Expose risk: developing visualisation tools for the future

The need

The disaster management cycle includes mitigation, prevention, preparedness, response and recovery. Development agencies have long term, proactive goals that address underlying risk factors. Humanitarian agencies target short term disaster response. Disaster risk reduction (DRR) aims to reduce risk throughout the disaster cycle and so is key to bridging the agency gap.

Absence of rigorous scientific hazard assessment is a recognised weakness in DRR strategies. Understanding the risk of different communities is of critical importance to deciding where relief efforts should be focused during disasters. This allows us to build on existing community level work in that country, so assisting with effective organisational humanitarian decision making.

What we have achieved

We have trialled the effectiveness of ImpactOnDemand®, a commercial risk visualisation, quantification and modelling tool developed by Aon Benfield.

We piloted this in Cambodia, a country of interest to both non-governmental (NGO) and commercial organisations. The main hazards here are annual flood and droughts, affecting over half a million people and costing $17 million dollars every year1.

This project provides an effective, low-cost method to visualise the exposure of communities to previous and ongoing hazards, in order to prepare for and respond to different disaster scenarios. An output is maps that can be understood and used by different stakeholders with minimal training.

By including information collected by NGOs we have also combined visualisations with a method to rank vulnerable communities, which can be used to prioritise the locations of relief efforts. Analysis of available datasets has been used to create guidelines for the systems and datasets that are required to visualise risk. This can be fed back into the NGO sector to help communities gain a better understanding of risk.

1http://www.preventionweb.net/

“This project has enabled us to identify gaps and opportunities in CAFOD’s community-managed risk assessment processes whilst testing low-cost technologies to develop our scenario planning with local partners. We have demonstrated the added value of collaboration in improved risk reduction for the most vulnerable communities in the world.”

Dr Kate Crowley, CAFOD
**How we did it**

ImpactOnDemand® allows the risk exposure of communities to be identified using geographical information systems (GIS). The exposure of communities is defined by integrating hazard footprints and the locations of population centres and identifying where they intersect.

For flooding events in Cambodia hazard footprints are represented by flooding extents for minor, medium and major events, based on previous flooding scenarios, provided by the Mekong River Commission (MRC).

Populations are represented using census data provided by the MRC and Open Development Cambodia. Census data are particularly useful because they contain attributes that describe the vulnerability of individual communities.

To select and rank the attributes that the communities themselves believe makes them vulnerable, we used participatory vulnerability and capacity assessments (PVCAs) collected by NGOs.

These attributes were then combined to create a social vulnerability index for each community, which provides decision makers with a method of prioritising the exposed communities and therefore indicating where relief efforts should be focused.

Guidelines for using this methodology have been created to allow different stakeholders to create their own maps with minimal training, allowing them to simply create different disaster scenarios.

“ImpactOnDemand® is our online insurance exposure management tool, which is used to assess and visualise risk before, during and after catastrophe events. Through this project we have been able to see how it can be applied to assist in the rapid risk assessment and visualisation of vulnerable communities to the same natural catastrophes.”

Brad Weir, Aon Benfield

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**Meet the team**

From left to right

Richard Wall, UCL
Dr Stephen Edwards, UCL
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**Project Details**

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**Project dates**
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