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Research for Biosphere Stewardship and Innovation

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Fact sheet

MULTIPLE EVIDENCE BASE (MEB)

A framework for connecting indigenous, local and scientific knowledge systems

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The Multiple Evidence Base (MEB) is an approach for connecting knowledge systems, building dialogue and mobilizing existing knowledge for assessments and improved policy such as potentially within IPBES. It is also a way to support and enhance existing mechanisms for learning and decision-making in response to the dynamics of social-ecological systems at all scales.

Indigenous and local knowledge systems are increasingly recognized and brought forward as sources of understanding on ecosystem dynamics, sustainable practices, and interdependencies between people and nature; a potential that often has not informed decision making on ecosystem management beyond the local level. In some regions and at some temporal and spatial scale, our sole source of knowledge may reside among local users and managers. However, there has so far been limited success in bringing knowledge systems together beyond case studies.

Furthermore, the actors and knowledge systems that generate and underpin knowledge and insights are often not part of decision-making processes. Thus, there is a great need to develop functioning mechanisms to engage and legitimate in a transparent and constructive way synergies between knowledge systems (Reid et al. 2006).

The Multiple Evidence Base is an approach that proposes parallels whereas indigenous, local and scientific knowledge systems are viewed to generate equally valid, complementarily and useful evidence for interpreting conditions, change, trajectories, and in some cases causal relationships relevant to the sustainable governance of ecosystems and biodiversity (Tengö et al. 2013). The approach draws on literature emphasizing the complementary nature of various knowledge systems, as well as the need to move away from translating knowledge into one currency, i.e. "integrating" indigenous and local knowledge into science through unidirectional validation processes (Berkes 2007, Nadasdy 1999).

The Sagla (chief) Leodomiro Paredes of Usdub, Guna Yala welcoming participants from a diversity of knowledge systems to the international dialogue workshop "Knowledge for the 21st Century: Indigenous knowledge, traditional knowledge, science and connecting diverse knowledge systems" held in Panama, April 2012, before the IPBES Panama meeting to establish the IPBES (see www.dialogueseminars.net/Panama)

It also draws on the outcomes of a dialogue process in collaboration with a network of indigenous peoples and local communities, in particular the International Indigenous Forum for Biodiversity (IIFB) (see www.dialogueseminars.net/panama). The starting point in the Multiple Evidence Base approach is that each system contributes to knowledge relevant to the sustainable management of ecosystems – through its own unique practices and experiences, complementarities as well as new ideas, and innovation from cross-fertilization across knowledge systems.

All these are valid and need to be build upon in e.g. assessments and policy decisions related to biodiversity and ecosystem services. The type of contribution may vary according to the problem at hand, including the extent to which it may apply. However, to realize this potential, we argue that different criteria of validation should be applied to data and information originating from different knowledge systems. The MEB approach highlights the importance of indigenous and local knowledge systems on their own terms, i.e., validated within rather than by pre-defined science criteria. It also recognizes differences within different types of scientific knowledge, such as social science and natural science disciplines, and forms of evidence.

This process allows for an enriched picture to emerge based on the triangulation of information across knowledge systems and thus evaluation of the relevance of knowledge and information at different scales and in different contexts. Brought together, multiple evidence on an issue or assessment topic, such as Arctic sea ice dynamics related to climate change, will create an enriched picture of understanding in an assessment process. The enriched picture is also a starting point for further knowledge generation, within or across knowledge systems through cross-fertilization and co-production of knowledge. This is outlined in Figure 1.

We propose the MEB as a 'nested approach' that considers different types of knowledge (from very specific and localized to more general) and different types of overlap between knowledge systems that may appear at different levels (and for different goals). Parallel approaches to addressing complementarities, potential synergies as well as contradictions across knowledge systems have been applied across the globe and for various issues, for example sea ice dynamic and climate change (Laider 2006), population dynamics of fish and other wildlife (Mackinson 2001, Moller et al. 2004, Gagnon & Berteaux, 2009), as well

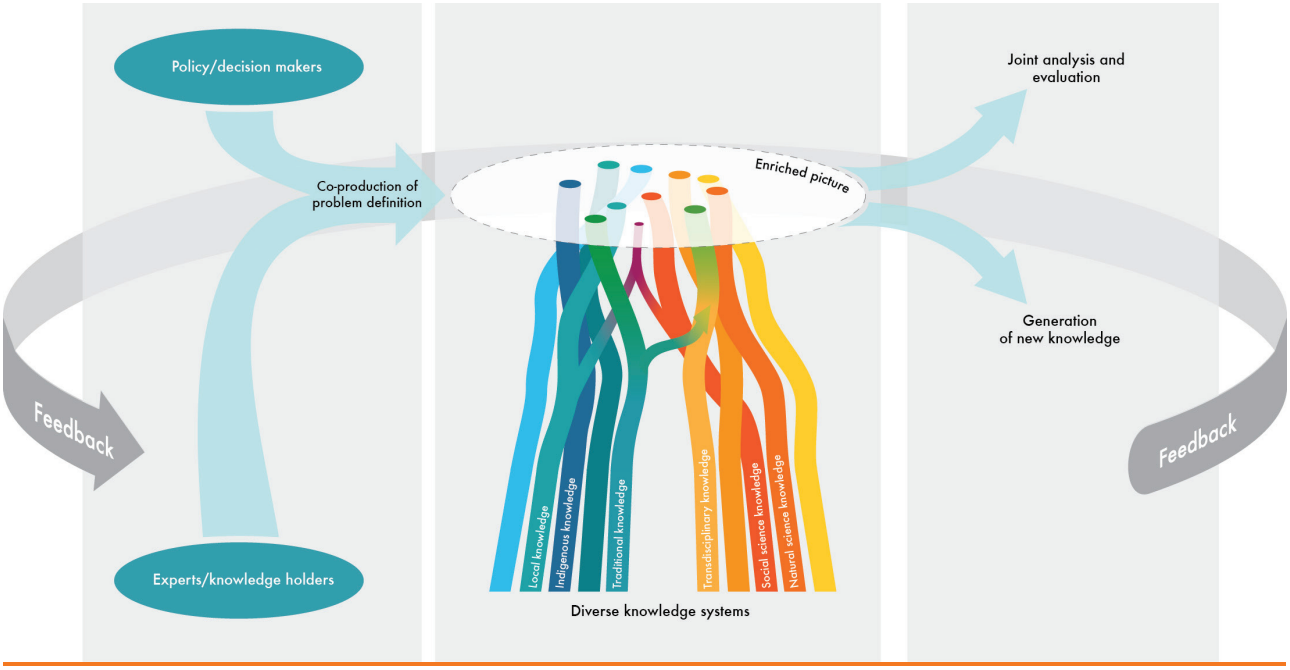

Figure 1. *Outlining three phases of a Multiple Evidence Base approach, that emphasizes the need for co-production of problem definitions as well as joint analysis and evaluation of the enriched picture created in the assessment process. Phase 1 Concerns defining stakeholders, problems and goals in a collaborative manner. Phase 2 entails bringing together knowledge on an equal platform, using parallel systems of valuing and assessing knowledge, and Phase 3 is the joint analysis and evaluation of knowledge and insights to generate multi-level synthesis and identify and catalyze processes for generating new knowledge.*

as land use change and farming practices (Chalmers and Fabricius 2007, Brondizio 2008), see more details in Table 1.

Many of the case studies find that a MEB approach creates an opportunity for "a culturally informed" appraisal of scientific knowledge and practice (IPBES, 2012). For example, it has been shown that combining scientific and traditional methods for monitoring wildlife provides an opportunity for customary users to scrutinize science and for science to learn relationships and processes previously unknown (Moller et al. 2004). Thus, in addition to broadening and enhancing the available sources of relevant knowledge as base for decision making, a MEB approach aims at enhancing trust and avoiding the arrogance of a single ex ante "right approach," which frequently overrides the contribution of indigenous peoples, local communities, and practitioners in the context of assessment programs and development projects.

An on-going knowledge platform that uses a MEB approach is the Community Based Monitoring and Information Systems (CBMIS), a bottom-up process for mobilizing indigenous and local knowledge for monitoring of biodiversity, ecosystems, and human wellbeing. CBMIS refers to the bundle of monitoring approaches related to biodiversity, ecosystems, land and waters, and other resources, as well as human well-being, used by indigenous peoples and local communities as tools for their management and documentation of their resources. CBMIS is a joint initiative among a global network of indigenous peoples and local communities, which seeks to combine the monitoring needs of communities with need for detailed data as a base for joint action related to territories and resources. The initiative emerged in cooperating with the CBD Secretariat and the UN Permanent Forum on Indigenous Issues. Initially, regional and thematic workshops have been organized to identify indicators relevant for indigenous peoples, towards monitoring local to global progress in achieving internationally agreed environment and development goals, such as the indicators related to traditional knowledge for the Aichi biodiversity targets. The network is now advancing in developing tools and methods to a common set of instruments that can be used by communities. (SCBD, 2013; Stankovich, M. et.al, 2013).

To realize a MEB approach in e.g. assessments processes, there is a need for true dialogues, which gives and promotes credibility and legitimacy of all involved. This requires a process whereas the problem definition, the assessment process, and the evaluation of findings involve co-production and collaboration with relevant stakeholders from the onset. As part of this, there is a need for innovative ways for dialoguing and meeting, as well as new tools and understanding of e.g. combining qualitative and quantitative data and scaling knowledge across scales.

A MEB approach should be tailored in relation to different goals, regions, and kinds of assessment and scales of investigation, but also needs to recognize cross-scale interactions.

Summary

Indigenous, local, and scientific knowledge systems are different manifestations of valid and useful knowledge systems which generate complementary evidence for interpreting conditions, change, trajectories, and causal relationships relevant to the sustainable governance of ecosystems and biodiversity.

MEB responds to the need to move away from translating knowledge into one currency, i.e. "integrating" local and indigenous knowledge into science.

MEB is aimed at building dialogue in a way to mobilize existing knowledge for assessments and improved policy such as potentially within IPBES.

Different criteria of validation should be applied to data and information originating from different knowledge systems.

MEB aims to generate an equal starting point for mutually agreed ways to proceed, including the potential for co-production of knowledge.

The complementary perspective proposed by such approach will contribute to build resilience and capacity for transformation that includes empowerment of indigenous peoples and local communities.

Table 1. Examples of case studies using a multiple evidence approach

Issue investigated	Multiple Evidence Base	Reference
Relationship between Arctic sea ice and climate change	Literature review assessing current research presenting Inuit knowledge or observations of sea ice, along with scientific knowledge or observations of sea ice	(Laidler, 2006)
Monitoring of sustainable customary wildlife harvests in Canada and New Zealand	Data sharing and calibrating traditional monitoring methods against scientific abundance measures. Interviews and collaborations with hunters	(Moller, Berkes, Lyver, & Kislalioglu, 2004)
Comparing local and scientific understanding of land use and land cover change and underlying drivers, Wild Coast, Eastern Cape, South Africa	Interviews with local experts and other local representatives, and reviewing scientific literature on forest-savannah dynamics	(Chalmers & Fabricius, 2007)
Fish population spatial dynamics, British Columbia, Canada	Combining knowledge of fish behaviour and distribution. Interviews with fishery scientists, fishery managers, and local fishers	(Mackinson, 2001)
Ecology of Arctic Fox and Snow Goose in Nunavut, Canada	Investigating the complementarity of Inuit TEK and scientific knowledge across spatial and temporal scales. Workshops, interviews, mapping for collecting TEK, review of scientific information	(Gagnon & Berteaux, 2009)
Agroforestry intensification in the Amazon estuary	Investigation involved learning from and doing experiments with estuarine small farmers on the management techniques used to intensify food production (acai palm fruit) without deforestation. Mapping and quantitative data complements ethnography, ethnobotany	(Brondizio, 2008)

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