Integrating science into humanitarian and development planning and practice to enhance community resilience

Executive Summary

The full guidelines are available for download at www.ukcds.org.uk/resources/integrating-science-into-humanitarian-and-development-planning

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Integrating science enables innovation and shared learning. For example, in Bangladesh, Kakoli and her son Ruhan (pictured) work with Caritas Bangladesh and the Bangladesh University of Engineering and Technology to monitor soil salinity and test a solar powered water purification system, providing a fresh drinking water and evidence to lobby for improved agricultural practices. Source: Kate Crowley, CAFOD.

Purpose of the guidelines

The full guidelines are for humanitarian and development practitioners looking to effectively integrate relevant scientific understandings of risk within their humanitarian/development planning and practice, for the purpose of enhancing community resilience. They begin with an introduction to what science is and how it might be used, followed by a breakdown of the key components for integrating science these guidelines encourage practitioners to think about the types of scientific information and expertise that they may need, how to access and use them, and how to ensure that they are applied in an ethical and accountable manner. Each section concludes with a checklist of key questions practitioners should consider throughout the process.

The guidelines are not exhaustive or prescriptive instead the aim is to enable practitioners to ask useful questions that will ultimately help them to apply science in their planning and operational decision-making. While the authors acknowledge that invaluable knowledge resides in communities at risk, the draft guidelines are about how to utilise scientific and technical expertise from external institutions.

Executive summary

There has been an increased emphasis upon the application of science for humanitarian and development planning, decision-making and practice; particularly in the context of understanding, assessing and anticipating risk (e.g. HERR, 2011). However, there remains very little guidance for practitioners on how to integrate sciences they may have had little contact with in the past (e.g. climate). This has led to confusion as to which 'science' might be of use and how it would be best utilised. Furthermore, since this integration has stemmed from a need to be more predictive, agencies are struggling with the problems associated with uncertainty and probability.

Whilst a range of expertise is required to build resilience, these guidelines focus solely upon the ***relevant data, information, knowledge, methods, principles and perspective which scientists can provide***, that typically lie outside of current humanitarian and development approaches.

Using checklists, real-life case studies and scenarios the full guidelines take practitioners through a five step approach to finding, understanding and applying science.

This document provides a short summary of the five steps and some key lessons for integrating science.

Cover photo: *Dr Megan French of University College London (UCL) collects samples for water quality analysis in the Bolivian Altiplano with Efrain Blanco Coariti of the Instituto de Investigaciones Químicas, Universidad Mayor de San Andres, Bolivia, a local partner of the Catholic Agency for Overseas Development (CAFOD). The research is coordinated by the UCL-CAFOD partnership. Source: M. French, February 2013.*

Five steps to science integration success	
1. Defining the problem to be addressed:	
Do you (the practitioner) know what sort of information you require?	Begin by identifying and defining the problem to be addressed. This will help establish an aim and set of objectives to determine what sort of information is necessary and, thus, know what questions to ask of scientists. Knowing what questions to ask is a key enabler in obtaining access to scientists: **it is easier to build a dialogue around an initial set of questions, rather than a vague concept** and will also help in monitoring and evaluating the success or failure of the integration of science.
2. Accessing the scientific information, knowledge and expertise:	
Do you know where and how to access scientific information?	Science can be accessed both through open-sources and directly with scientists. **A particularly effective mechanism of engagement is through partnerships with scientific organisations**. Partnerships take time, commitment and resources to build and they may take time to deliver benefit.
3. Understanding the science and assessing its credibility:	
Do you, your partners and the communities you work with understand the science?	Practitioners and other users of science need skills to determine the **credibility and uncertainty** of the science they are using and whether or not it is fit for purpose. There are basic measures that can be adopted to ensure the scientific information is **trustworthy and representative of the real world**. Seeking out more than one source of information and appreciating scientific debate are just some of the ways in which the quality and relevance of scientific information can be verified.
4. Applying scientific information and methods:	
Do you know how to apply scientific information and methods in an ethical and accountable manner?	Whilst scientists and NGOs are both bound by ethical/accountability frameworks alike, it is important to have an agreed set of values prior to meeting with a community. **Accountability mechanisms should be put in place to protect scientists, NGOs and communities**.
5. Measuring the impact of the science integration:	
Do you know how to measure the impact of science integration within your project?	The impact of integrating science can be measured in order to determine whether there has been a positive (or negative) change to a vulnerable communities' situation. This can be achieved throughout the programme cycle but requires the **monitoring of science integration within the project or programme framework from the start**.

> **"Genuine willingness by practitioners to integrate science creates an environment of trust and openness on part of the scientists"**
>
> Scientist at the Kenyan Meteorological Department.

Key considerations when integrating and using science:	
Managing expectations:	Being aware of the limits of science and scientists will help to facilitate partnerships with scientists, who should also be aware of the expectations of communities, and the constraints upon them that may affect their ability to participate.
Knowing the suitable entry point:	Ideally science (just as with any other relevant knowledge) should be used to inform the analysis for and design of any implementation activity. However there may be instances where it is more appropriate to introduce different types of science later in the project cycle.
Science integration should be a positive and beneficial process for all parties involved:	Using science should not be burdensome if the process of engagement is well managed and a proactive approach to accessing the science is adopted. Practitioners should not be put off by uncertainty as all decisions are based on a degree of uncertainty, which should stimulate debate that leads to improved decision making.
Communities are interested in and can understand science:	If well communicated, communities can deal with a number of scientific concepts and uncertainty and make well informed decisions based on this and their own knowledge and understanding. They can also inform the science and participate in scientific research.

Citizen science in action

In flood prone Malawi, Christian Aid with local partner Evangelical Association of Malawi brought together *community members from Village Civil Protection Committees with scientists from the Department of Climate Change and Meteorology and District Council staff responsible for water management and disaster risk reduction. This enabled:*

- *Flood risk mapping*
- *The development of an action plan and implementation of flood mitigation measures.*
- *The calibration and correct siting of river level gauges, with an easy-to-read traffic light system to facilitate early warnings.*
- *The establishment of community-managed rain gauges to enable them to supplement this system and their local indicators with their own data recording for water and drought management.*

The Chikwawa community in Malawi check their own rain gauge as part of their flood monitoring system. Source: Richard Ewbank, Christian Aid.

In conclusion, being able to evaluate the ***credibility*** of the information and ***co-produce the knowledge to inform decision-making and action*** will improve projects and build an evidence base to ***inform future research strategies and influence donor funding*** for this type of work.

Ultimately, partnerships with scientists coupled with ***good communication and understanding*** of the science will transform resilience building programmes, creating spaces for dialogue between stakeholders for the development of high impact innovations.