

Mobilizing Knowledge To Enhance Adaptive Capacity

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Key Messages
Knowledge is a key indicator of adaptive capacity
A system for measuring adaptive capacity is crucial for achieving the Paris Agreement's "Global Goal on Adaptation"
Adaptive knowledge should be based in both theory and experience
A standardized scale for measuring knowledge, such as the knowledge ladder should be the basis for self-assessment at multiple scales, and for comparative assessment and learning

This paper discusses about how to use knowledge to enhance adaptive capacity.

Introduction

For over a decade, researchers and policymakers have considered enhancing “adaptive capacity” to be a linchpin of successful adaptation to climate change. In 2015, at the 21st Conference of Parties in Paris, the international community formally asserted the importance of increasing the ability of individuals and groups to adapt to long-term changes in the climate, and committed to doing so through the Paris Agreement. Article 7 of the Paris Agreement, the “Global Goal on Adaptation” (GGA), commits signatory countries to “enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal.”¹

There are many challenges to measuring adaptation, and there is currently no internationally accepted tool for doing so. Craft and Fisher (2018)² identify four main challenges to measurement for

the GGA: designing a system that can aggregate results; managing the dual mandate of reviewing collective progress and informing the enhancement of national level actions; methodological challenges in adaptation; and political challenges around measurement. Drawing from their insights, we construct a multi-scalar, contextually flexible, multimethod-based framework for measuring one central component of adaptation: adaptive capacity.

Knowledge is one powerful determinant of adaptive capacity and must be mobilized to increase community resilience. Knowledge is not merely the possession of information. To enhance adaptive capacity, an actor must develop evidence-based beliefs, derived from either formal science or local/traditional ways of knowing, about current and likely future effects of climate change in their area, as well as potential adaptation strategies and their likely consequences.⁵ This policy brief outlines a universal framework for assessing actors’ knowledge as a way to gauge their adaptive capacity. We propose a “knowledge ladder” as an index that actors at all scales can use to determine their level of adaptive capacity, track progress in increasing adaptive capacity over time, and compare their capacity-building efforts with others.

What is adaptive capacity?

While there is no universally accepted definition of adaptive capacity, it is typically used in accordance with the IPCC’s definition: the ability of actors at different scales -- from individuals to nations -- to prepare for and respond successfully to current and likely future changes in the climate system.³ More recent definitions stress that adaptive capacity should also include actor’s ability to “take advantage of opportunities” presented by climate-related stresses.⁴ Researchers have also identified a number of determinants of adaptive capacity -- access to resources, technological capacity, access to information, etc. -- and have used these and others as indicators for assessing adaptive capacity at different scales.

Why adaptive capacity?

Measuring adaptation is crucial for achieving the “Global Goal on Adaptation.” However, the GGA has not yet been set, nor have standards been established that would allow Parties to measure progress toward a

global adaptation goal. In contrast, the global goal for mitigation, which aims to limit average global temperature rise to 2 degrees Celsius (with the added aim to limit temperature rise to 1.5 degrees), is quantifiable, clearly defined, and measurable.

Defining and measuring adaptation are especially important in light of Article 13 of the Paris Agreement on transparency. This Article requires Parties to continually report actions taken and support given toward national and global goals. Transparent reporting ensures countries can be held accountable through a system of “naming and blaming,” which is the crux of the Paris Agreement.

An index for measuring adaptive capacity will be useful for UNFCCC-led goals and reporting, and can allow regional, national, sub-national, and local actors to better assess their readiness for adapting to climate change. Such a framework for assessment can be used by actors at different scales -- such as city governments, district leaders, regional NGOs, and national planners to compare their adaptive capacities across like entities or between scales. For example, a standardized methodology for measuring adaptive at the city level could facilitate comparisons of adaptive capacity in urban areas in South Asia, and encourage subsequent knowledge-sharing between them.

Measuring adaptive capacity, either by outside assessors or through self-assessment, focuses actors’ attention on a long-term conception of a community’s ability to adapt. Abundant awareness of climate change, knowledge and resources to imagine and implement adaptive strategies, and widespread support for doing so all lessen the climate change impacts a community experiences. Adaptive capacity is thus a critical tool in efforts to reduce both economic and non-economic loss and damage.

Knowledge in other indexes

The Human Development Index (UNDP)

- Measured as the “composite score of mean years of schooling and expected years of schooling”
- Knowledge is the ability to acquire knowledge through schooling.

The Knowledge Economy Index (World Bank)

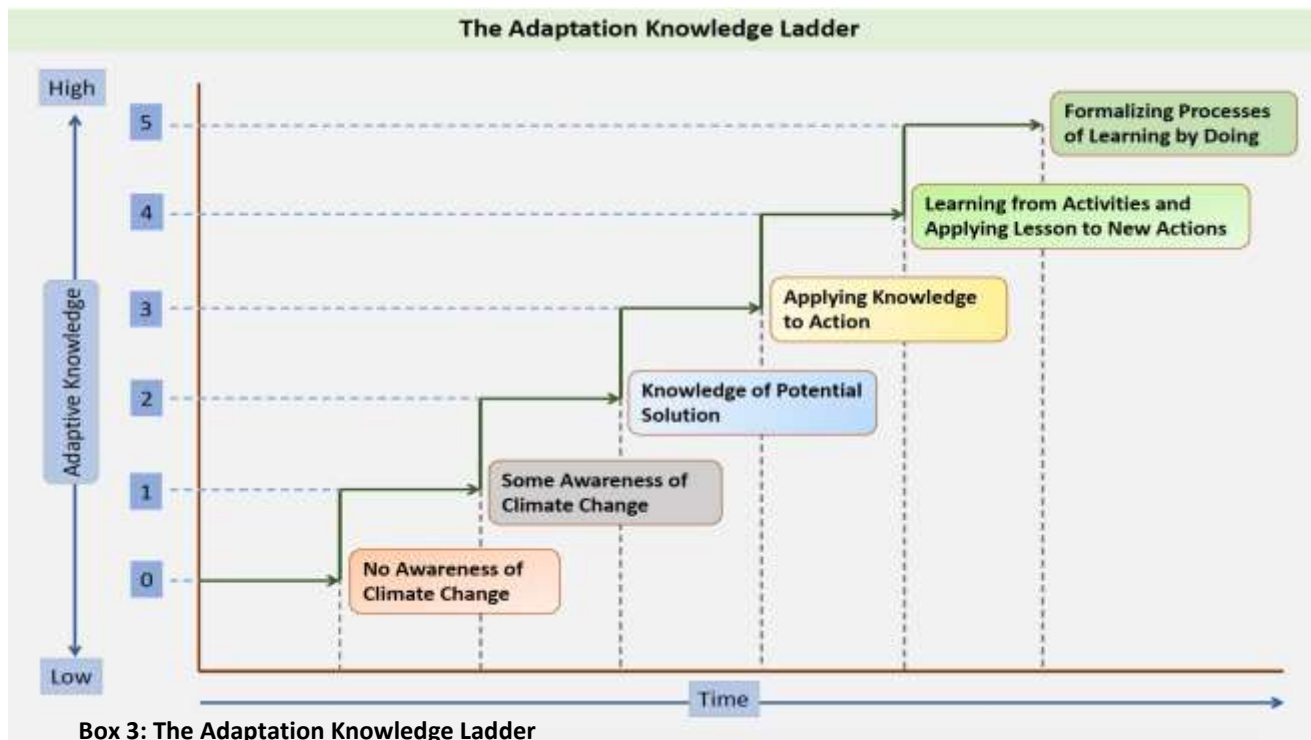
- Measured as the composite of the adult literacy rate, gross secondary school enrollment rate, and gross tertiary school enrollment rate.
- Knowledge is the main driver of economic growth.

Box 2

Knowledge is a Key Indicator

Knowledge consistently appears in the literature as a significant determinant of adaptive capacity, even though researchers disagree about how best to define and measure it. Knowledge, both of likely future changes in the climate and possible adaptation strategies, empowers individuals and groups to decide whether, when, and how to adapt, and enables them to address place-specific effects of climate change in ways that prioritize their long-term goals. It determines how well actors can adapt within constraints imposed by limited resources and power. Knowledge is, in this sense, a necessary but insufficient condition for successful adaptation: **regardless of how much money or power actors have,⁶ they cannot adapt to climate-induced hazards or stresses unless they are aware of a problem, understand potential responses to this problem, and know how to effectively implement these responses.**

An adaptive capacity index that includes knowledge as a key indicator must learn from indexes such as the Human Development Index⁷ and Knowledge Economy Index⁸ (see Box 2), while also seeking to better capture all knowledge that may contribute to adaptive capacity. For example, awareness of climate change and ability to construct solutions may come from a formal education system, but it may also come from years of experience and knowledge-sharing among farmers or from reading newspapers and watching documentaries. Foregrounding knowledge, as these indexes do, should be maintained, but a broader, more inclusive definition of knowledge is imperative to accurately capture knowledge relevant to climate adaptation. In this way, knowledge as measured by global indexes must be reimagined to focus more qualitatively on individuals’ substantive familiarity with certain material, and their ability to translate that information into positive outcomes. For this reason, as elaborated below, we consider the types of knowledge that contribute to adaptive capacity broadly.



Box 3: The Adaptation Knowledge Ladder

Climbing the Knowledge Ladder

We propose a standardized scale, or “knowledge ladder,” for actors – from farming communities to national governments – to identify their level of adaptive knowledge, track efforts to increase adaptive knowledge over time, and compare progress to similar actors at the same scale. Such a scale can also be employed by the UNFCCC to track progress towards meeting the GGA.

Here, adaptive knowledge refers to any knowledge that improves individuals’ or groups’ abilities to adapt themselves to climate change. The knowledge ladder includes two types of adaptive knowledge: theoretical knowledge (awareness of a problem and knowledge of potential solutions) and experiential knowledge (understanding derived from applying knowledge to specific cases). Having theoretical knowledge is essential to building adaptive capacity. For example, the City of Dhaka cannot successfully respond to changes in rainfall patterns, if its administrators do not know how rainfall patterns are likely to change, how these changes might affect the populace, and what sorts of actions the City can take to manage these changes.

Experiential knowledge, or “learning by doing,” sits at the highest rungs of the knowledge ladder because it implements knowledge of climate-related problems and potential solutions, while also evincing the existence of a process, formal or informal, for testing potential solutions in an iterative and progressive system of trial and error. Such a process enables actors to produce their own knowledge, rather than relying exclusively on theoretical knowledge transmitted from others, and to use this knowledge to address place-specific stresses in a way that serves their needs and long-term development goals.

Having a standardized knowledge ladder allows actors to assess their adaptive knowledge, and evaluate efforts to increase this knowledge over time. While we suggest the UNFCCC develop its own indicators of adaptive knowledge and conduct evaluations in various countries as a way to track progress towards the global goal, **we also propose that actors use the knowledge ladder as a self-assessment tool.** Actors should determine the criteria for advancing up the knowledge ladder based on their place- and value-specific adaptation needs. Indicators and scoring are to be determined by each actor, and should reflect their judgment about what sorts of knowledge are most important in achieving their adaptation goals. For instance, Dhaka City officials may decide that 80 percent of the city’s population should be aware of the city’s climate risks in order to advance from Level 0 to Level 1. They may then develop place-specific indicators of awareness -- whether surveys or proxy indicators like penetration of television programs about climate change -- to evaluate progress towards this goal. City officials could perform the same process for each step on the knowledge ladder.

Having a standardized knowledge scale also allows actors to compare their progress in expanding adaptive knowledge with other actors. If cities in South Asia all begin to track their adaptive knowledge according to the same knowledge ladder, Dhaka City administrators could compare the city’s knowledge level with Mumbai City. Even if different cities use place-specific criteria for determining their position on the ladder, having a standardized scale, at a minimum, helps city administrators in different places ground conversations

about building adaptive knowledge in a common scale, shared goals, and a mutual understanding of what progress means. It might also encourage cities to share best practices for increasing adaptive knowledge and tracking efforts to do so.

Actors will find different indicators more or less useful for determining their position on the knowledge ladder. However, the following might serve as helpful proxies for relevant theoretical and experiential knowledge. Indicators of theoretical knowledge might include:

- public opportunities to take courses on climate change and/or adaptation;
- frequency of science-based news reports about climate change in an area;
- reach of educational programs that address climate change;
- local customs or institutions that promote attentiveness to, or documentation of, changes in weather patterns;
- presence of institutions that encourage knowledge sharing and collaborative knowledge production about climate change.

Indicators of experiential knowledge might include:

- opportunities, like grants or incubator programs, to test adaptation strategies;
- existence of published or internal reports documenting adaptation efforts;
- frequency of trainings or conferences held to teach others about lessons learned from adaptation efforts;
- successful adaptation actions occurring nearby, creating opportunities to model behavior;
- implementation of adaptive infrastructure, such as plinth-raising or flood barriers.

Next Steps

Rather than deciding in advance what sorts of knowledge will be most valuable to which actors, our framework proposes:

- a) the general categories of knowledge actors must possess to successfully prepare for and respond to climate change;
- b) possible indicators that actors can use to self-assess their climate knowledge; and
- c) the various levels actors should seek to ascend as they build their adaptive capacity. Our framework provides a template for actors interested in assessing adaptive capacity, and a scale actors can use to track progress over time and compare themselves to similar actors.

The knowledge ladder is a useful framework for both conceptualizing and assessing knowledge as an integral component of adaptive capacity. While it cannot by itself assess the totality of an actor's adaptive capacity, it is an important first step in imagining how we might define and work toward a GGA. The knowledge ladder should serve

as both a model and a reference for the measurement and assessment of adaptive capacity in the future

References

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Acronyms and Abbreviations

- GGA:** Global Goal on Adaptation
- UNDP:** United Nations Development Programme
- UNEP:** United Nations Environment Programme
- UNFCCC:** United Nations Framework Convention on Climate Change
- IPCC:** Intergovernmental Panel on Climate Change