

Adaptive Management & Dynamic Adaptive Policy Pathways

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TPM ResilienceLab

Reference point for interdisciplinary research to promote resilient societies. We are pushing the boundaries of scientific research by acting on the intersection of science, policy and practice.

- Excellent interdisciplinary research and cross-cultural environment
- Provide tools to make a case for policy change and action.



SUSTAINABLE DEVELOPMENT GOALS



Resilience is the ability of a socio-technical-environmental system to sustain its key functions – through absorbing, responding to, recovering from, adapting to or reorganizing – in response to chronic stresses and abrupt shocks.

We lose \$300 billion to natural disasters every year.

But a new study finds the cost to the poor is
60% higher than previous estimates—at over

\$500 BILLION



UNBREAKABLE
Download at gfdrr.org/unbreakable



Aims of this Workshop

- Why Adaptive Management?
- Key Principles
- Understanding Uncertainty
- Adaptive Policy

Workshop Outline

Adaptive Management & DAPP - a teaser
Managing Uncertainty
Interactive Uncertainty Mapping Exercise
<i>Coffee Break</i>
Adaptive policies
Policy Mapping
Results
Brainstorm: role of Partos
Wrap-Up & Next steps



1. Why adaptation is hard – the need for a systematic approach

Data vs Gut



A role for technology

*The development of a **more technology-oriented approach** to humanitarian action is essential – and inescapable – to take advantage of the opportunities to improve, for example, information gathering, analysis coordination, action or fund-raising.*

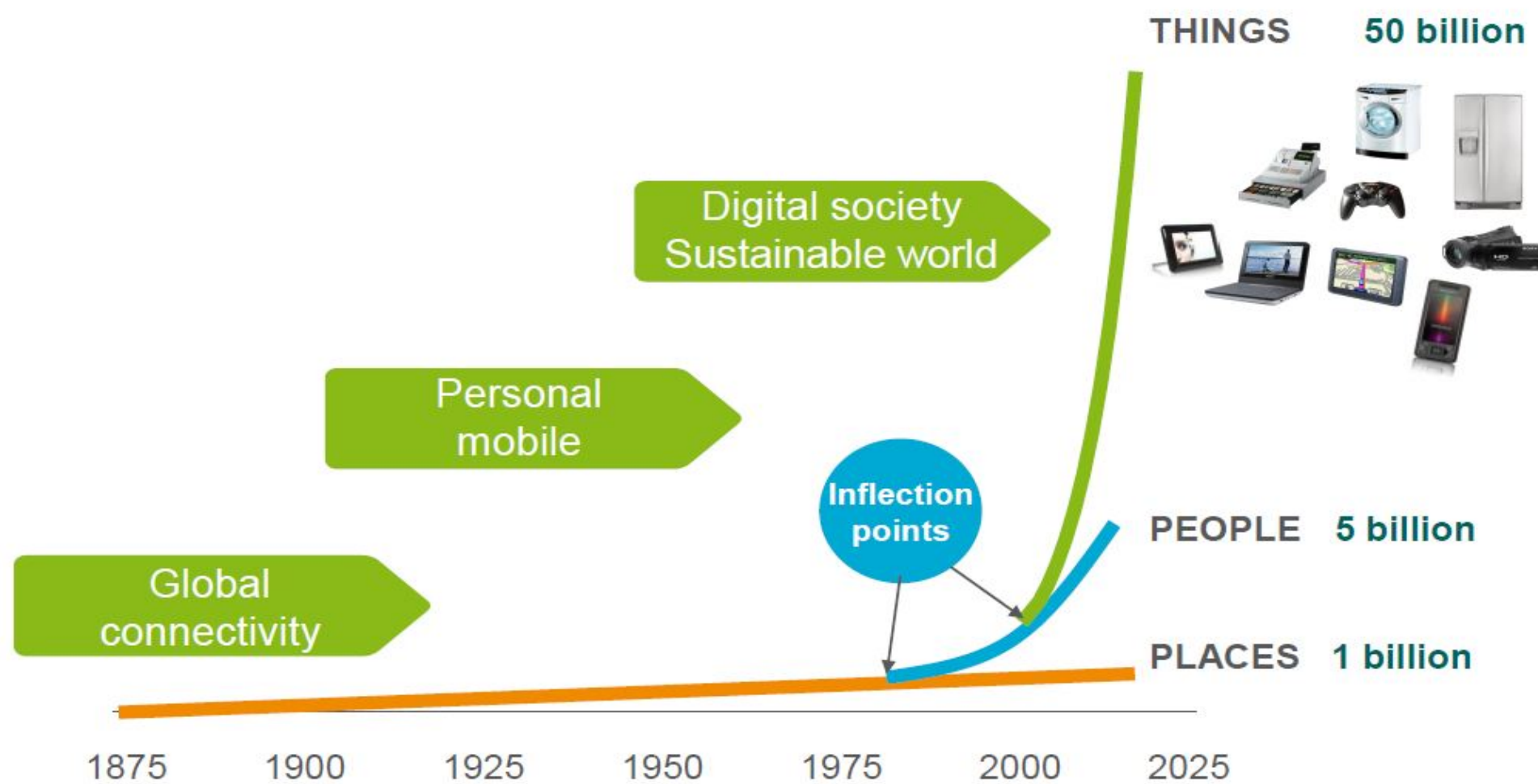


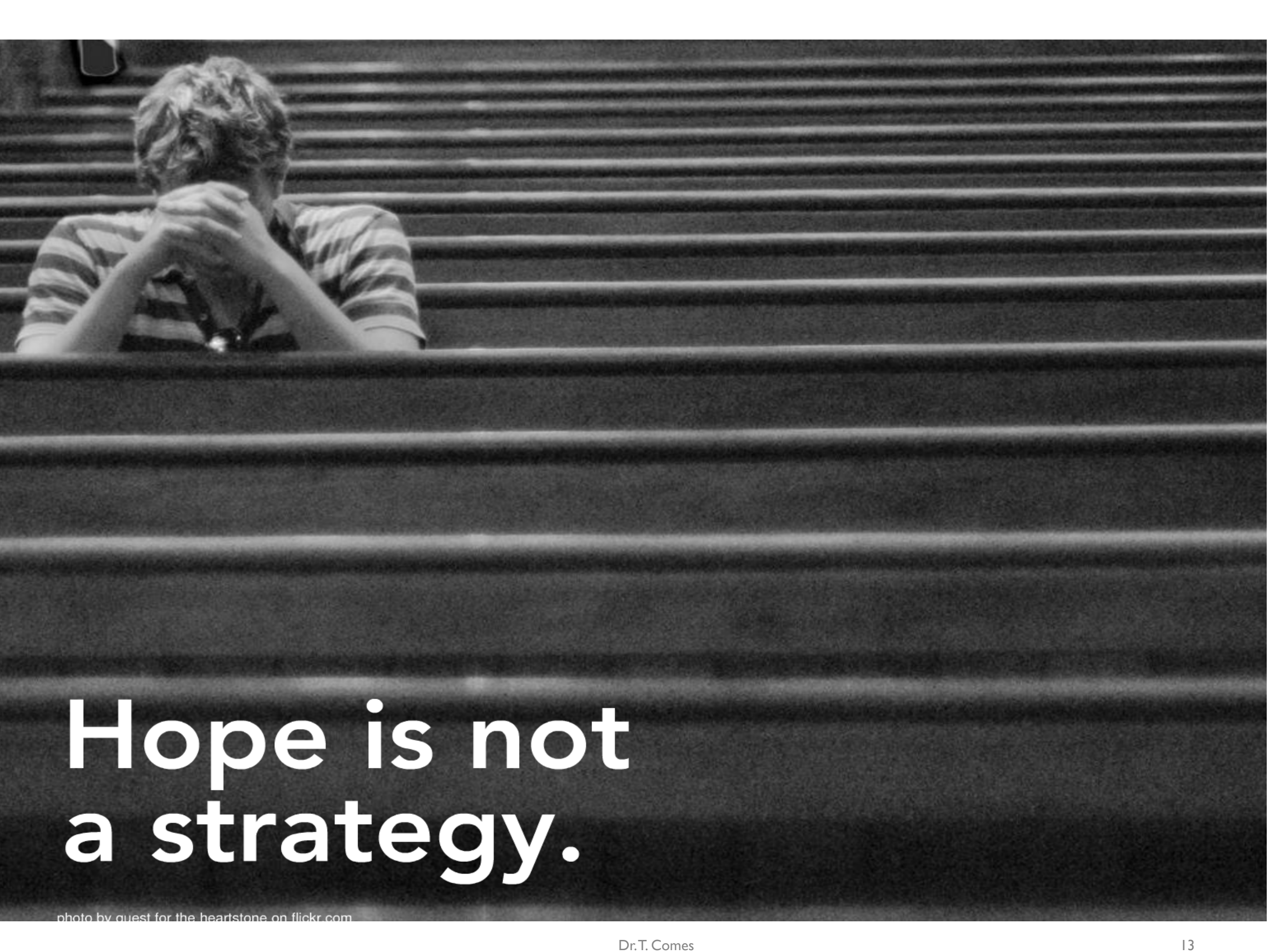
Bekele Geleta,
Secretary-General of the IFRC,
World Disasters Report 2013



“Information is often not perceived as the most urgent or most vital. But without information there is no response, no help.”

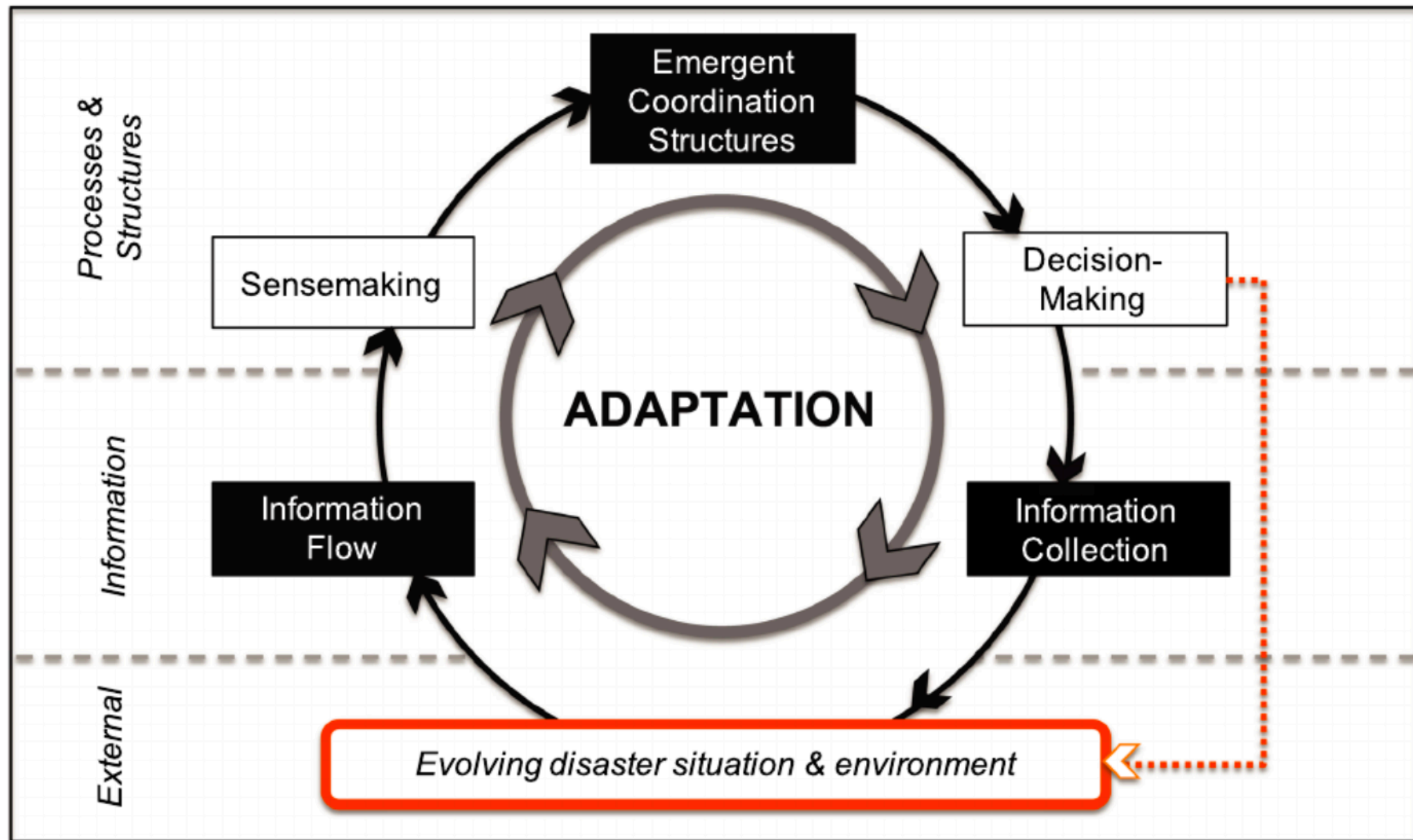
Interview Radyo Bakdaw





Hope is not
a strategy.

photo by quest for the heartstone on flickr.com



Comes, Van de Walle, and Van Wassenhove: Humanitarian Coordination-Information Bubble. *Production and Operations Management* 29(11), pp. 2484–2507.

The Role of Sensemaking

- provide a framework to **structure** chaotic streams of information into meaningful patterns that are the basis for decision-making
- **continuously on-going process**, adding to the narrative of expected events or paths
- **social** activity

Our most urgent challenge is: what are we collecting and why? Who is it for?”

Excerpt from interview with NN (UNICEF) in Manila, December 2013

“We are providing information to donors and Headquarters. We are only feeding the beast...”

Interview in Manila

The combination of missing or uncertain information, time pressure, and high needs in the immediate vicinity leads to a focus on responsive action over a thorough exploration of the situation, which hampers sensemaking and slows down adaptation in the initial response.

Comes, T., van de Walle, B., & Van Wassenhove, L. (2020). The coordination-information bubble in humanitarian response: Theoretical foundations and empirical investigations. *Production and Operations Management*, 29(11), 2484-2507. <https://doi.org/10.1111/poms.13236>



“In Syria, it is impossible to separate operational from strategic or political information. More than anywhere else, information is power here”

(Excerpt from interview with NN (NN) in Amman, May 2014.)

As there is a total lack of a protocol on how we should deal with information, the prevailing mode of official operation is to stick to secrecy – unless explicitly told otherwise by their superiors.

(Excerpt from interview with NN in Amman, June 2015.)

Although humanitarians recognize the need to continuously adapt to volatile conflicts, donor demands or changing political environments, organizational structures, processes and deeply engrained narratives that solidify over time cause significant delays, or lead to compromising standards and principles

THE TWO WAYS THOUGHTS COME INTO YOUR MIND

FAST (SYSTEM 1)

- **Automatic** - you don't have to do anything actively
- Operates on the now
- Forms stereotypes based on previous experience
- Creates bias by quick reactions
- An emotional response



SLOW (SYSTEM 2)

- Needs mental effort and several steps to retrieve information
- Demands attention and effort
- Biases influence "rational decisions"
- When system 2 is at work, self control goes down



THE NEW YORK TIMES BESTSELLER

THINKING, FAST AND SLOW



DANIEL
KAHNEMAN

WINNER OF THE NOBEL PRIZE IN ECONOMICS

"[A] masterpiece . . . This is one of the greatest and most engaging collections of insights into the human mind I have read." —WILLIAM EASTERLY, *Financial Times*

Review

- more than 100 scientific publications reviewed
- mapped on requirements of decision processes in disaster management from field research

https://www.researchgate.net/profile/T_Comes/publication/294580982_Cognitive_Biases_in_Humanitarian_Sensmaking_and_Decision-Making_Lessons_from_Field_Research/links/56c210a708ae2dc3eb882231.pdf

Phase	Bias	Effect
I. Onset	Anchoring and insufficient adjustment	When facing a new problem, most people estimate an initial condition. As time unfolds, this appraisal is adjusted. Anchoring is the tendency to fix specific features, making later adjustments inadequate.
	Availability and recency biases	Events that are vivid, recent, unusual or highlighted by the media are readily recalled or envisaged and therefore assigned high probabilities. For the recency bias, this comes down to putting stronger weight on recent events.
	Framing	The frame refers to how one views and structures a problem. It involves determining which information is relevant, in what form it is presented, and how it is monitored. The framing has a significant impact on the preferences and the alternatives considered [31].
I. Onset & II. Response	Conjunction Fallacy	Judgments of probabilities do not reflect that the probability of a conjunction $P(A\&B)$ cannot exceed the probabilities of its constituents.
II. Response	Overconfidence and Group-Overconfidence	Decision-makers asked to rate their performance are overly optimistic (overestimation and overplacement relative to others), or the range of variation they provide is too narrow (overprecision). Group processes amplify this behaviour in self-confirming loops.
	Confirmation bias	Favouring information that confirms existing preconceptions or hypotheses.
	Illusory correlation	Perceiving patterns, trends, correlations when they do not exist, encouraging the belief that unrelated variables are correlated.
	Conservatism / Undesirability of a negative event	Failure sufficiently to revise forecasts based on new information when the new information indicates a negative event. This bias occurs when there is a desire to be cautious, prudent, or conservative related to harmful results.
	Law of small numbers	Overestimation of the degree to which small samples are representative of populations.
	Wishful thinking and illusion of control	Letting preferences affect expectations of the future, and overestimating the influence on events over which one has little or no control. Probability of desired outcomes judged to be inappropriately high.
	Representativeness / Neglect of base rates	Even when useful information is salient, it will be ignored in favour of ephemeral, low-validity, individuating information. People tend to see each individual problem as unique when it would best be thought of as example of a broader class of events.
III. Recovery and Transition Processes	Sunk cost fallacy	Decision-makers fail to cut their losses and continue investing in clearly failing situations. Motivations include self-justification and loss aversion [32].
	Regression bias	Failure to allow for regression to the mean.
	Logical reconstruction	'Logical' reconstruction of events, which cannot be accurately recalled.
	Hindsight bias	Overestimating the likelihood with which one would have predicted a known outcome.
Transversal	Groupthink	Premature and concurrence-seeking decision-making in groups. Conditions: pressure arising from crisis, intergroup conflict, structural faults in organizations, monopolies on decisions, and partial leadership.
	Selective perception	Analysing problems in terms of own experience and background. Expectations may bias observations and interpretation of variables.

“In decision-making you have to keep moving, you cannot sit still and reflect too long, by taking a decision you are moving and then you can adjust and learn.”

(Excerpt from an interview in the response to Typhoon Haiyan, Tacloban, December 2013).

Bias	Operational DM
Anchoring and insufficient adjustment	High: decisions made at the onset of an operation are based on uncertain or lacking information . Given the time pressure, this is an initially effective strategy. As initial decisions provide the basis for the response, they have a powerful impact. While decisions should later on be adjusted in the light of new information, the anchoring bias can prevent adequate adaptation, and is particularly difficult to overcome if combined with confirmation bias.

*“Headquarters want to control the game. **And they want to choose their own reality.**”* (Excerpt from an interview of the author on the Syria Crisis, May 2014).

Bias	Operational DM
Wishful thinking and illusion of control	High in complex crises: humanitarian narratives (internally and externally) rely on the ability to alleviate suffering inducing a motivational bias. This may lead to neglect of risks and limited communication with local actors or NGOs with controversial views.

A Primer

DYNAMIC ADAPTIVE POLICY PATHWAYS



Interim technical note on water, sanitation and hygiene for COVID-19 response in slums and informal urban settlements – May 2020

Prepared by UN-Habitat and UNICEF



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**COVID-19 AND
HUMAN DEVELOPMENT:**

Assessing the Crisis, Envisioning the Recovery



Turning the **COVID-19** crisis into an opportunity:
What's next for **social protection**?

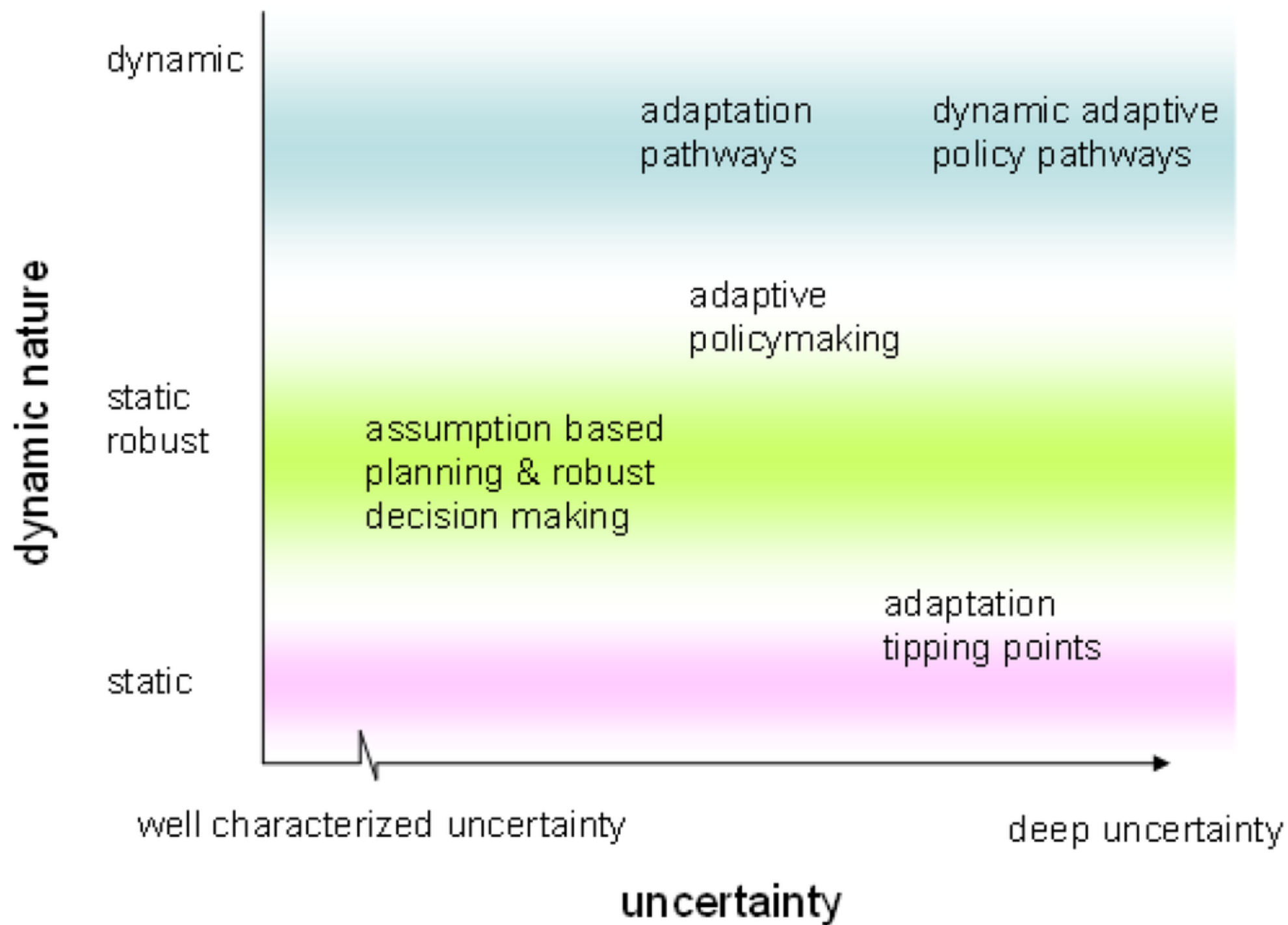
Global e-Conference

5, 6 and 8 October 2020

Quang Nguyen Vinh/ Pex

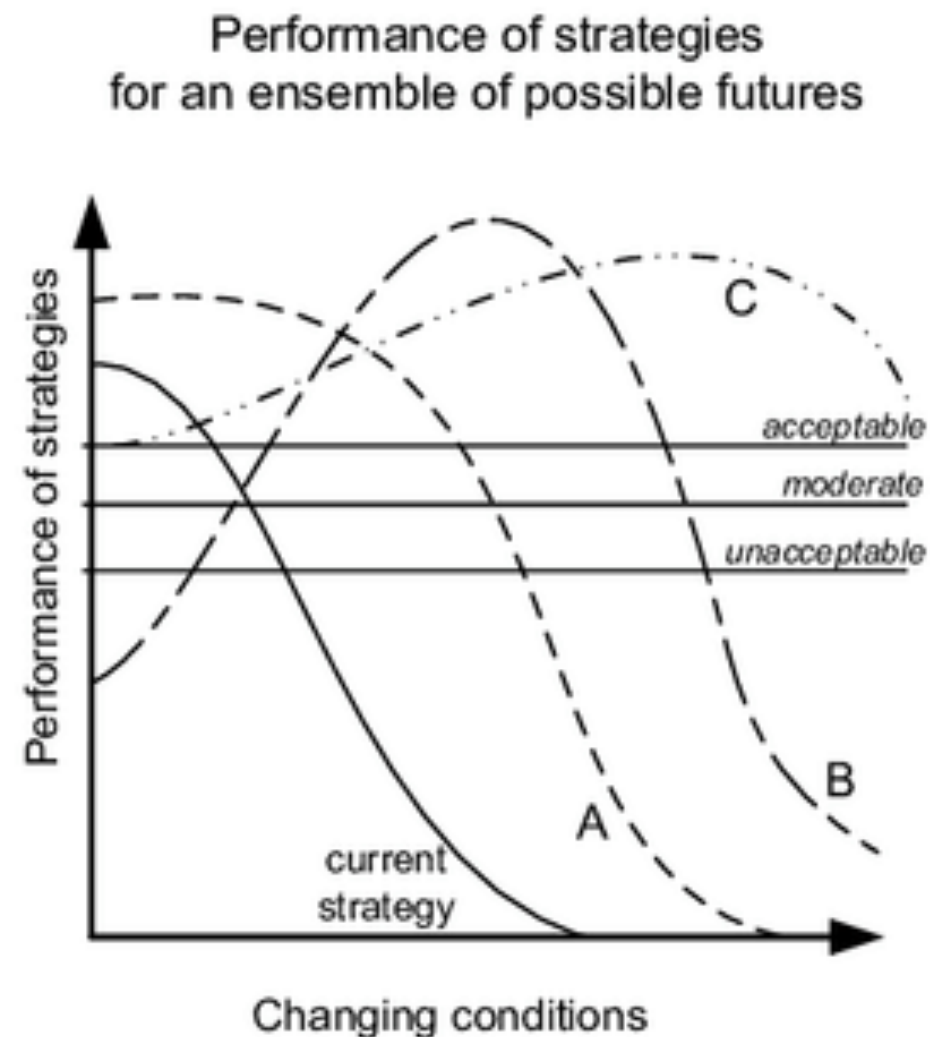
#whatsnextforSP



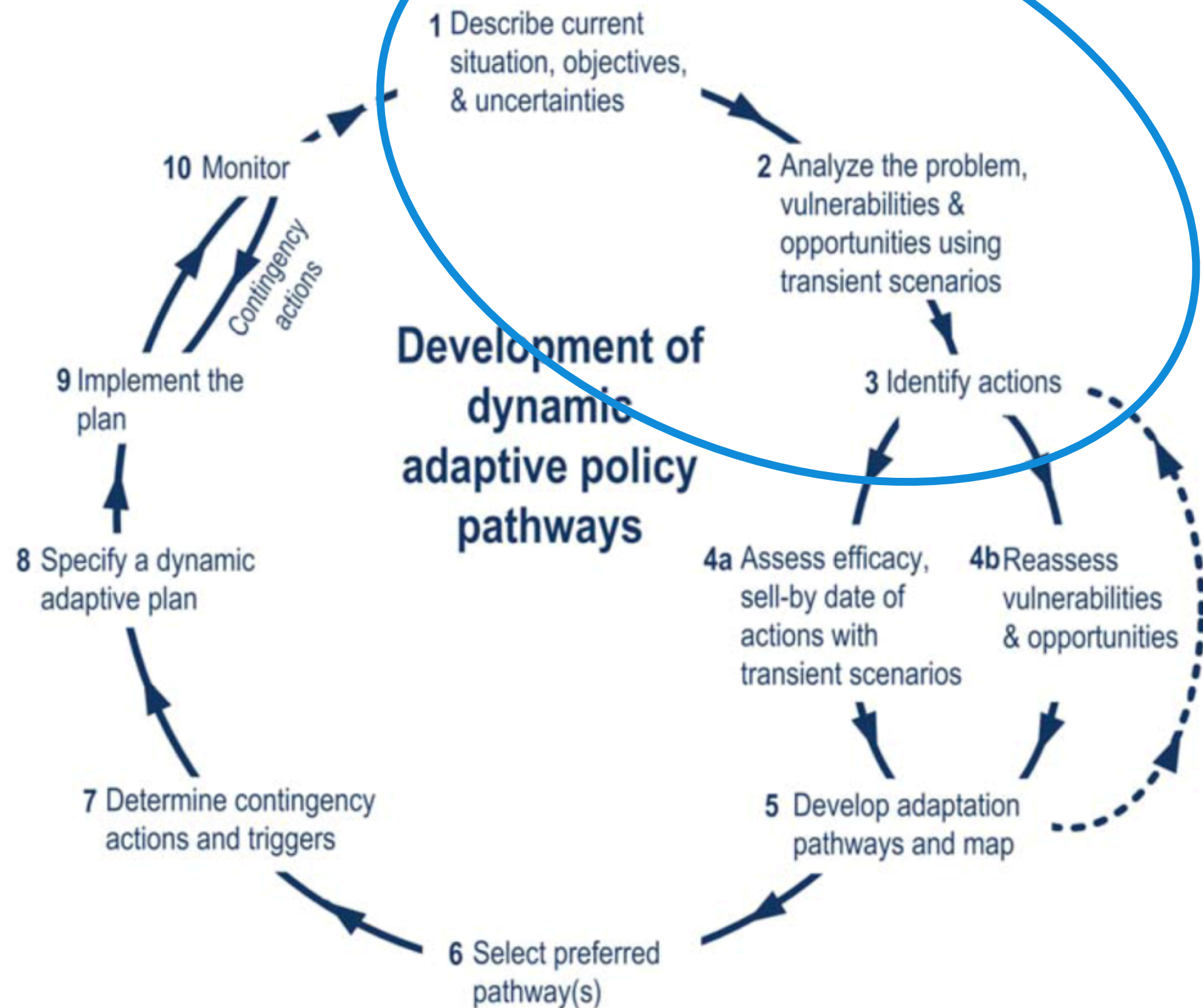


Dynamic Adaptive Policy Pathways

Roadmap for decisions under uncertainty that recognizes that some future developments are highly uncertain.



Process

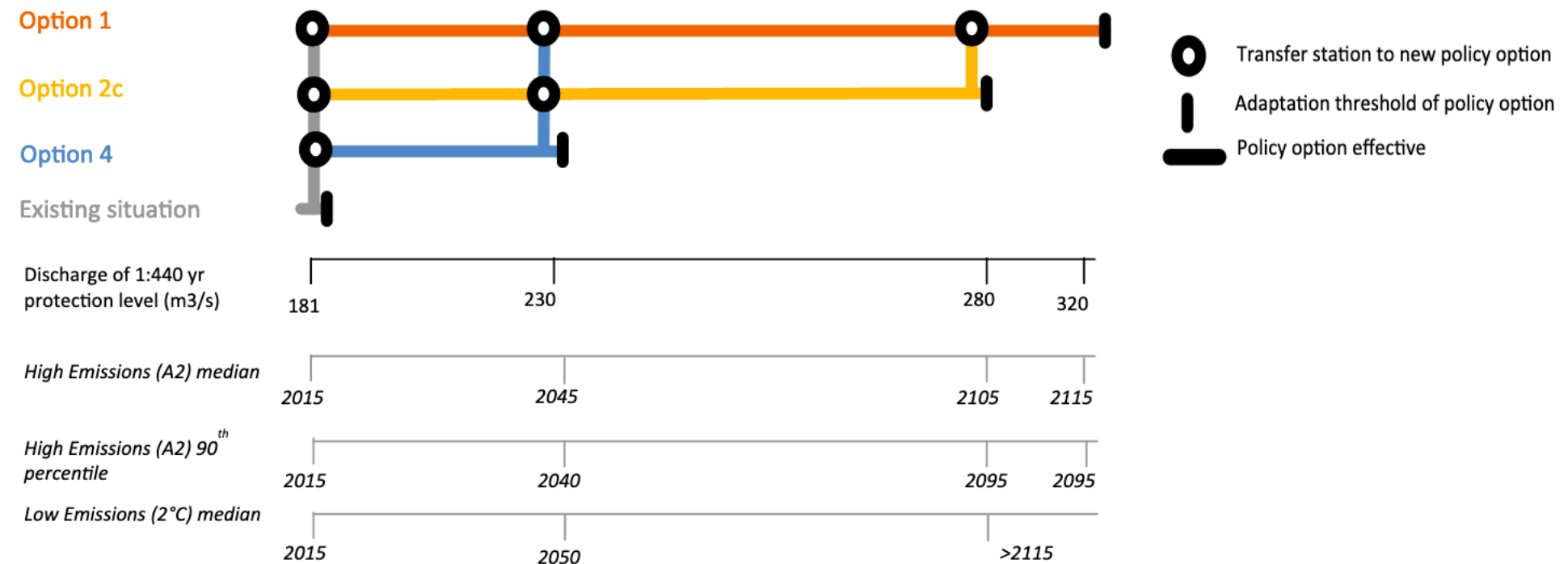


An example from flood protection

Actions

Scenarios

Consequences



Pathway		Direct effects		Side effects		
		Relativ costs	Target effects	Social impacts	Transport impacts	Environ- mental impacts
1	○	\$\$\$	+	---	++	+++
2	○	\$	+	--	+++	++
3	○ ○	\$\$\$	+	---	+++	+++
4	○ ○	\$\$	+	--	+++	++
5	○ ○	\$\$\$	+	--	++	+++
6	○ ○ ○	\$\$\$\$	+	---	+++	+++

Lawrence, Judy, et al.
 "Dynamic adaptive policy pathways (DAPP): From theory to practice."
Decision Making under Deep Uncertainty.
 Springer, Cham, 2019.
 187-199.



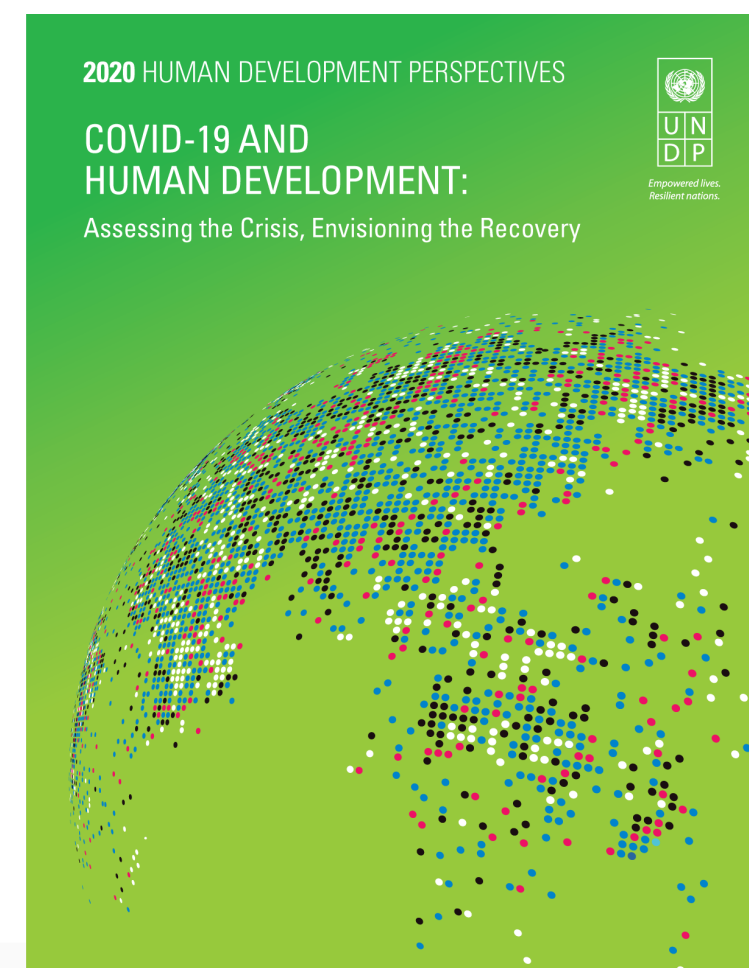


Interim technical note on water, sanitation and hygiene for COVID-19 response in slums and informal urban settlements – May 2020

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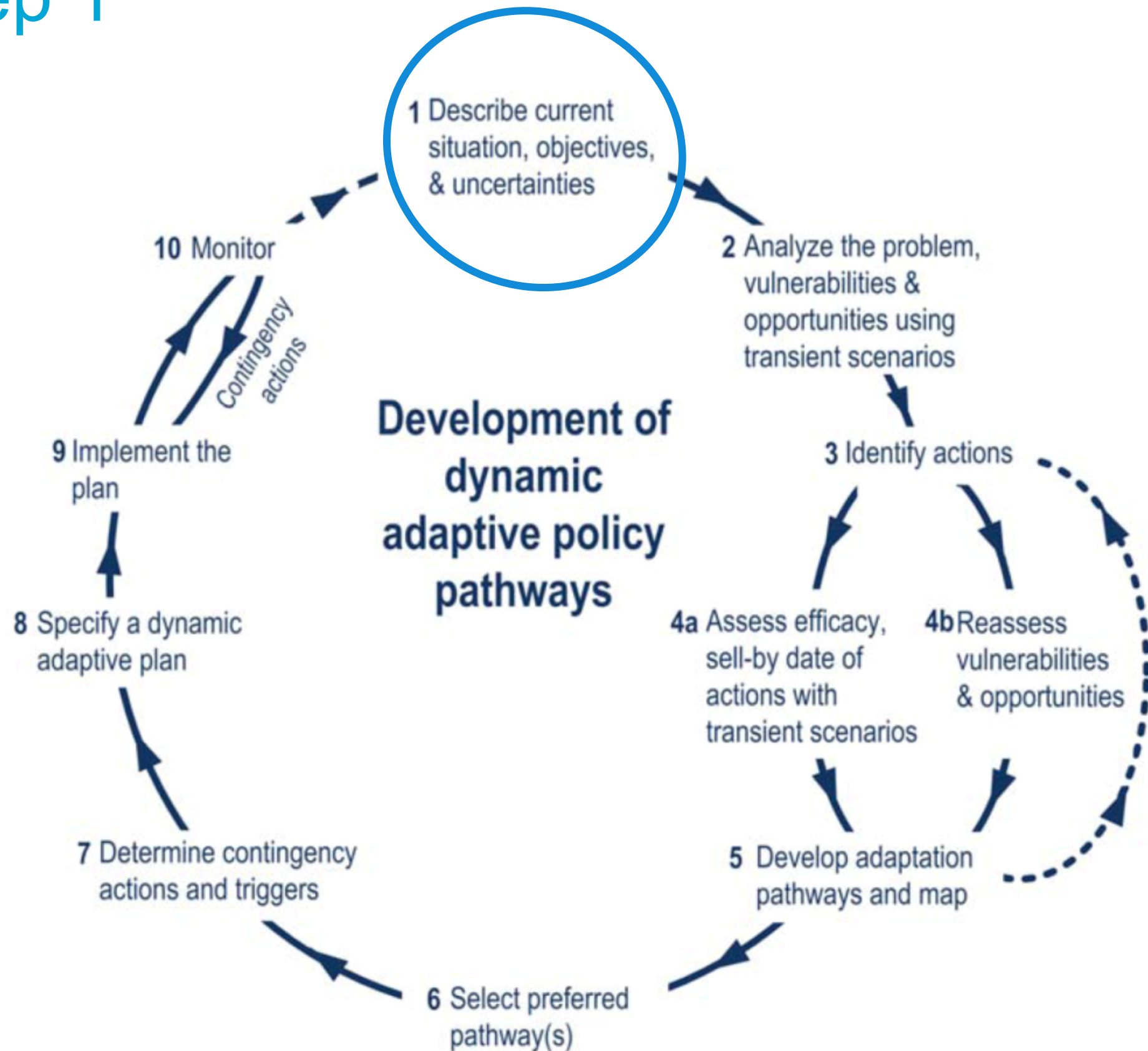


© UNICEF/UNI46576/Markisz

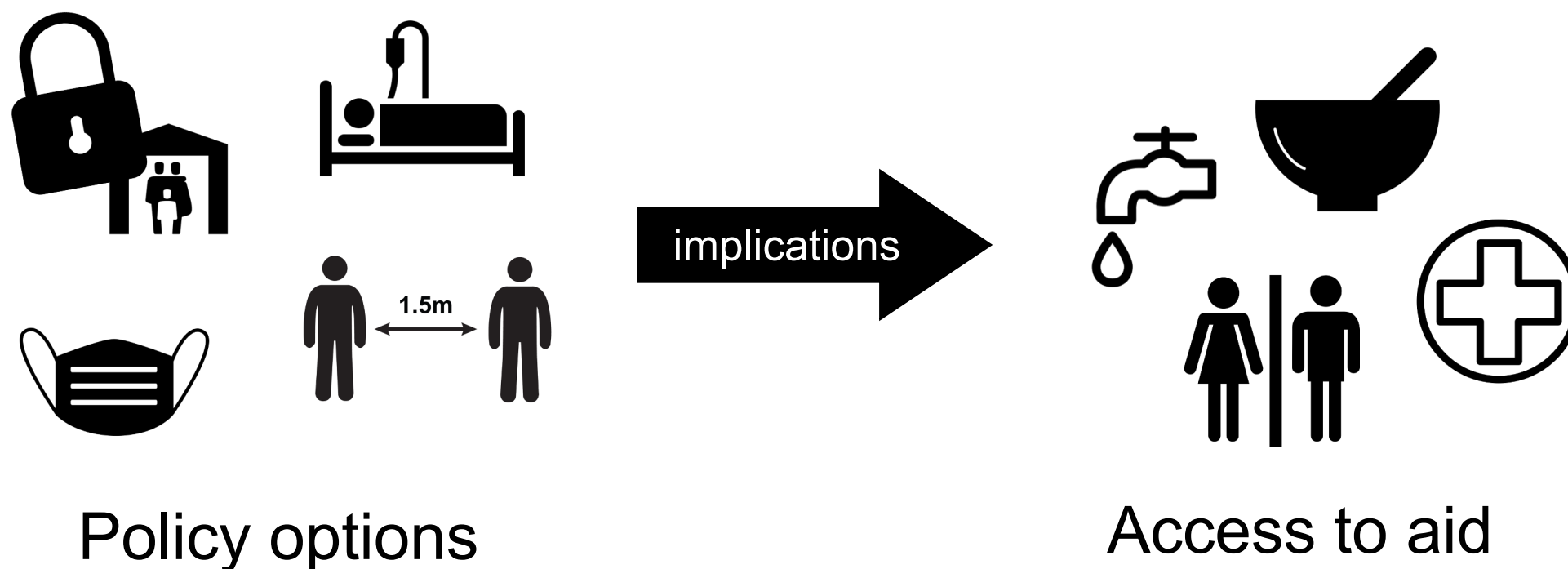


MANAGING UNCERTAINTY

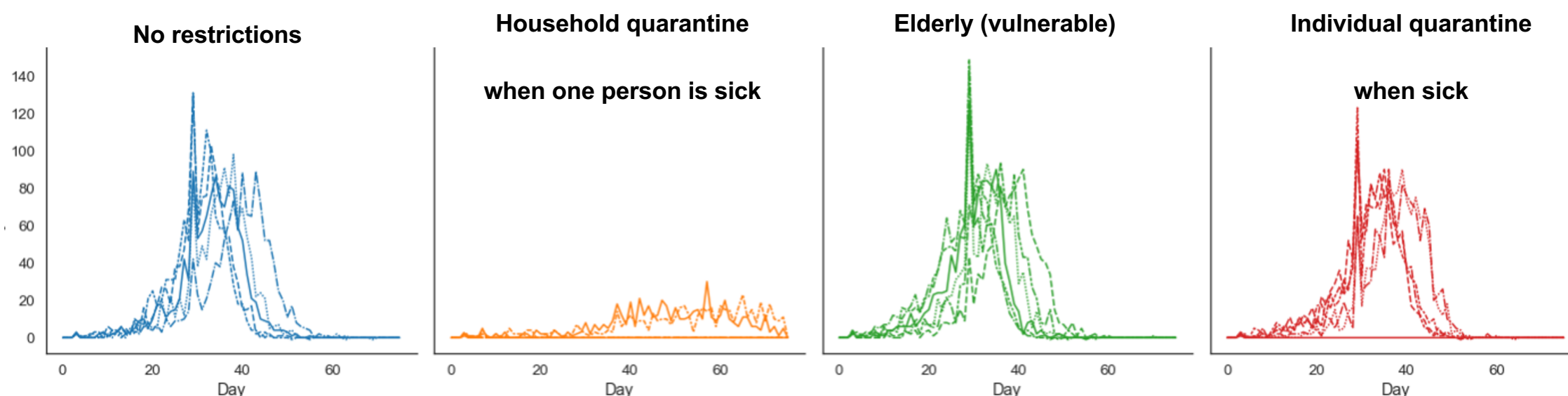
Step 1



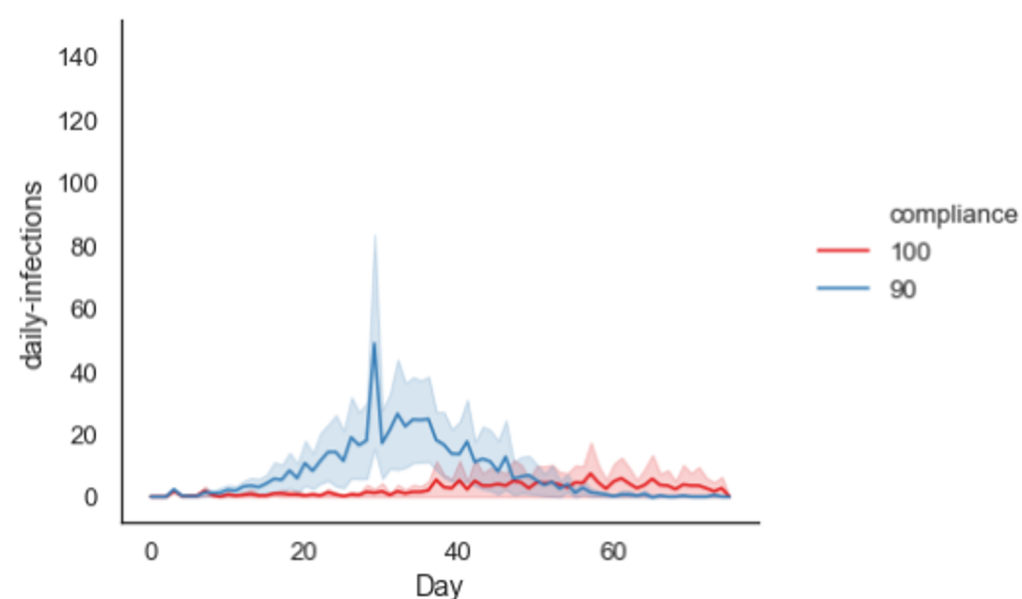
COVID-19 response in informal settlements



Gain insight in



Isolating entire households is effective to prevent COVID-19 spread

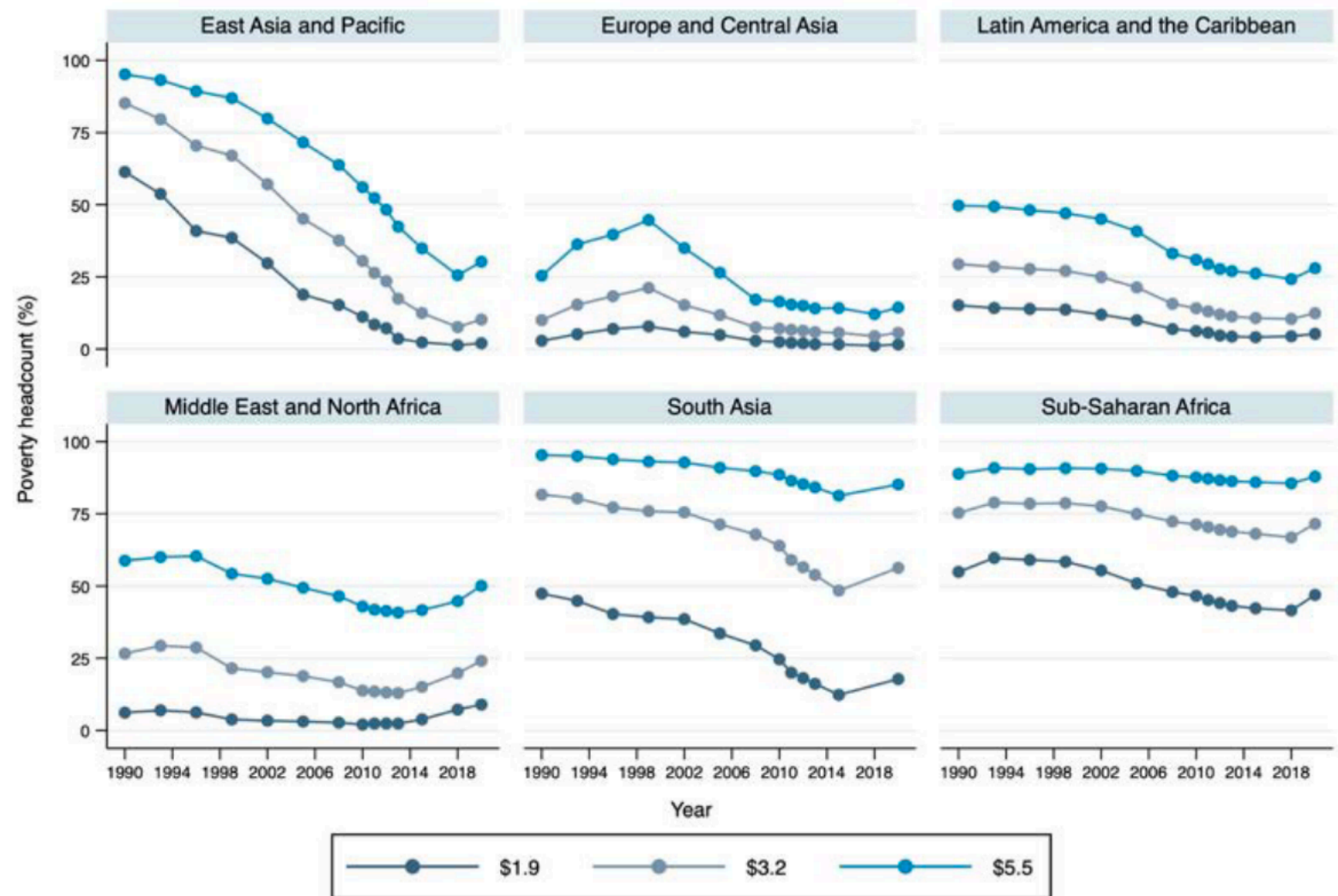


Longer-Term Implications



WIDER Working Paper 2020/43

Estimates of the impact of COVID-19 on global poverty



Picture of two pandemics
/ Covid cases fall in rich
west as poorer nations
suffer

'They can't take it any
more' / Pandemic and
poverty brew violent
storm in Colombia

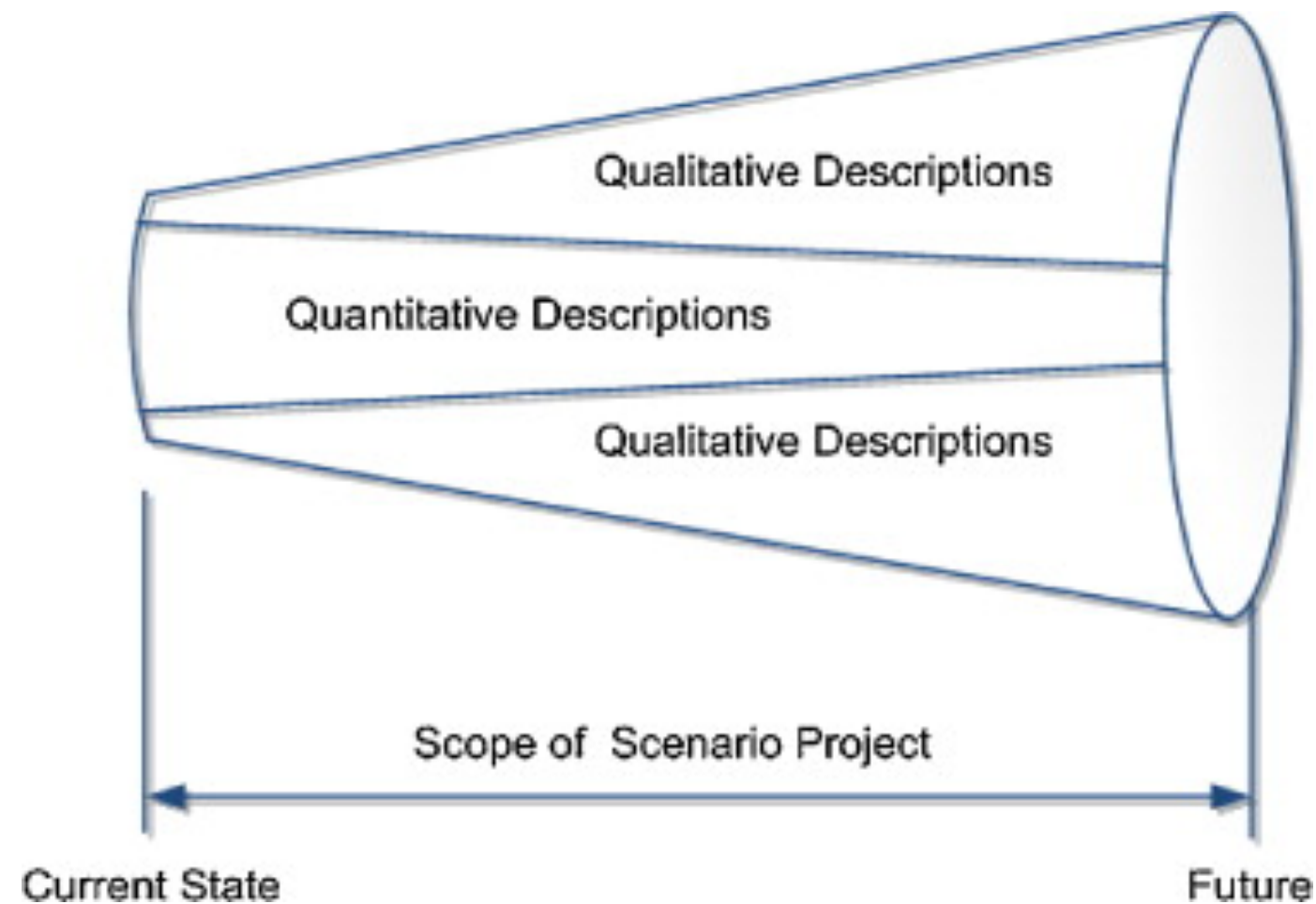
UK aid cuts will put tens of thousands of children at risk of famine, says charity

Save the Children's analysis finds Britain will spend 80% less on nutrition abroad this year, as hunger levels rise around the world



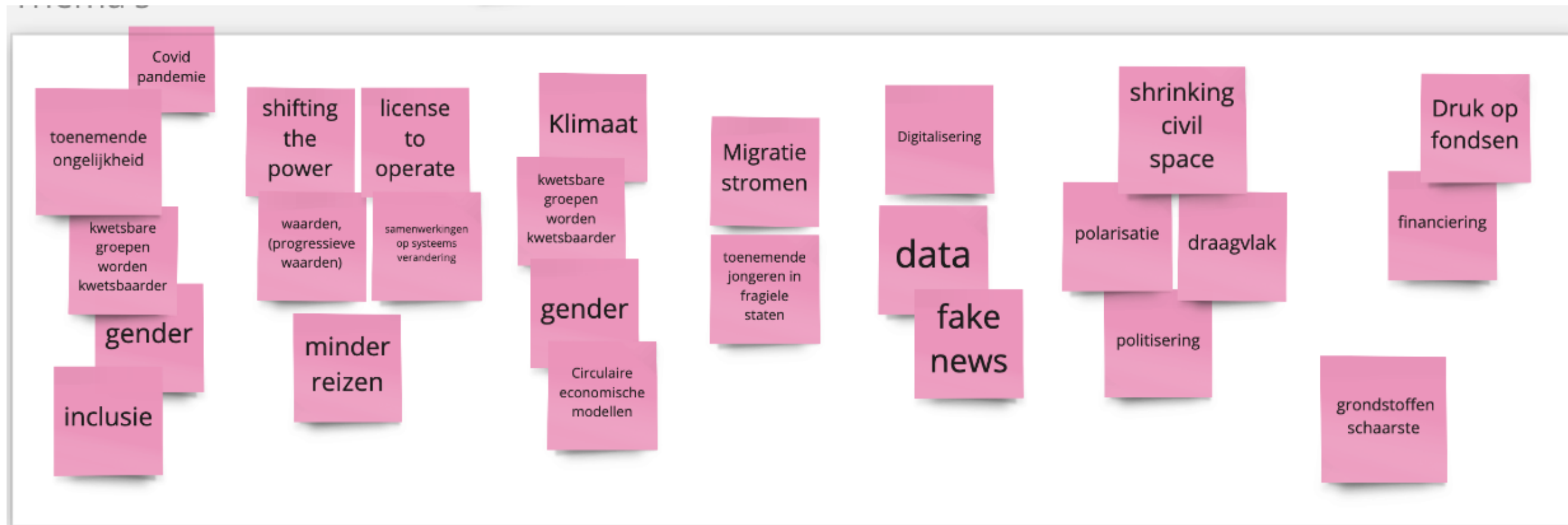
▲ A seven-month-old is measured at a clinic in Deir Al-Hassi, Yemen. The UN has called for urgent action to avert famine in 20 countries. Photograph: Issa Al-Rajhi/AP

Scenarios combine short- and long-term uncertainties to plausible narratives



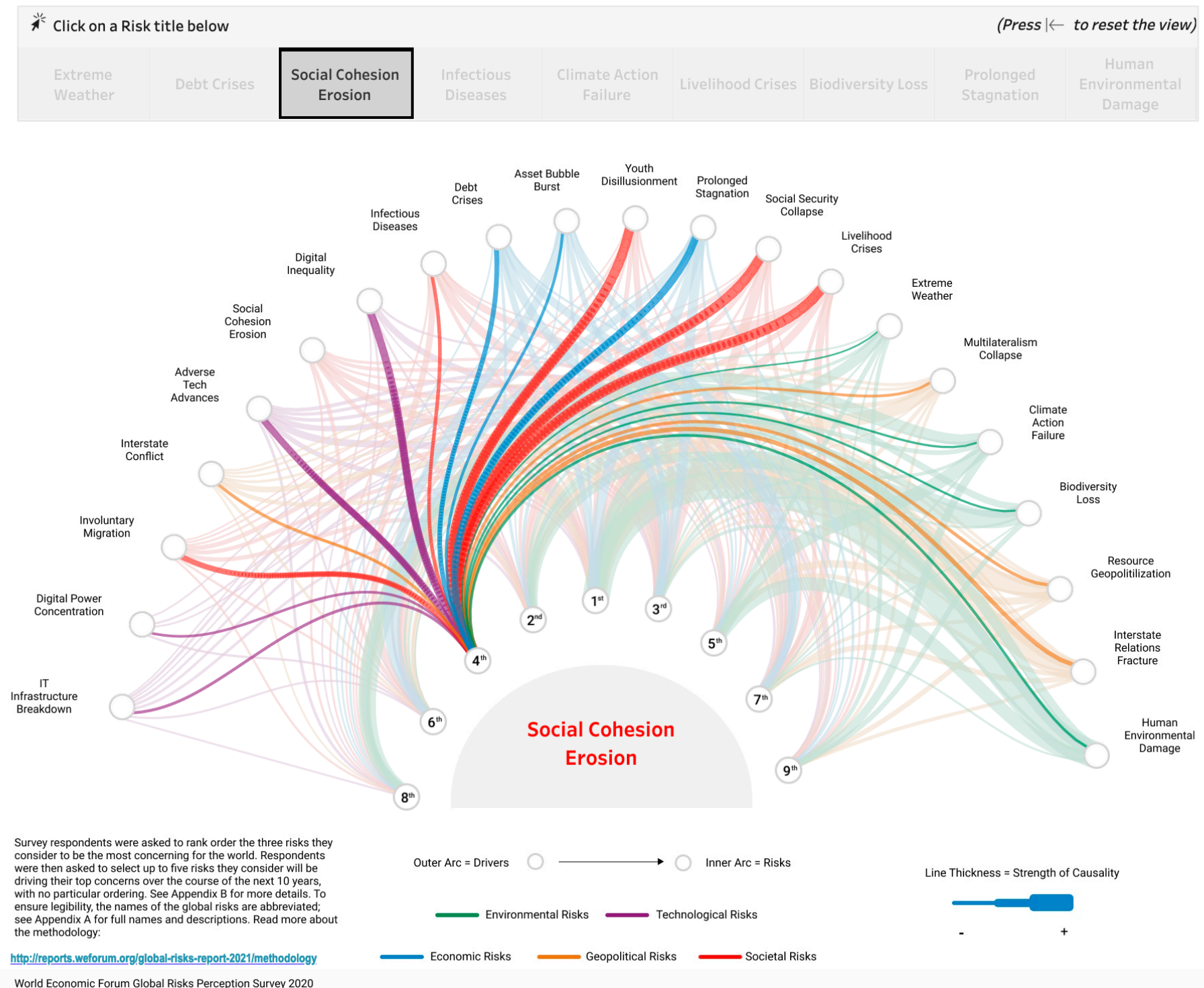
Amer, M., Daim, T. U., & Jetter, A. (2013). A review of scenario planning. *Futures*, 46, 23-40.

Operationalizing uncertainty: Your turn!

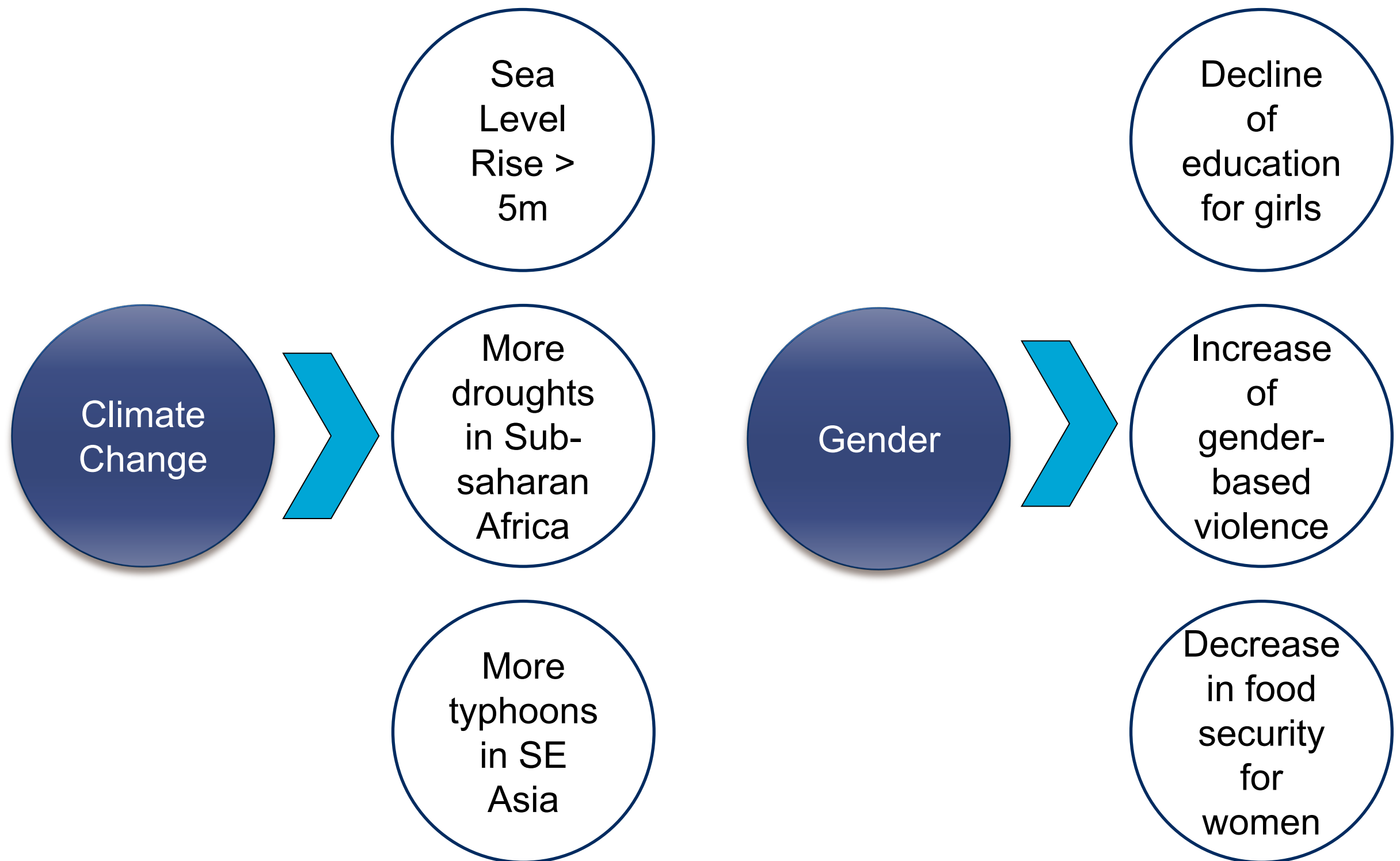


Interdependencies

Which global risks are driving Social Cohesion Erosion?



Making it concrete



Step I: Identify relevant uncertainties

Interactive Mural Session

10 Minute Brainstorm

Identify short- and longer-term uncertainties that affect the success *of your operations*.

Stay in the 'uncertainties box'

10 Minute Classification

Classify by likelihood and impact; in the short- and long-term

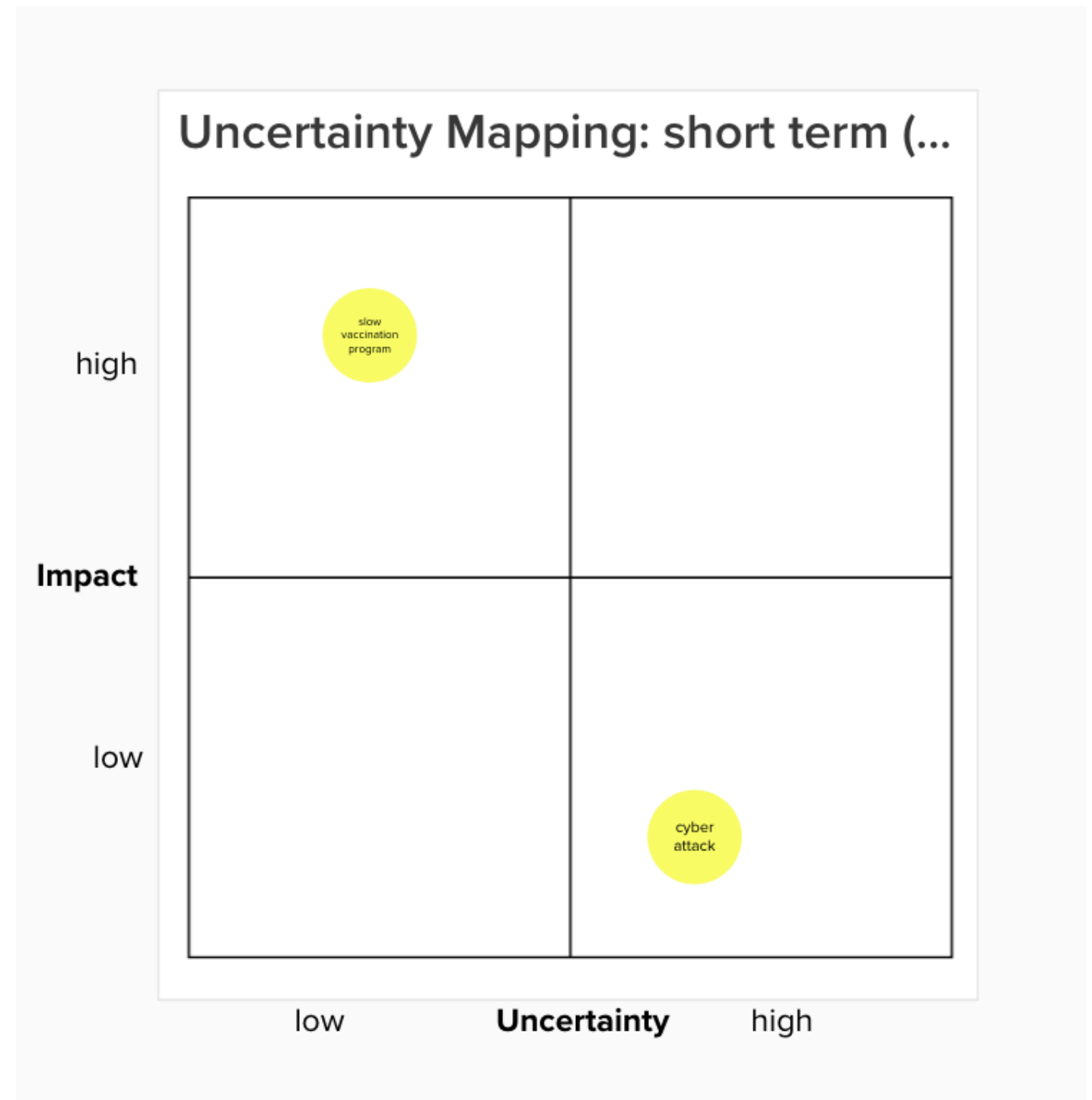
10 Minute Group Discussion

Prioritize the uncertainties that matter most. Change the colour to pink.

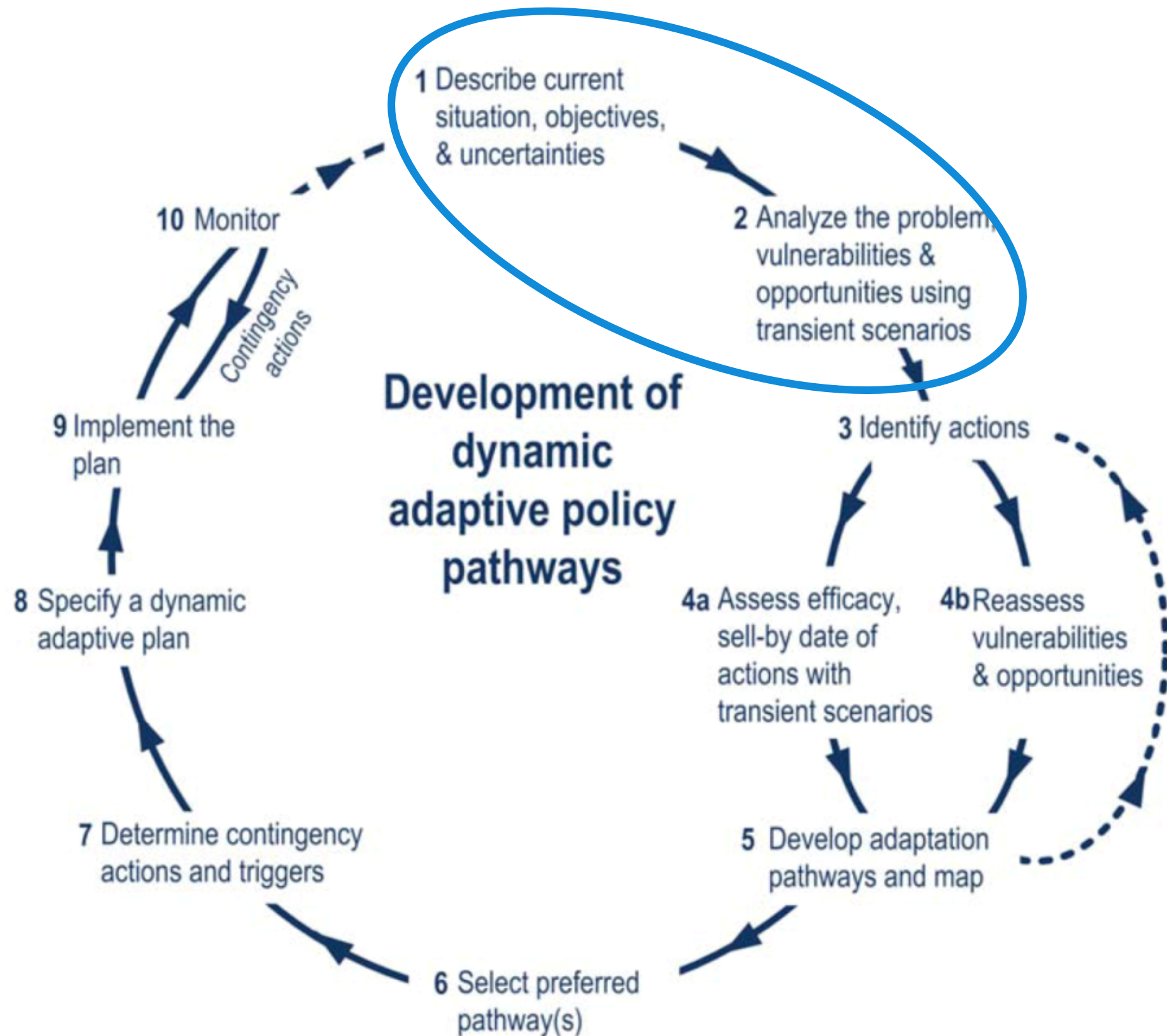
As you discuss, please consider:

- *What are important vulnerabilities in your operations?*
- *What are opportunities that you will be able to grasp?*

Mural: <http://bit.do/partos>



Your Results



More: Scenario Workshops

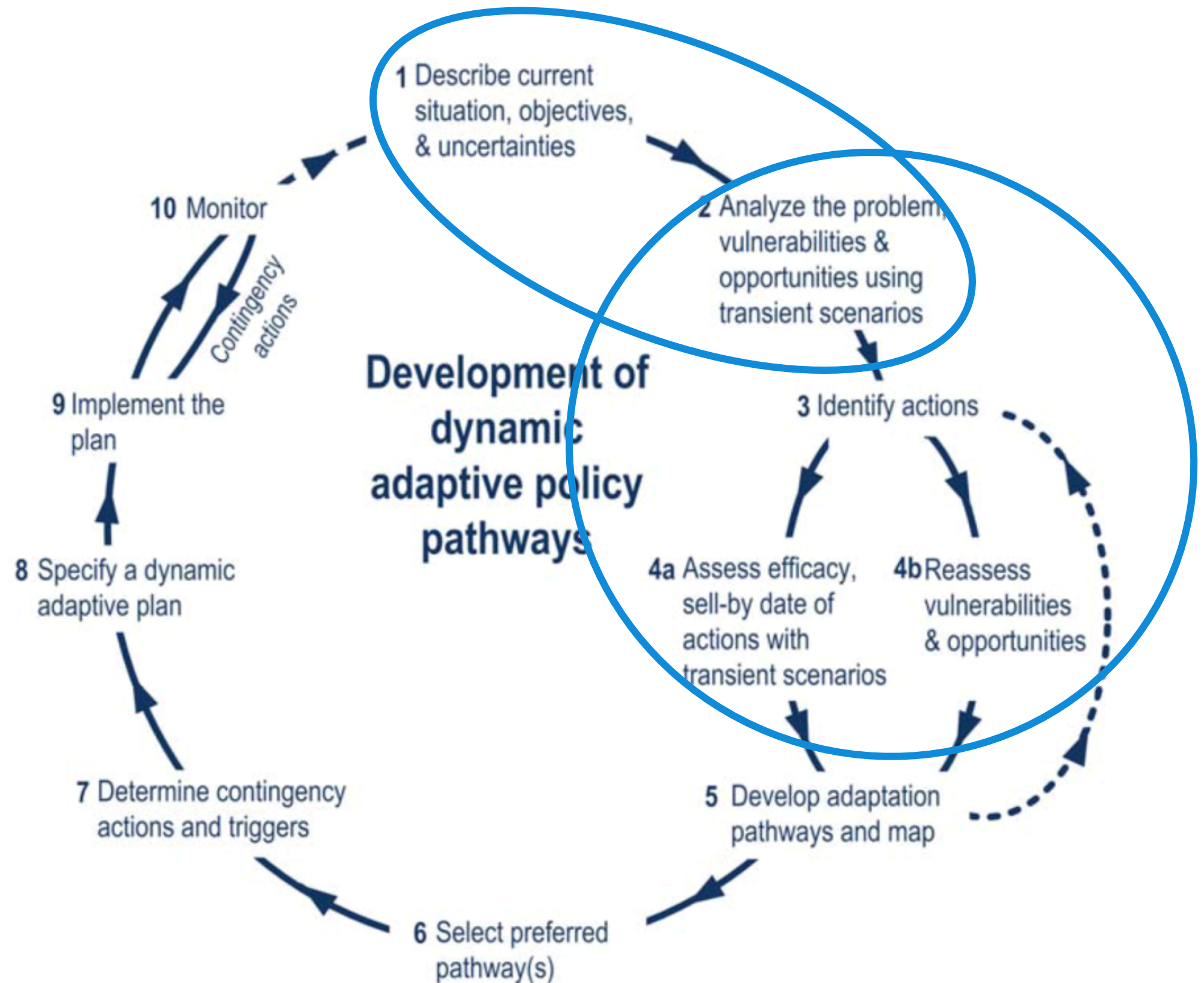
TPM ResilienceLab



Defining Policy

FROM UNCERTAINTY TO ACTION

Your Results



Activities

- **Mitigating or hedging actions** — reduce adverse impacts on a plan stemming from vulnerabilities.
- **Seizing or exploiting actions** — take advantage of opportunities that may prove beneficial to the plan.
- **Enabling actions** — taken proactively to affect external events or conditions that could either reduce the plan's chance of failure or increase its chance of success.

Walker, W. E., Marchau, V. A., & Kwakkel, J. H. (2019). Dynamic Adaptive Planning (DAP). In *Decision Making under Deep Uncertainty* (pp. 53-69). Springer, Cham.

Challenges

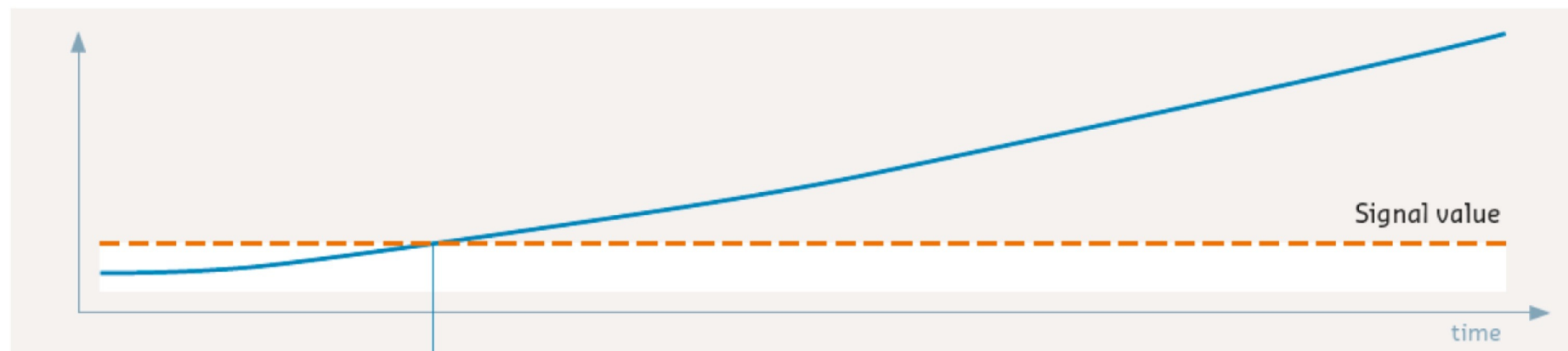
- Actions create path-dependencies
- Timing of decisions – when to act?

When to act?

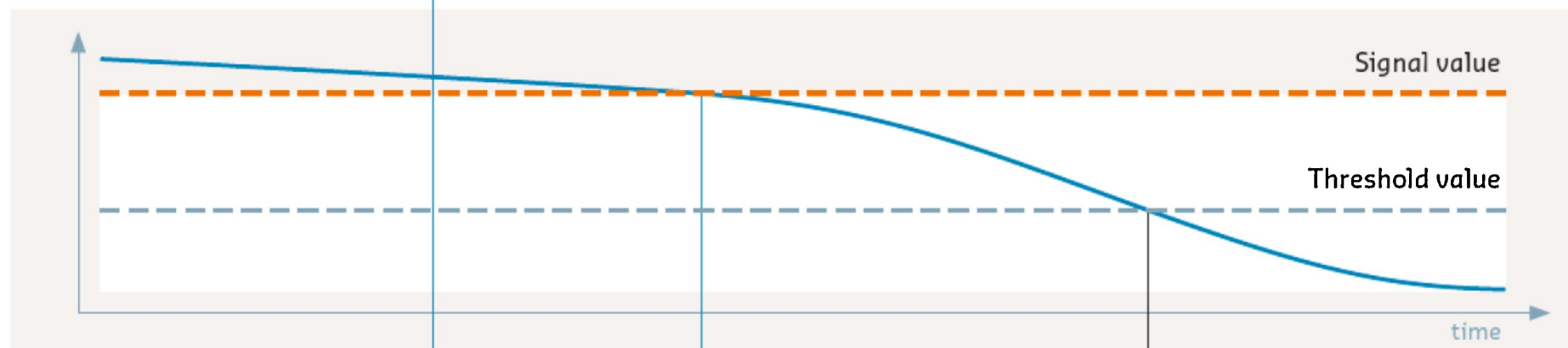


What do we need to know before making a decision?

Environmental conditions (signpost)



Performance (signpost)



△ Signal

△ Signal

Decision node A

Implementation A ○

C or D ○○

Decision node C or D

Adaptation tipping point

Main Activities

What can and should we do under the priority uncertainties?

How to ensure success?

Main activities can be hedging or exploiting

Enabling Activities

Actions that support the robustness and flexibility of planning:

- Are there actions **common** to all scenarios?
- How can we make switching between the different sets of actions easier?
- What are the implications of each portfolio and/or needing to switch between portfolios?
 - Cost implications?
 - Time implications?
 - Ability to meet program targets?
 - Others?

Step 1 (10'): For your priority uncertainties identify policies for the short term. What can/should we do under each set of conditions? Distinguish main and enabling activities.

Step 2 (10'): Sort according to cost/effort. Are there any options that always pay off? What are your priorities?

Mitigating policies - Scenario 1

Uncertainties

Main actions & policies

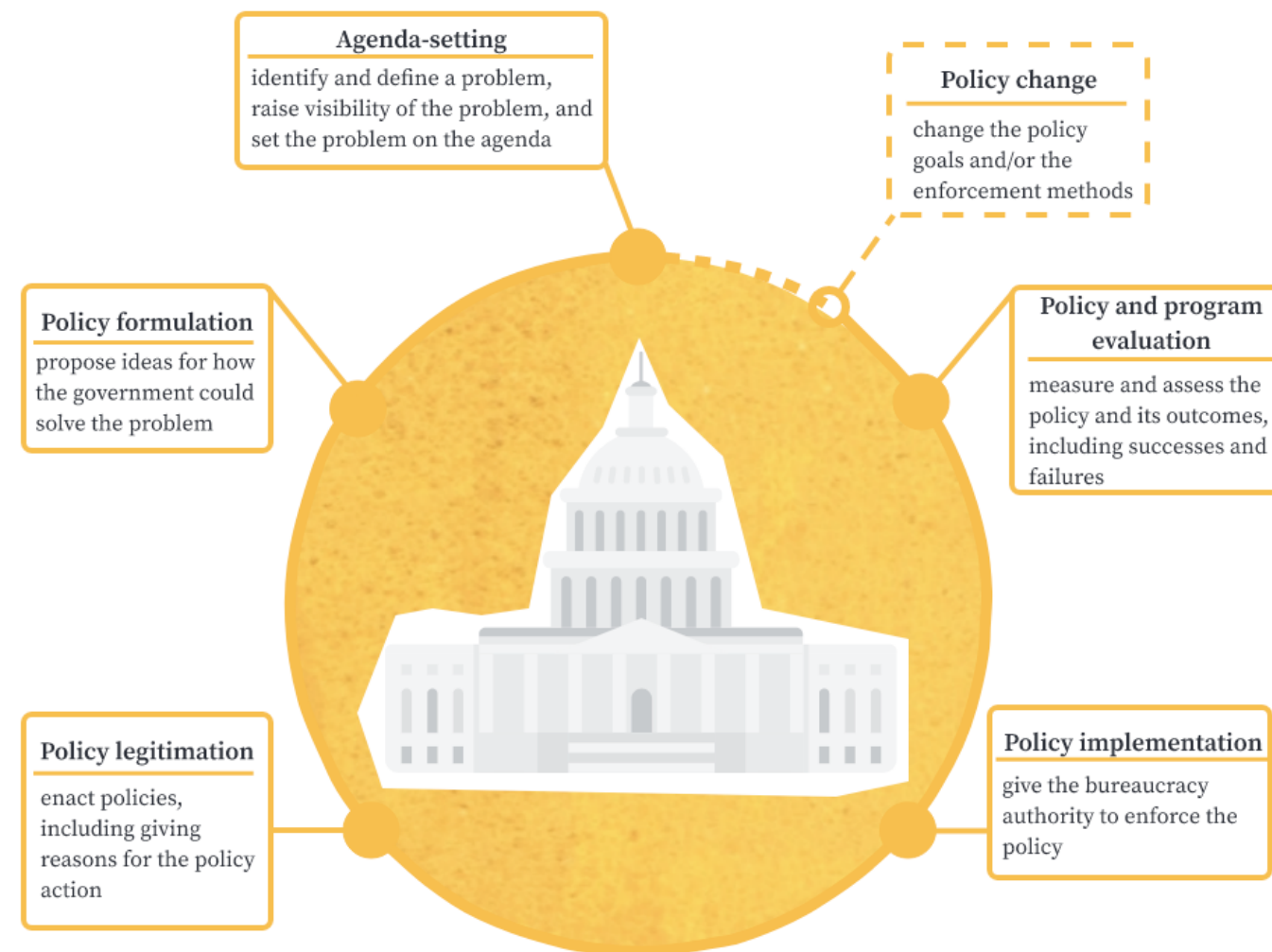
Enabling actions

low cost high effort

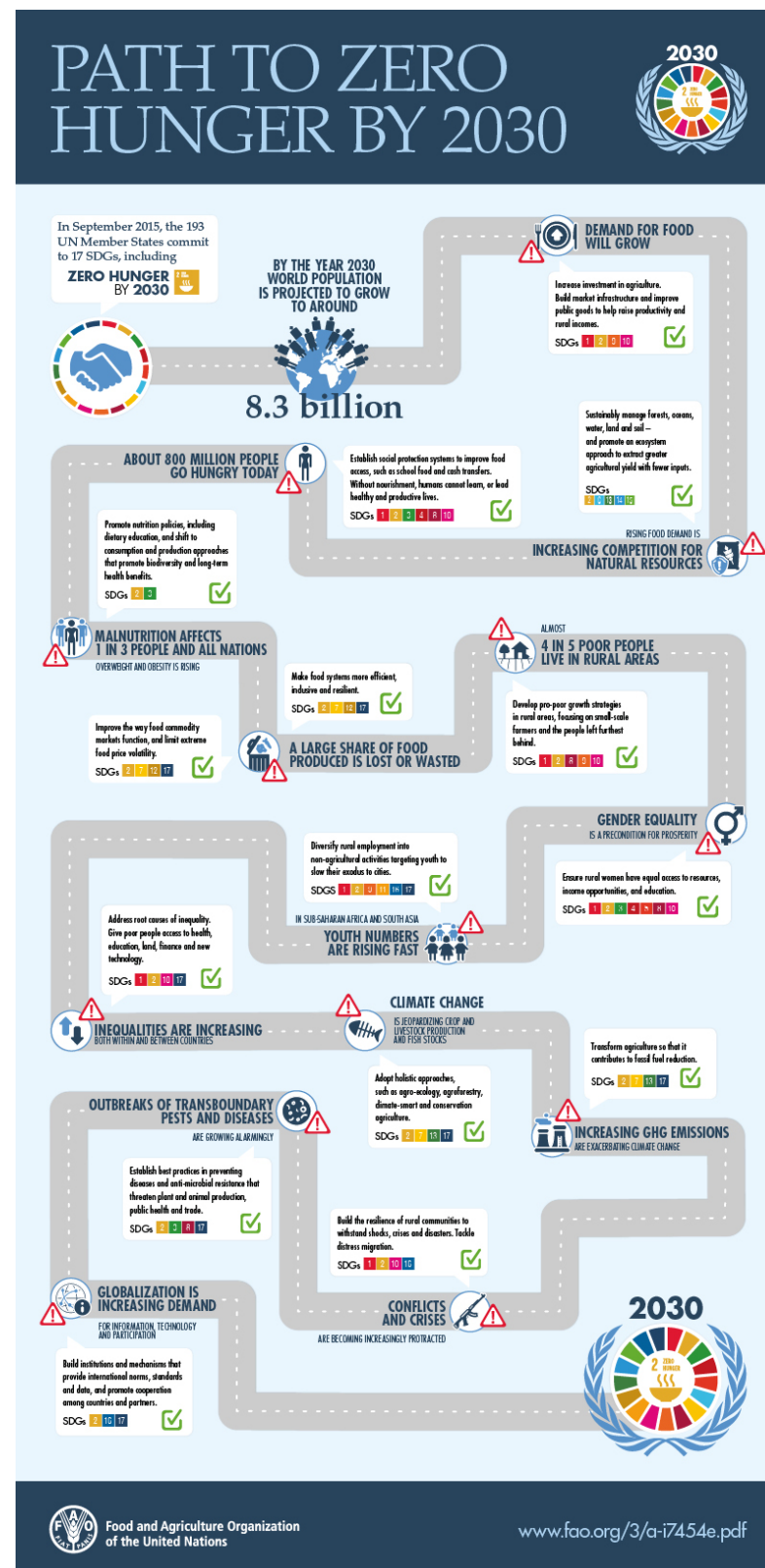
Your Results

Consider Timing & Lifecycle of your decisions

The policy process model



Need for Alignment



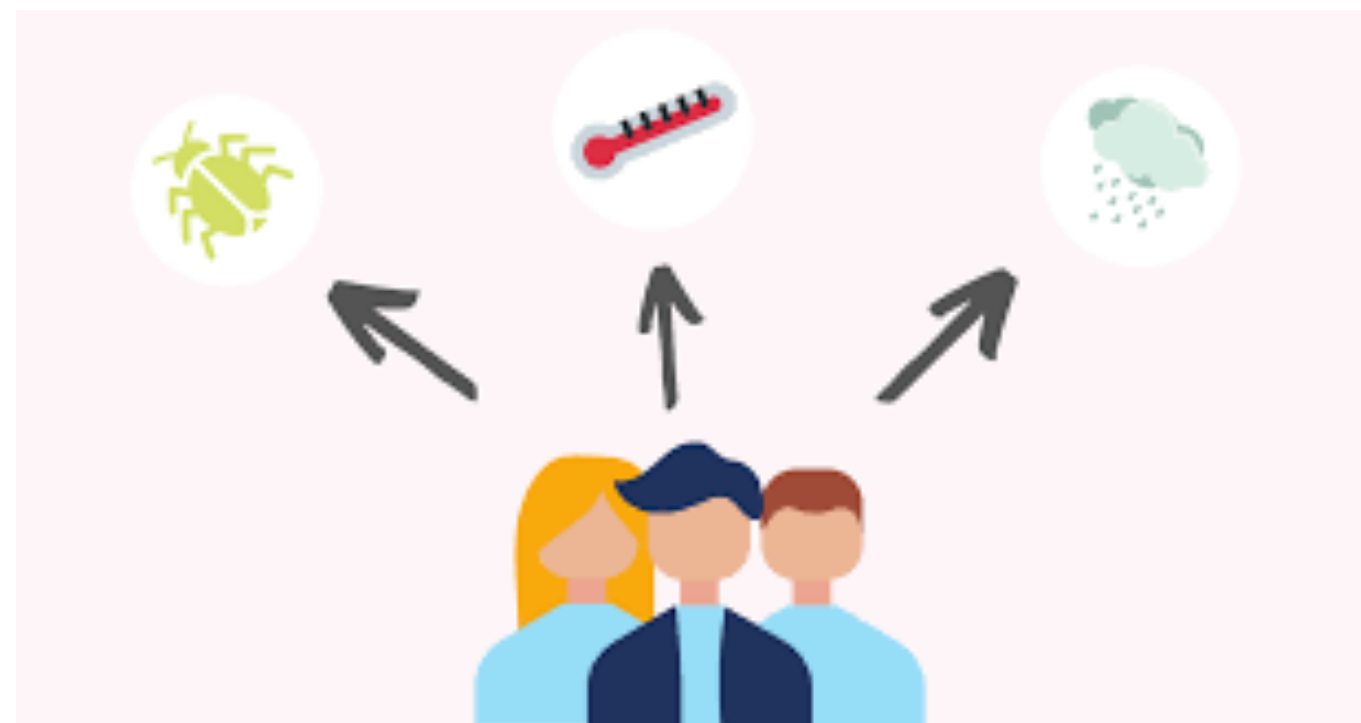
Implications for Partos

Given the actions for your organization, what can be the role of Partos in terms of coordination, alignment and policy?



Next steps

Scenario workshops



Questions?

More questions?
Ideas for collaboration?
Contact us!



t.comes@tudelft.nl