

AMESH: A New Approach to Environmental Health



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Keane Shore

[Photo: A bulldozer in Tunisia levels the habitat of wild rodents that transmit leishmaniasis.]

In the less complex-seeming world of several decades ago, international development agencies saw simple problems, and responded with direct and obvious solutions. Now, they're realizing more and more that an aid project may be an object lesson in chaos theory: the equivalent of a tiny butterfly's wing beat leading to an unforeseen hurricane.

[David Waltner-Toews](#) of the University of Guelph is one of a growing number of researchers grappling with ways to understand such complexity, with regard to environmental health issues in developing countries. He and many others believe that health issues can't be isolated from their context — nor properly solved outside it — without unintended consequences. (For example, some water management initiatives designed to promote population health, such as irrigation and hydroelectric dams, provide habitats for infectious diseases such as malaria.)

Coping with complexity

That's why his group created AMESH — an [Adaptive Methodology for Ecosystem Sustainability and Health](#) — to help development researchers cope with complexity. The AMESH approach resulted from a research collaboration between the [University of Guelph](#) team and the [International Center for Tropical Agriculture](#) (CIAT) in the western Amazon frontier region of Ucayali, Peru. Launched in 1996 with funding from the Canadian International Development Agency (CIDA), the Ucayali project is supported today by the International Development Research Centre (IDRC) and other organizations.

According to Dr Waltner-Toews, the ecosystem approach is more demanding and gratifying — both intellectually and practically — than traditional approaches to environmental health which focus only on quantitative measurements of short term outcomes. AMESH builds on a wide range of practice and theory borrowed from systems, ecosystem management, health, development, and participatory action research.

Practical and participatory

"AMESH .. is theoretically grounded in our most current understanding of complex systems, and is, at the same time, practical and participatory," Dr Waltner-Toews and his three associates — Tamsyn Murray, James Kay, and Ernesto Raez-Luna — wrote in an introductory paper about the methodology. With funding from IDRC, "it is currently being tested in urban, rural, and frontier contexts, and appears to be adaptable to a wide variety of settings... Unlike conventional research methodologies, the process itself promotes the ends — health, sustainability, and ecological integrity — that it seeks to achieve."

Dr Waltner-Toews likens traditional health research methods to a single small window on a problem. By contrast, AMESH attempts to build a larger picture, like that created from many pieces of stained glass, based on vast local consultation. Rather than relying on a fixed, linear checklist, the methodology employs a set of branched and nested questions. Depending on the responses of community members and groups, the results guide them and the research team in many different directions until a problem is articulated more fully than in traditional linear-statistical approaches.

Strengths

The strength of AMESH is that it examines interactions between often-competing health, environmental, and economic goals, says Dr Waltner-Toews. This helps development planners — and the people their projects affect — to identify what trade-offs they may need to make, and to negotiate ways to make them. Because this is a highly participatory approach, it also promotes awareness and builds local capacity.

But implementing AMESH holds major challenges. Bringing so many different perspectives and investigative methods to bear on an environmental health problem sometimes leaves researchers wondering how to integrate them all into a clear picture at the end of the process.

Core question

"One of the core questions in this whole area is: How do you test the quality of information from multiple perspectives and multiple sources?" says Dr Waltner-Toews. "We always simplify when we make decisions. What's the appropriate way to simplify with this kind of view? We can't look at everything all of the time. Traditionally, all we've done is [acknowledge that] these questions are too complex, so we reduce the questions to the size of our statistical methods. While some of these methods work up to a point, they don't [necessarily] answer the questions we want to answer."

One way around this problem is to depict multiple relationships using a 'spaghetti diagram' — so-called because its many circles and arrows look like a plate of pasta. Spaghetti diagrams illustrate both qualitative and quantitative values, weighting relationships and information in ways that traditional statistics cannot. The University of Guelph team constructs them by posing several sets of questions designed to identify all stakeholders; reconstruct historical reasons for present circumstances; understand the effects of official policies; and obtain many perspectives on the local reality. The resulting picture is "a richer, more realistic, and holistic appreciation of the area," he suggests.

Testing AMESH

According to Dr Waltner-Toews, the methodology works best in well-defined communities that are tied closely to the landscape — often rural. His team is now studying how to adapt it to more urban settings, where people have less of a sense of place. (With funding from IDRC, he and his colleagues are working with two Nepalese organizations to improve water quality and reduce the incidence of a parasitic disease spread by stray dogs in Kathmandu.)

"The biggest challenge to sustainability is not technical, but one of imagination. People are unable to imagine alternative ways of living," he stresses. "The technical stuff only has meaning in the context of the world people want. The world can be imagined in systems terms, but there is in principle no single systems model that can capture that complex reality. This means that we can never completely predict what will happen, no matter how much we know."

Improvising healthy living

"There is structure in nature," concludes Dr Waltner-Toews. "Our task is to find out how to improvise healthy ways of living within that structure."

Keane J. Shore is an Ottawa-based writer and editor. (Photo: R. Ben-Ismael, IDRC)

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