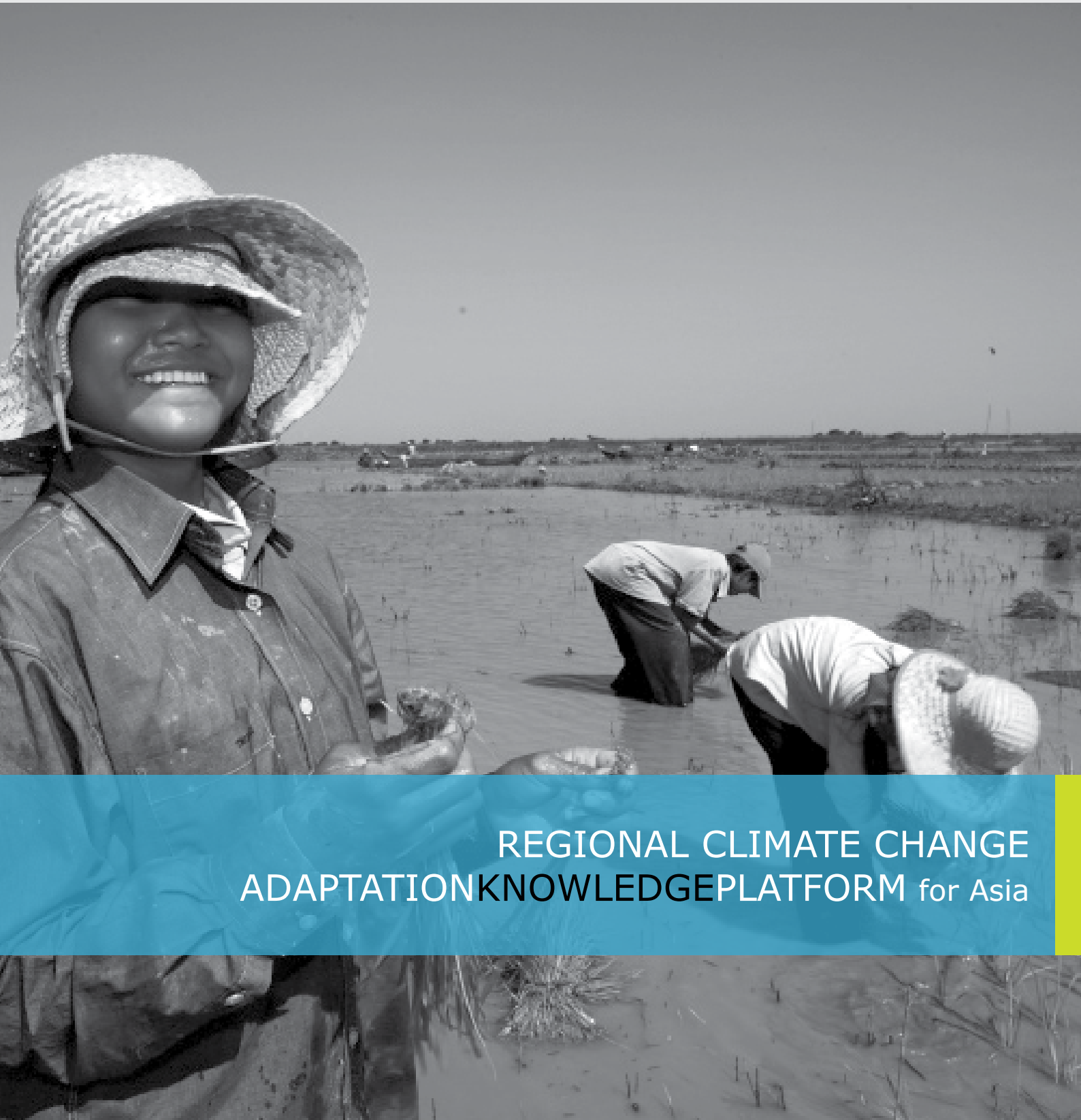


Policy Research Brief No 2
Adaptation Knowledge
October 2011



**ADAPTATION
KNOWLEDGE
PLATFORM**



**REGIONAL CLIMATE CHANGE
ADAPTATIONKNOWLEDGEPLATFORM for Asia**

This **Policy Research Brief** draws on work in progress related to the Adaptation Knowledge Platform to disseminate and exchange adaptation knowledge with a wider audience. We welcome your suggestions or comments.

This Policy Research Brief was written by **Louis Lebel** (Unit for Social and Environmental Research, Chiang Mai University, *llebel@loxinfo.co.th*) on behalf of the Adaptation Knowledge Platform. It summarizes the key messages from two journal articles in preparation on adaptation knowledge.

^{21, 22}

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Bangkok, Thailand
October 2011

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ADAPTATION KNOWLEDGE

This policy brief reflects on the role of knowledge in the adaptation to climate change. It is not meant to be prescriptive but rather to provoke critical thinking about how information is mobilized, collated and disseminated in support of adaptation. There are four key messages.

- First, knowledge important to adaptation can come from sources such as science and practice, as well as experience, customs and traditions.
- Second, knowledge-action gaps arise not only because needed knowledge is missing, but also because existing knowledge is impractical, inaccessible or otherwise goes unused.
- Third, narrowing of knowledge-action gaps requires active management of boundaries between knowledge holders and users.
- Fourth, knowledge is important, but not sufficient for action. There must also be capacity and incentives or motivation.

The brief derives from the experiences of the Adaptation Knowledge Platform. It draws on issues raised at the October 2010 Adaptation Forum held in Bangkok's United Nations Conference Centre and in an on-going series of sharing and learning seminars.^{2,6}

SCIENTIFIC KNOWLEDGE

Science is a crucial source of research- or evidence-based knowledge for adaptation. This includes, for example, the likely behavior of specific climate variables, the sensitivity of particular ecosystems or households, the underlying social and political causes of individual vulnerability, the potential sources of resilience and the likely consequences and costs of alternative adaptation interventions.

The importance of scientific knowledge for adaptation is widely recognized. Formal assessment processes synthesize existing science and understanding and make them relevant for decision-makers in a particular place, sector or business.

Scientific networks that cut across academic – bureaucratic lines within countries, as well as across national borders, play key roles in building capacities to interpret and use the latest scientific knowledge.

Information systems that allow better sharing of data, methods, findings and case studies also play an important role in the dissemination of scientific knowledge.¹⁰

Good science communicators may not only synthesise findings but also help explain climate change and thus improve the understanding of climate risks by laypersons and officials.⁸ Mass media has had and will continue to have a very important role to play in making such knowledge more widely accessible.¹¹

However, scientific knowledge alone – useful as it can be – will not be sufficient for effectively adapting to climate change. Other sources of knowledge are also important.

LOCAL KNOWLEDGE



Local knowledge, whether based on actual experiences, codified in traditions, or tacitly embedded in practices, is important to adaptation actions because it can take into account specific features of biophysical and social context.

Local knowledge about past changes in climate or ecosystems, about sources of vulnerability and resilience, or about specific ways to adapt may be significant. Community-based approaches to disaster risk reduction and now, increasingly, to climate change adaptation often pay substantial attention to local knowledge.

Awareness of climate

Awareness of changes in climate or in ecosystems upon which livelihoods depend is an important form of local, experience-based, knowledge for adaptation. Users of natural resources learn about changes in their environment from direct observations or experience as well as from other users. Such local knowledge is not only critical to livelihoods, but also valued by scientists.

Villagers in eastern Tibet perceive changes in temperature, precipitation, and glacial retreat that correspond to instrumental data.¹² Samoans monitor changes in plants and animal behavior to forecast changes in weather and climate and to anticipate extreme events.²⁶ Inhabitants of Kiribati observe changes in temperature, rainfall, sea-level and water resources that are consistent with instrumental records and noted impacts on tree mortality.¹⁹ Local fishers in the Solomon Islands report that seagrass beds have expanded and observe a gradual sea-level rise over a fifty year period.²⁰

Knowledge relevant to adaptation can come from sources such as science and practice, as well as experience, customs and traditions.

The local knowledge of Aboriginal and Torres Strait islanders in northern Australia has been incorporated by agencies into fire management, natural resource management and information materials produced for visitors.^{18,31}

Local observations can draw attention to new factors unforeseen by the big picture. Thus, combining different sources of knowledge may produce a better understanding than can be obtained from one source alone.⁵

Vulnerability and sources of resilience

Vulnerable people often have important insights into what causes vulnerability and where are sources of resilience within their communities. Nomadic herders in the desert-steppe of Mongolia identify sand storms and intense and longer droughts, brought about by recent climate changes, as the most important threats to their livelihoods.²⁷ But fully understanding vulnerabilities and sources of resilience often depends on having links to information sources at other levels and from other places. Existing social structures also underlie differences in vulnerability.¹³ Special attention must often be given to marginalized groups, women, the elderly and children⁹. Gender roles can be significant barriers to risk reduction projects.¹⁷

Adaptation strategies

The experience, the practical and the local knowledge of natural resource users and managers are useful starting points for adaptation because these are often concerned with strategies for coping with change. Ecosystems and markets are seen as inherently dynamic and climate as just one of several drivers that need to be considered in making ends meet.

The capacity of farmers to adapt to changes is widely acknowledged.^{1,7} Farmers in Jharkhand build bunds and weirs from local materials that offer low-cost alternatives to imported materials while being effective for water harvesting in dry periods.¹⁵ Adi villagers in Arunachal maintain good quality community forests that improve livelihood resilience.³² In Nepal resilient institutions for community forestry, irrigation and alpine herding provide foundations for developing adaptation strategies.⁵

Historically, residents of small islands, used their knowledge about winds, tides, wave action and storms to locate villages and homes.²⁸ Building methods also reflected local conditions. Management of coastal erosion problems, using mangroves that are self-sustaining rather than concrete walls that need constant repairs, also provides other ecosystem services.³

GAPS

A knowledge-action gap is a mismatch between understanding a problem and doing something about it.^{23, 25}

Missing

Knowledge may be missing because there is no research, or research has been carried out but has discovered no salient solutions. The lack of research may be a result of setting agendas in ways which lead to insufficient investment. Some problems in adaptation are inherently complex and, despite substantial research effort, may remain intractable until the research questions are reframed.

Inaccessible

Knowledge may be inaccessible because of problems of communication or understanding. Access difficulties may also arise from insufficient capacities to acquire knowledge. Knowledge-action gaps are often created by lack of coordination and collaboration among agencies.²³ Problems of poor communication and insufficient capacity largely explain why some knowledge exists but remains inaccessible²⁹.

Unused

Knowledge may exist but remain unused because the incentives for its adoption and change of practices are inadequate. Narrow interests, power relations and existence of other higher priorities may prevent otherwise actionable knowledge from being used. Knowledge may also be ignored because there are other legitimate priorities for allocation of resources or action.

Knowledge-action gaps arise not only because needed knowledge is missing, but also because existing knowledge is impractical, inaccessible or otherwise goes unused.

Uninformed

Action may be taken without the support of relevant knowledge. This happens, for example, when the motivation of decision-makers is to be “seen as doing something” without paying too much attention to details or appropriateness. In other, more creative cases, actions may be taken with very incomplete knowledge, but with careful monitoring and follow-up in the hope of learning something – learning by doing.

Climate change as a phenomenon has some features that make gaps more likely:

- Amount of change and impacts are uncertain
- Impacts are heterogeneous making it difficult to cover all places or sectors with one policy or program
- Some changes are slow and cumulative and thus lack immediacy compared to other threats and issues
- Imperfect knowledge and long-time horizons suggest that both knowledge and action must consider the need for monitoring, review and revision of agendas and programs.

BRIDGES

Despite a rapidly growing body of research on the potential impacts from and vulnerabilities to climate change, and despite increasing policy attention to mainstreaming, major knowledge-action gaps remain with respect to adaptation. A few successful strategies for bridging these gaps are emerging from experience in the Asia-Pacific region. Here we highlight three.

Engage stakeholders

Most initiatives on adaptation knowledge have treated gaps as arising from a deficit of knowledge among non-experts. The communication strategy, accordingly, has been one of improving the accessibility and transfer of expert knowledge to those without expertise following either educational or marketing models.

As we have seen in this brief summary the knowledge required for successful adaptation is not just held by scientific experts. Thus, an alternative communication strategy is also needed – one which takes more seriously the engagement of stakeholders in the dialogue.

Manage boundaries

Better two-way communication is very useful for bridging gaps where the required knowledge exists somewhere, but it is not sufficient to generate the missing knowledge that is needed or to make it likely that actions will be well-informed.^{14, 30}

Narrowing knowledge-action gaps also requires active management of the boundaries between knowledge and action – or the links between science, policy

and practices.³³ How to do this well and systematically is still an open important policy question, but here are some suggestive insights.

Joint setting of research agendas could help make new scientific knowledge on adaptation more likely to be actionable. In practice this implies that decision makers in policy, planning or operational-practices need to have more meaningful representation on governing bodies for research funding.

Bridges are also built by giving each side a chance to understand each other better. Thus, there is high potential for bridge-building in temporary exchanges of individuals among academic, policy, and management agencies and other forms of inter-agency partnerships.²⁴

Narrowing knowledge-action gaps requires active management of boundaries between knowledge holders and users.

More opportunities for scientists and other stakeholders to scrutinize and deliberate draft adaptation policies and plans could lead to better informed, as well as more widely supported, action agendas. In practice this often means opening up policy and planning formulation earlier and more completely for public scrutiny.

MOTIVATION & INCENTIVES

Decision-makers, in the government or the private sector, will take action when there is a clear motivation and incentive to do so. Scientific experts need to be able to communicate clearly the significance of climate change in their sectors, places or areas of responsibility.

Of course decision-makers must still judge this knowledge against the situation they face, including resources at hand, but also against other competing priorities and driving factors. It may be that, after doing so, adaptation is not considered sufficiently important to change the development policy or plan or business strategy.

In practice, this means that actions to address adaptation should start by examining and modifying (if warranted) current policies, plans and institutions.¹⁶

Knowledge is important, but not sufficient for action. There must also be capacity, incentives and motivation.

Various screening tools can help with the initial identification of climate sensitive projects or policies, but a full assessment may be needed if there are significant climate-related risks to consider.

Even when climate adaptation actions are clearly warranted and agreed on, development planning still needs to maintain some flexibility and reversibility to cater for changes in understanding, risks and impacts.

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October 2011
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