONS	4. RESULTS	
	FLOOD Protection (0–9)	INVESTMENT & DEVELOPMENT (1–10)	DROUGHT Protection (0–9)	Choose Insurance?	Annual Precipitation	# Crises	# *Prosperity Points*
1							
2				Yes / No			
3				Yes / No			
4				Yes / No			
					TOTAL:		

2 Make decisions



Decade	2. INVESTMENT DECISIONS				3. OBSERVATIONS	4. RESULTS	
	FLOOD Protection (0–9)	INVESTMENT & DEVELOPMENT (1–10)	DROUGHT Protection (0–9)	Choose Insurance?	Annual Precipitation	# Crises	# *Prosperity Points*
1	0	9	1				
2				Yes / No			
3				Yes / No			
4				Yes / No			
					TOTAL:		

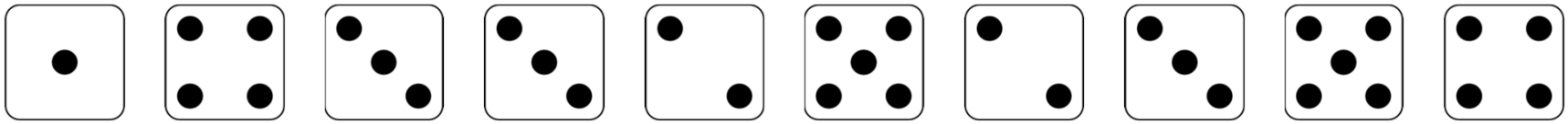
2 Make decisions



Decade	2. INVESTMENT DECISIONS				3. OBSERVATIONS	4. RESULTS	
	FLOOD Protection (0–9)	INVESTMENT & DEVELOPMENT (1–10)	DROUGHT Protection (0–9)	Choose Insurance?	Annual Precipitation	# Crises	# *Prosperity Points*
1	1	8	1				
2				Yes / No			
3				Yes / No			
4				Yes / No			
					TOTAL:		

3 Record observations

10 rolls = 10 years of precipitation



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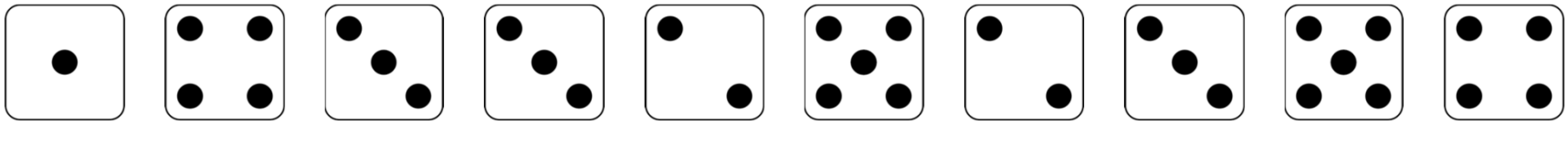
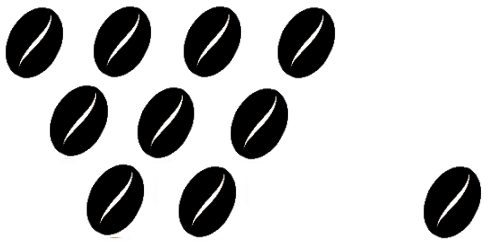
10 rolls = 10 years of precipitation



Decade	2. INVESTMENT DECISIONS: FLOOD Protection (0–9)	INVESTMENT & DEVELOPMENT (1–10)	DROUGHT Protection (0–9)	Choose Insurance?	3. OBSERVATIONS: Annual Precipitation	4. RESULTS: # Crises	4. RESULTS: # *Prosperity Points*
1	0	9	1		1, 4, 3, 3, 2, 5, 2, 3, 5, 4		
2				Yes / No	One Drought		
3				Yes / No			
4				Yes / No			
					TOTAL:		

4 Tally results

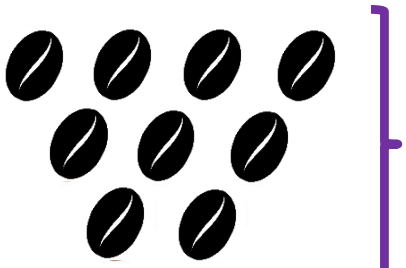


Since one drought occurs, we "consume" one protection bean

We protected against 1 drought

Decade	2. INVESTMENT DECISIONS				3. OBSERVATIONS	4. RESULTS	
	FLOOD Protection (0–9)	INVESTMENT & DEVELOPMENT (1–10)	DROUGHT Protection (0–9)	Choose Insurance?	Annual Precipitation	# Crises	# Prosperity Points
1	0	9	1				
2				Yes / No			
3				Yes / No			
4				Yes / No			
					TOTAL:		

4 Tally results



We get 9 Prosperity Points for the remaining beans!

Decade	2. INVESTMENT DECISIONS: FLOOD Protection (0–9)	2. INVESTMENT DECISIONS: INVESTMENT & DEVELOPMENT (1–10)	2. INVESTMENT DECISIONS: DROUGHT Protection (0–9)	Choose Insurance?	3. OBSERVATIONS: Annual Precipitation	4. RESULTS: # Crises	4. RESULTS: # Prosperity Points
1	0	9	1				
2				Yes / No			
3				Yes / No			
4				Yes / No			
					TOTAL:		

4 Tally results

But what if we had a second drought?

Decade	2. INVESTMENT DECISIONS: FLOOD Protection (0–9)	2. INVESTMENT DECISIONS: INVESTMENT & DEVELOPMENT (1–10)	2. INVESTMENT DECISIONS: DROUGHT Protection (0–9)	3. OBSERVATIONS: Choose Insurance?	3. OBSERVATIONS: Annual Precipitation	4. RESULTS: # Crises	4. RESULTS: # Prosperity Points
1							
2				Yes / No			
3				Yes / No			
4				Yes / No			
					TOTAL:		

4 Tally results

Each shortage of protection is a new crisis!

Not enough protection means…
…a social and environmental crisis
…and 0 Prosperity Points!

	2. INVESTMENT DECISIONS				3. OBSERVATIONS	4. RESULTS	
Decade	FLOOD Protection (0–9)	INVESTMENT & DEVELOPMENT (1–10)	DROUGHT Protection (0–9)	Choose Insurance?	Annual Precipitation	# Crises	# Prosperity Points
1							
2				Yes / No			
3				Yes / No			
4				Yes / No			
					TOTAL:		

4 Tally results

If one drought occurs:

City 1 x9 x1 0 x9

City 2 x2 x8 x1 0

Decade	2. INVESTMENT DECISIONS: FLOOD Protection (0–9)	2. INVESTMENT DECISIONS: INVESTMENT & DEVELOPMENT (1–10)	2. INVESTMENT DECISIONS: DROUGHT Protection (0–9)	Choose Insurance?	3. OBSERVATIONS: Annual Precipitation	4. RESULTS: # Crises	4. RESULTS: # *Prosperity Points*
1							
2				Yes / No			
3				Yes / No			
4				Yes / No			
					TOTAL:		

Repeat steps 1 through 4

1. Receive scientific information
2. Make decisions
3. Record weather observations
4. Tally results

Key Rules

Simplification of reality

No challenging the rules!

Decisions are individual

No consulting on City Decisions

Do collaborate on Regional Decisions

We will play 4 decades of decision making

Each round is 10 years

Winning the game

Winning City:

- *Cities with fewest crises for each Region*
- *Only 1 City winner per Region*
- *Tiebreaker within Region: City with the most Prosperity Points*

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1 Winning Region:

- *Most Prosperity Points*
- *Tiebreaker: Region with fewest crises*

There are prizes!!!

Let’s Play!!!

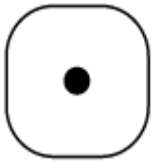
Nipharnia Getty Images

Round 1
(years 1-10)

1 Scientific Information

Historical precipitation

= Flood

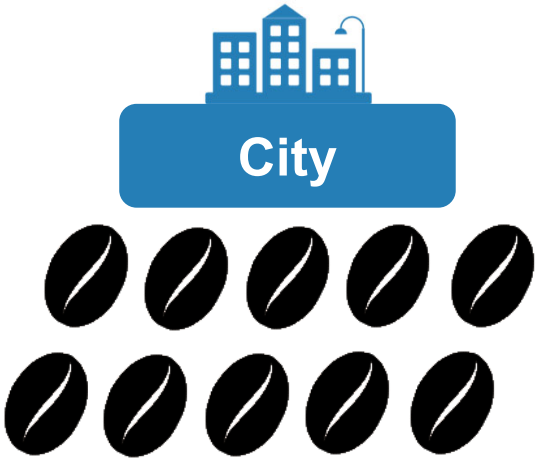


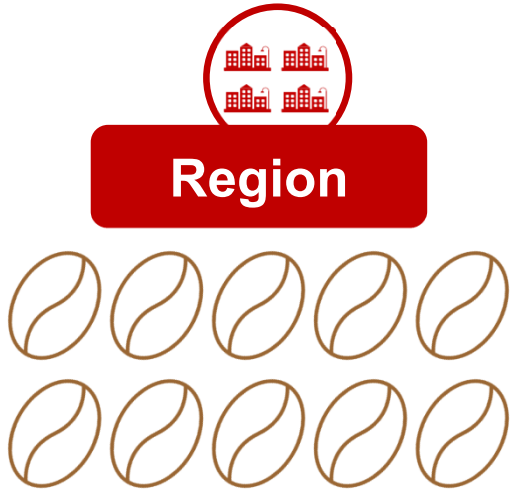
= Drought

2 Make decisions

Make investments for the coming decade

Allocate the beans and record your investments





3 Record observations

Ten years of precipitation occur

×10

*Use one die for the entire table—applies to City and Region

4 Tally results

Record results

Decade	2. INVESTMENT DECISIONS: FLOOD Protection (0–9)	2. INVESTMENT DECISIONS: INVESTMENT & DEVELOPMENT (1–10)	2. INVESTMENT DECISIONS: DROUGHT Protection (0–9)	2. INVESTMENT DECISIONS: Choose Insurance?	3. OBSERVATIONS: Annual Precipitation	4. RESULTS: # Crises	4. RESULTS: # *Prosperity Points*
1							
2				Yes / No			
3				Yes / No			
4				Yes / No			
					TOTAL:		

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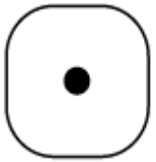
1 Scientific Information

Historical precipitation

= Flood



= Drought

2 Make decisions

New investment option: Insurance

Insurance

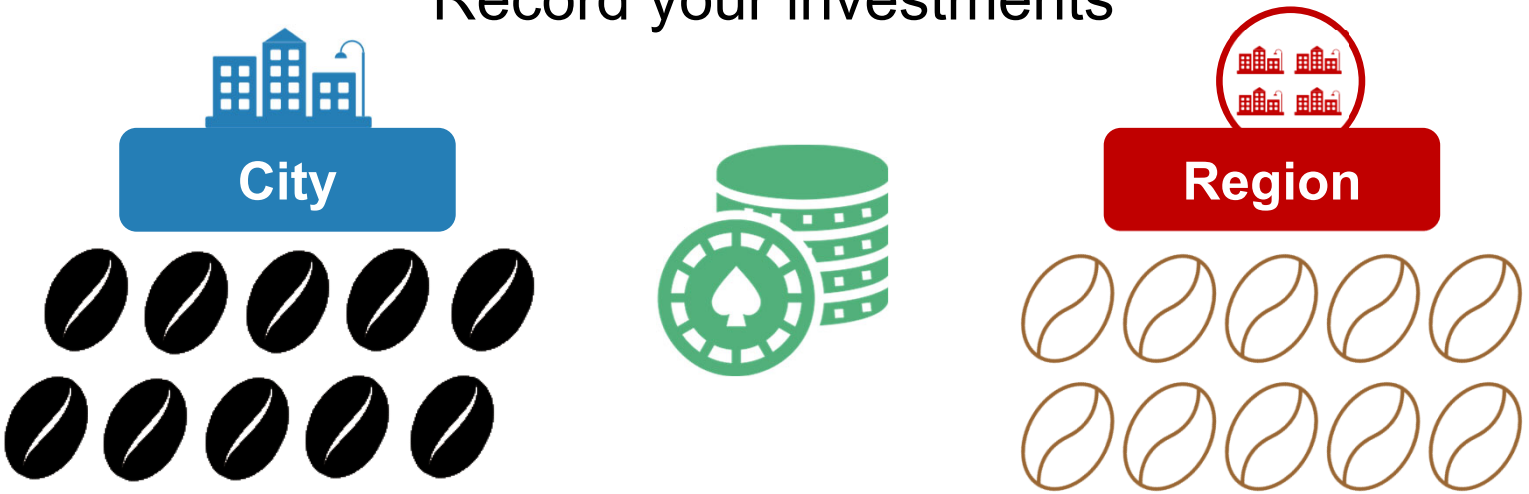
- Insurance insulates you from crises
- You are guaranteed a fixed number of prosperity beans, no matter how many floods or droughts occur
- How many beans would you pay for this insurance?

….Insurance costs 7 beans, and will result in a guaranteed 3 prosperity points and no crises

2 Make decisions

Make investments for the coming decade

Allocate the beans or choose insurance
Record your investments



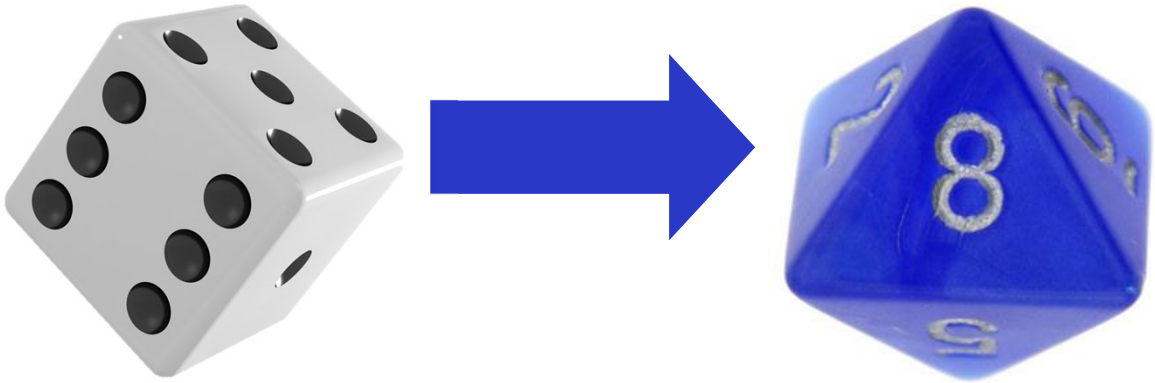
3 Record observations

***TWO* years of precipitation occur**

×2 only

Have you heard about…

CLIMATE CHANGE?



6 = Flood

1 2 3 = Drought

3 Record observations

Eight more years of precipitation

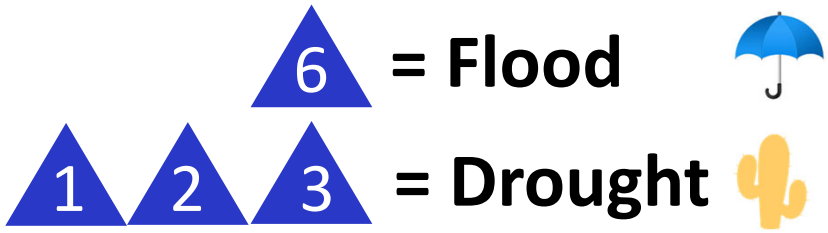
×8

6 = Flood

1 2 3 = Drought

4 Tally results

Record results



Decade	2. INVESTMENT DECISIONS: FLOOD Protection (0–9)	2. INVESTMENT DECISIONS: INVESTMENT & DEVELOPMENT (1–10)	2. INVESTMENT DECISIONS: DROUGHT Protection (0–9)	2. INVESTMENT DECISIONS: Choose Insurance?	3. OBSERVATIONS: Annual Precipitation	4. RESULTS: # Crises	4. RESULTS: # *Prosperity Points*
1							
2				Yes / No			
3				Yes / No			
4				Yes / No			
					TOTAL:		

bdurrahimcrz via Getty Images

1

Scientific Information

Precipitation under climate change

6 = Flood

1 2 3 = Drought

2 Make decisions

Buy insurance?

Insurance

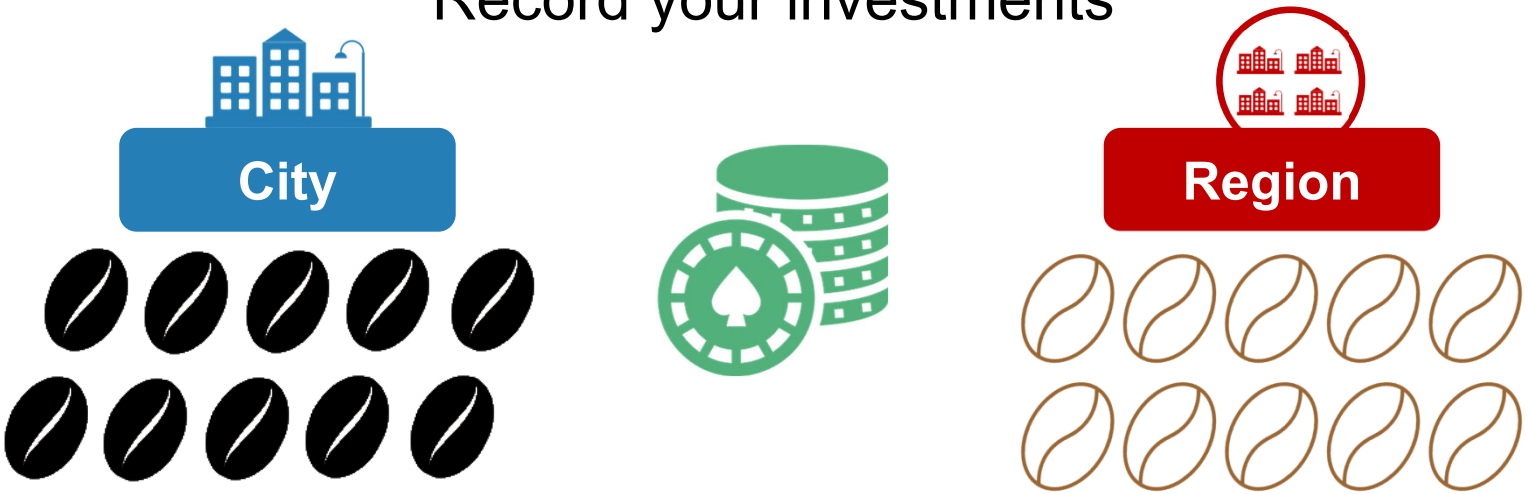
- How many beans will you spend for this insurance?

The cost of insurance has increased! It now costs eight beans and will result in a guaranteed two prosperity points and zero crises.

2 Make decisions

Make investments for the coming decade

Allocate the beans or choose insurance
Record your investments



3 Record observations

Ten years of precipitation occur

~~×2~~ ×10

4 Tally results

Record results

6 = Flood

1 2 3 = Drought

Decade	2. INVESTMENT DECISIONS				3. OBSERVATIONS	4. RESULTS	
	FLOOD Protection (0–9)	INVESTMENT & DEVELOPMENT (1–10)	DROUGHT Protection (0–9)	Choose Insurance?	Annual Precipitation	# Crises	# *Prosperity Points*
1							
2				Yes / No			
3				Yes / No			
4				Yes / No			
					TOTAL:		

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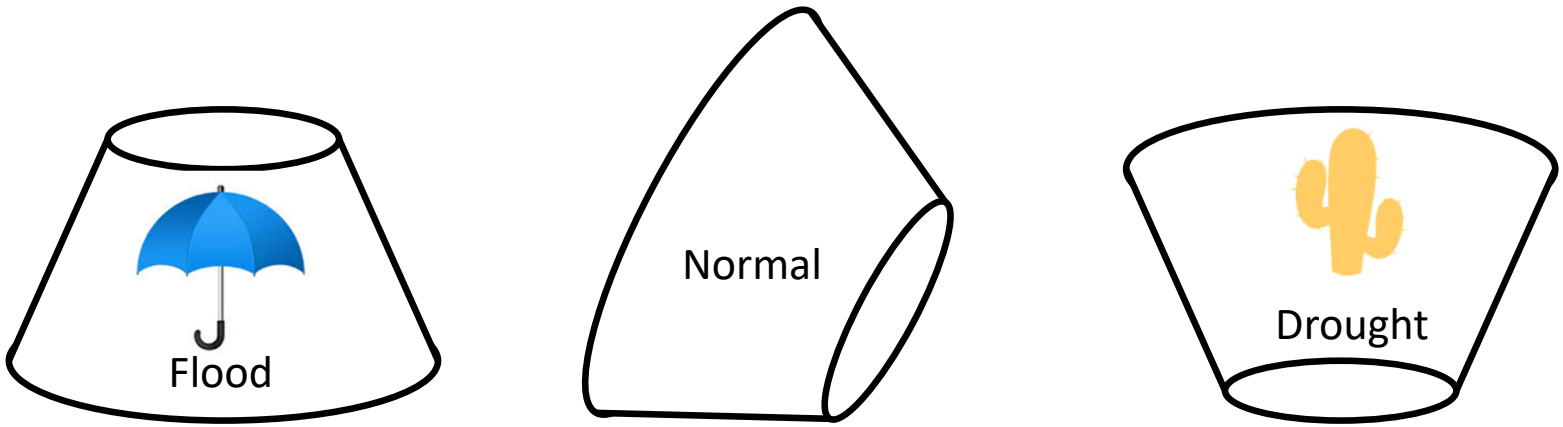
1 Scientific Information

A NEW MODEL for climate change



2 Make decisions

Buy insurance?

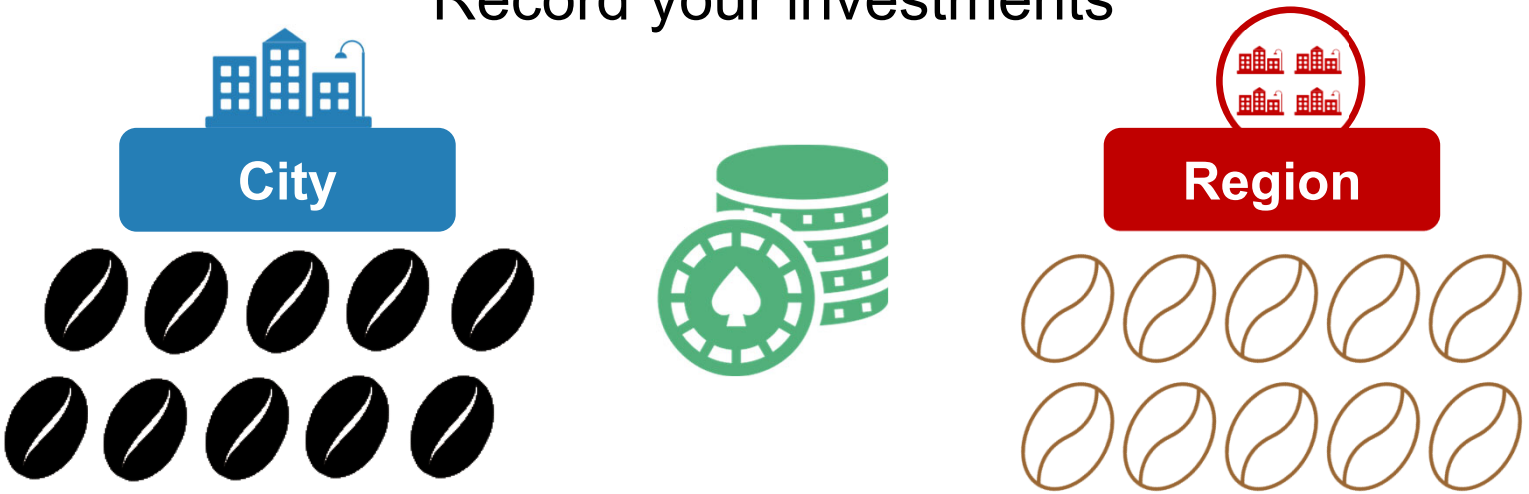
Insurance

Insurance is available. Cost is eight beans, and results in guaranteed two prosperity points and no crises.

2 Make decisions

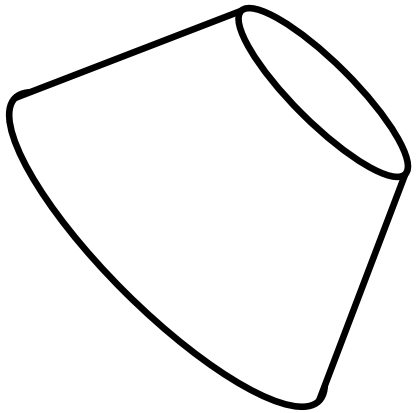
Make investments for the coming decade

Allocate the beans or choose insurance
Record your investments



3 Record observations

Ten years of precipitation



Climate will remain deeply uncertain…

4 Tally results

Decades 1–3 ONLY

Decade	2. INVESTMENT DECISIONS				3. OBSERVATIONS	4. RESULTS	
	FLOOD Protection (0–9)	INVESTMENT & DEVELOPMENT (1–10)	DROUGHT Protection (0–9)	Choose Insurance?	Annual Precipitation	# Crises	# *Prosperity Points*
1							
2				Yes / No			
3				Yes / No			
4				Yes / No			
					TOTAL:		

Fewest Crises = City winner!

Most Prosperity Points = Region winner!

One last task..

In your groups, identify:

- One thing you learned from the game, and
- One thing you felt

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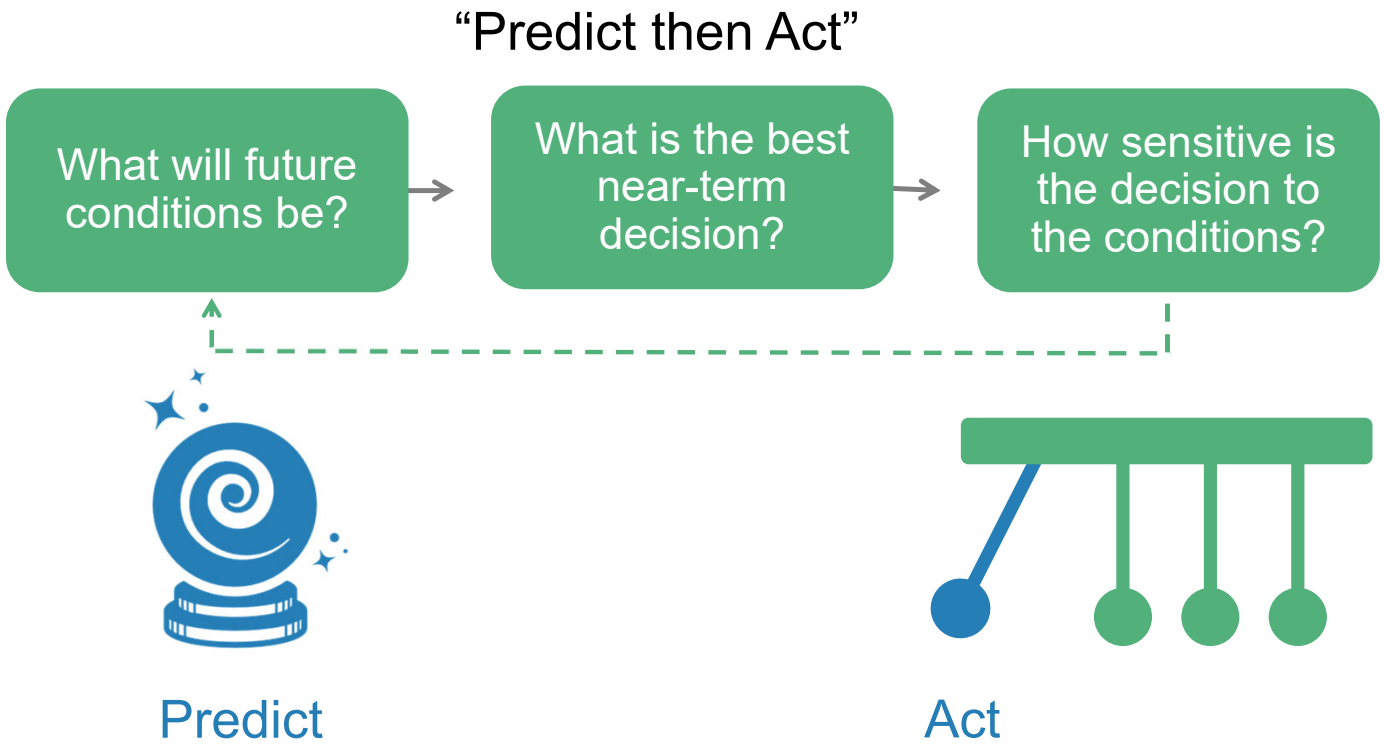
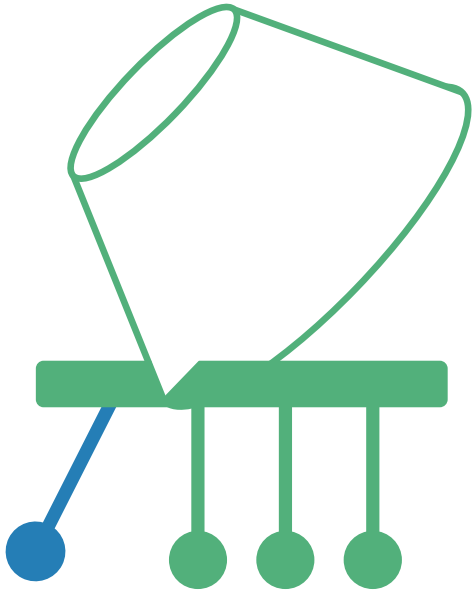
We can act to shape the future,
even when we can’t predict what that future will be

Policy analysis traditionally begins with a consensus understanding of the future



“Predict then Act” can break down when uncertainties are deep

Predict



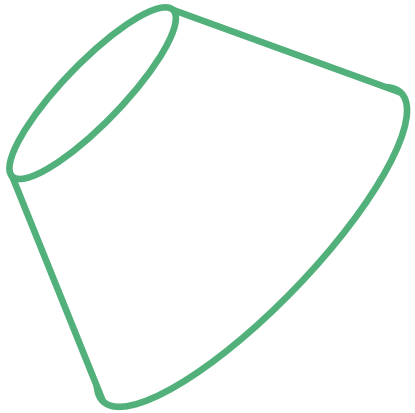
Act

“Predict then Act” can break down when uncertainties are deep

Uncertainties
are underestimated

Competing analyses can
contribute to gridlock

Predict-then-act distracts from the
main task of working together to
identify creative solutions



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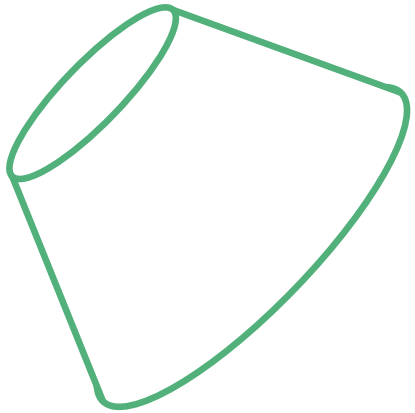
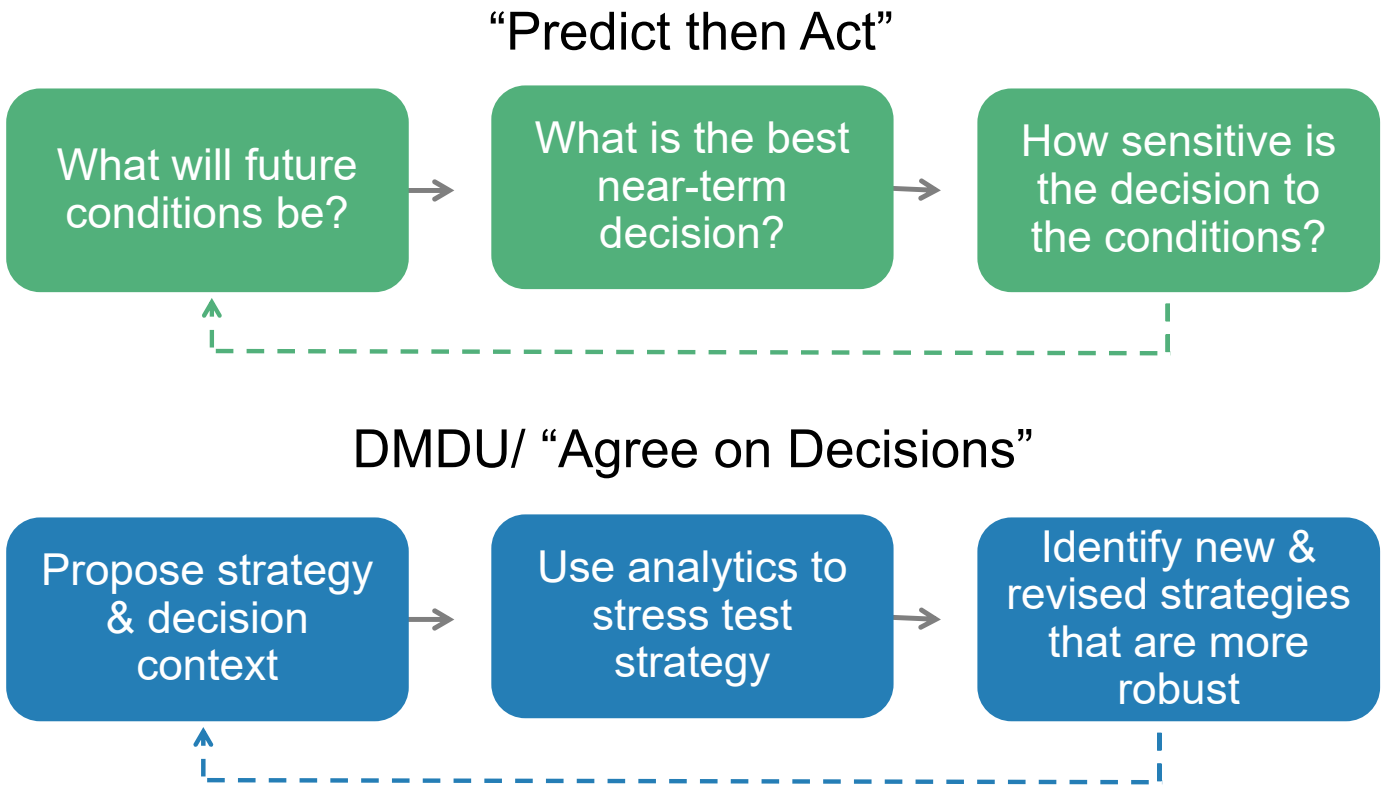


Deep uncertainty occurs when decisionmakers don’t know
or don’t agree on the likelihood of alternative futures or
how actions are related to consequences

Decision Making Under Deep Uncertainty (DMDU) conducts the analysis in reverse order



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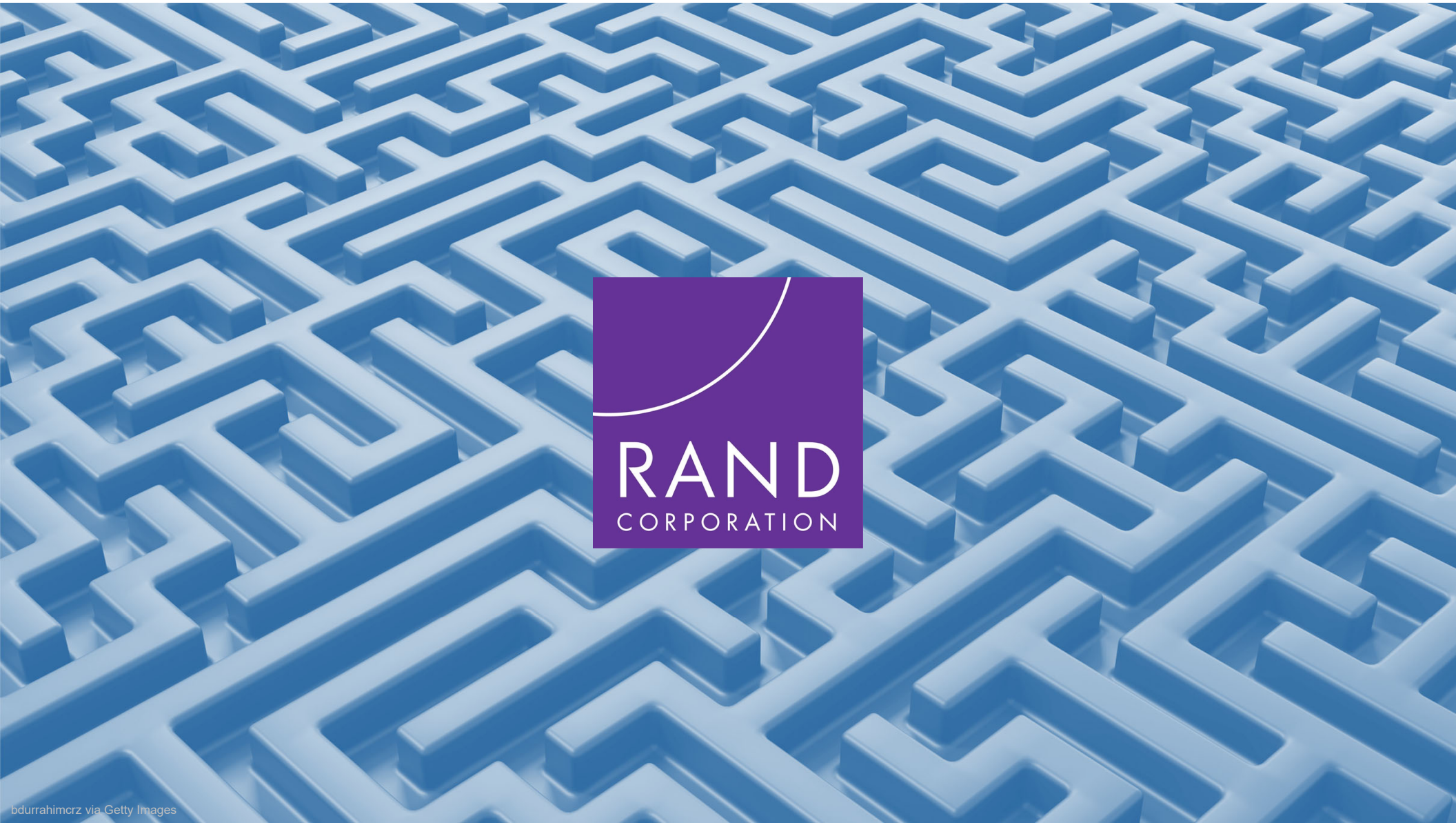

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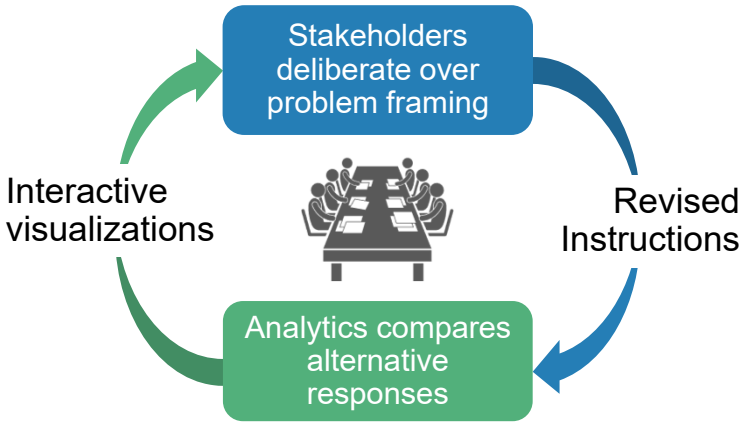
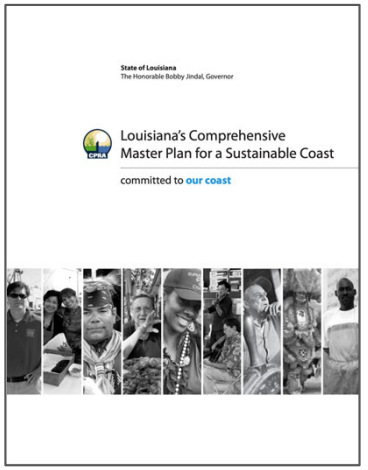
The game motivates DMDU approaches for collaborative, evidence-based long-term decision making

Multi-scenario, multi-objective DMDU analytics provides "prothesis of the imagination"

Deliberation with analysis engages groups with diverse interests, values, and world views

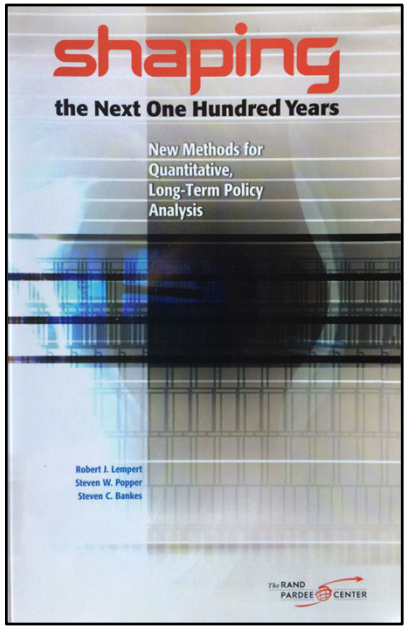


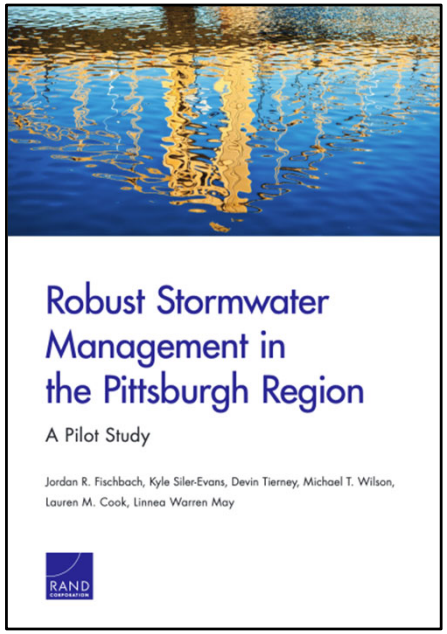
Help build consensus on bold plans

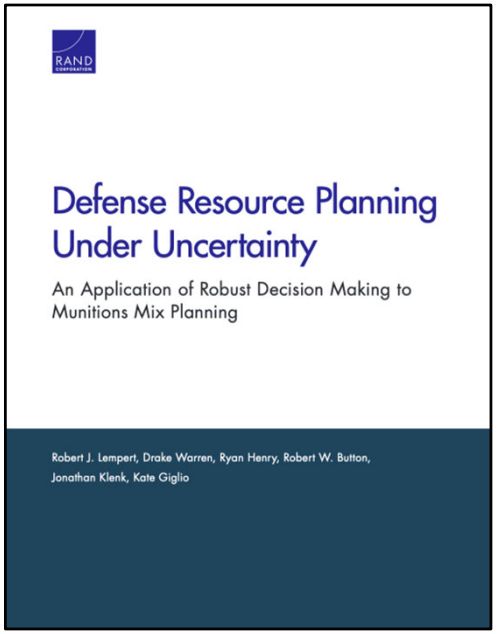


Helps implement *long-term policy analysis*, in which reflecting on potential events decades or more in the future causes policy makers to choose near-term actions different than those they would otherwise pursue

RAND applies these methods in many areas







Learn more

Frederick S. Pardee Center for Longer Range Global Policy and the Future Human Condition

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