



Using ICTs to Integrate Frontline Views into Strategic Planning for Climate Change

Authors: Terry Gibson and Nigel Scott

Initiative Overview

The Intergovernmental Panel on Climate Change predicts increasingly intense weather conditions as a result of climate change, which will increase the threat of climatological and related complex disasters (UNISDR 2008). Data from the Centre for Research on the Epidemiology of Disasters (2008) indicates that in 2007, for example, floods and windstorms accounted for 86% of the overall disaster mortality, and hydro-meteorological disasters accounted for more than 98% of the total affected by disasters. Coherent strategies and effective implementation of measures to reduce the vulnerability of people are critical as climate change escalates these hazards in frequency and intensity.

The Hyogo Framework for Action 2005-2015 (HFA) is one such initiative, adopted by 168 countries at the World Conference on Disaster Reduction in Japan in 2005. It promotes a strategic approach to reducing vulnerabilities to and risks of hazards, with the ultimate goal of reducing disaster losses by 2015. The United Nations Global Assessment Report on Disaster Risk Reduction presents an analysis of disaster risks including an overview of progress towards the Hyogo Framework for Action based on self-assessment of progress by over 130 governments (e.g. UNISDR 2011). 'Views from the Frontline' (VFL) fills a gap in the monitoring process by providing a complementary view of progress based not on government self-assessment, but on the experience and views of people living in disaster-prone communities – those on the 'frontline'.

'Views from the Frontline' is a process of gathering information on disaster risk reduction at a local level. Local organisations gather both qualitative case studies and quantitative data from face to face surveys – low cost digital video technology is used to create annotated case study videos, and email and spreadsheets are used to coordinate and manage survey data. In 2011, VFL also trialled an experimental programme to research the use of SMS surveys using mobile phones.

The first VFL report was published in 2009, and a second report (GNDR 2011) was presented at the UN Global Platform for Disaster Risk Reduction in 2011. VFL is seen to provide a generic model by which the voices of local communities can be heard in the debate on climate change and on wider resilience by those in strategic decision-making positions.

Application Description

VFL aims to inform policy making processes such as the Global Platform for Disaster Risk Reduction by providing evidence of what is happening on the ground. For VFL 2011, a short questionnaire was designed comprising 20 questions on local government issues, plus 5 questions about the respondent (e.g. age, gender, location), and 2 questions to establish views on the threat of disaster and progress in reducing disaster losses. Questions on local government covered inclusion and participation, policies

CASE STUDY

Category: ICTs and Climate Change Strategy

and capacity, and accountability and transparency; for example:


- Does the local government ensure women and men participate equally in disaster prevention decision-making and implementation?
- Do local government officials have clear roles and responsibilities to carry out disaster prevention?
- Does the local government regularly monitor and report on progress on disaster prevention?

The case studies ('Actions at the Frontline': see GNDR 2011a) serve to illustrate findings from the survey data, and provide a deeper understanding of how progress is being supported or challenged.

Face to face interviews and group discussions with key informants were carried out by Participating Organisations (POs). POs are typically local civil society organisations, which are supported by a National Coordinating Organisation (NCO). A data entry tool (running on Excel) was provided to enable NCOs to input the data into a structured database for analysis (see Figure 1).

Views from the FrontLine 2010

Page1

 Global Network
of Civil Society Organisations
for Disaster Reduction

Name

Region/PO Location

Male Female

Urban Rural

Young person Adult

CR LG

On the following screens there are 20 questions. Please use these scores to respond:

1. No, not at all
2. To a very limited extent
3. Some activity but significant scope for improvement
4. Yes, but with some limitations in capacities and resources
5. Yes, with satisfactory, sustainable and effective measures in place

Save & Close Database Page 1 of 5 Next

Figure 1: Example of Excel-Based Data Entry Screen for Returning Survey Results

While the VFL process is essentially one of communication upwards through a network, it has been eased by access to simple ICT infrastructure. Email was used to send questionnaires to POs throughout the network, to return data sets to the secretariat, and to disseminate findings and reports to network members. Although Web 2.0 technology has been used to enable members to take part in blogs, online discussions, and a session at the Global Platform event in 2011 was streamed through the GNDR website, members make greater use of simple email discussion lists. The use of ICTs in the VFL process is highlighted in Figure 2.

As part of the 2011 VFL process, GNDR worked with the telecommunications company Txteagle (renamed Jana in late 2011) on an experimental programme to research the use of mobile phone technology for surveys. Txteagle have developed a compensation platform that has been integrated with billing systems of 220 mobile operators around the world, giving them access to 2.1 billion phone numbers in 80 countries (MobileActive 2011). Txteagle uses various mechanisms to recruit phone subscribers as 'members', who opt in to the process - Txteagle then invite members to complete surveys in exchange for airtime. Invitations to take part in the VFL 'eSurvey' were initially sent via SMS to Txteagle members in 36 countries (see Figure 3). Respondents could choose to complete the survey using a webpage, or through a multiple exchange of SMS messages.

CASE STUDY

Category: ICTs and Climate Change Strategy

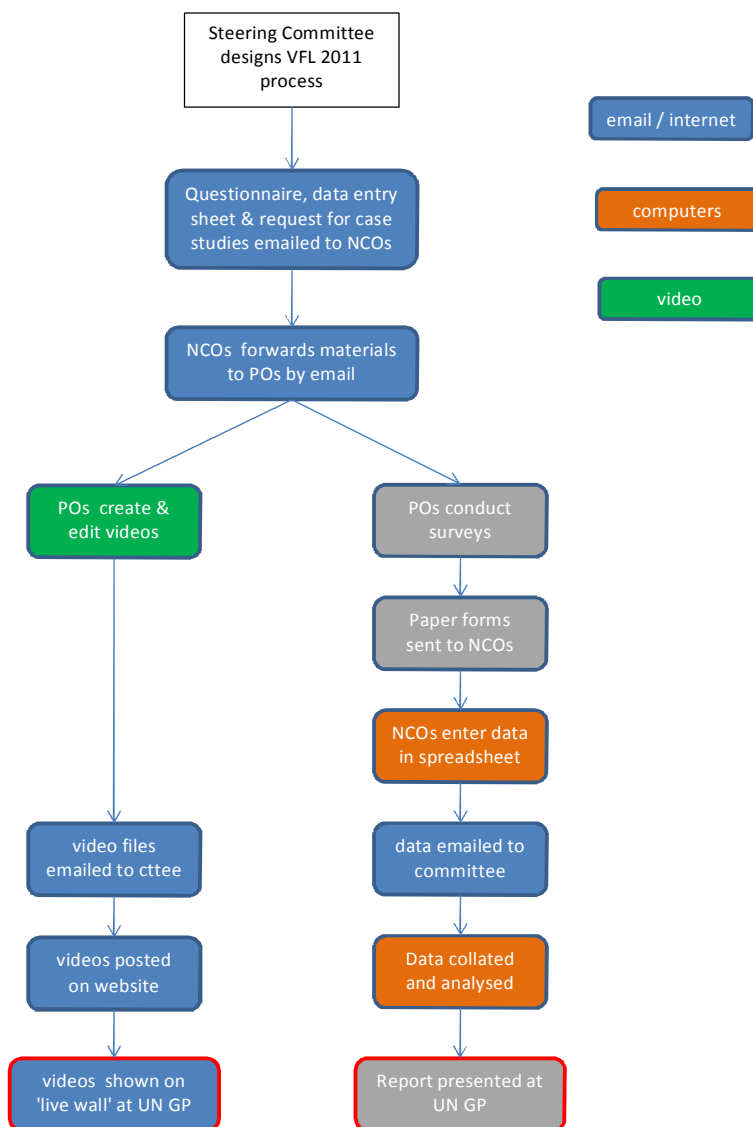


Figure 2: Schematic of VFL Process



Figure 3: Invitation Message to Participate in eSurvey by Phone

CASE STUDY

Category: ICTs and Climate Change Strategy

Formal Drivers

The main goal of 'Views from the Frontline' is to support the effective implementation of the Hyogo Framework for Action to build the resilience of vulnerable people and communities at risk to disasters. The HFA is structured around five 'Priorities for Action' which identify steps which can be taken to reduce the vulnerability of urban and rural populations to natural disasters, 75% of which are climate related (Holmes 2009). Its particular contribution is to provide a complementary local level assessment of progress which indicates whether policy development based on the HFA Priorities for Action is being translated into effective implementation of that policy at local level.

Objectives/Purpose for ICT Usage

Video was used for case studies because visual images in a two-minute package are a particularly effective means of communicating to policy makers, both at a national and international level. The reach and quality of internet connectivity in developing countries has now reached the point where network members can effectively use email for coordination and sharing data files.

Paper based surveys using face to face interviews are labour intensive and costly. The eSurvey approach was proposed as a cost effective means of extending the reach of the survey beyond the local networks of POs.

Stakeholders

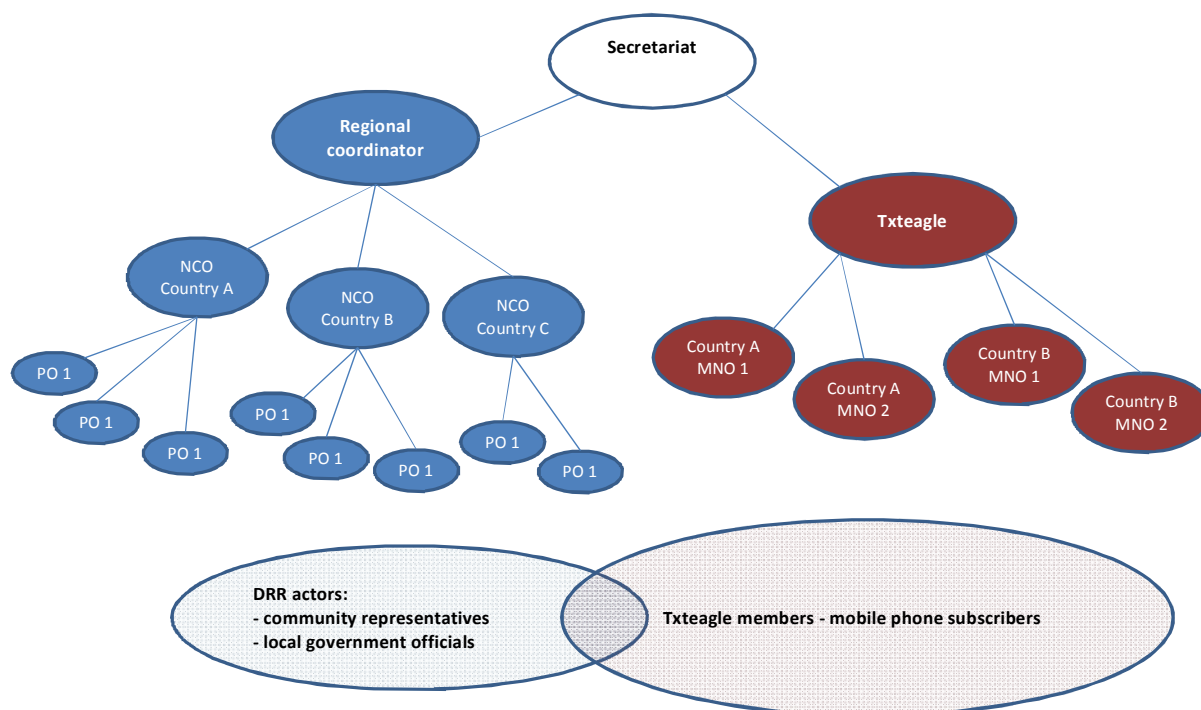


Figure 4: Overview of VFL Stakeholders in VFL Data Gathering Activities

The implementation of Views from the Frontline was undertaken by various network members (see Figure 4):

CASE STUDY

Category: ICTs and Climate Change Strategy

- Participating Organisations. Typically between 6-12 local civil society organisations that were responsible for conducting interviews and focus group discussions with key informant groups, and for gathering case studies.
- National Coordinating Organisations. In each country an NGO taking this role established a national team of POs, provided training, and coordinated the surveys and case studies.
- Regional coordinator. In each of the eleven regions¹, a national NGO took responsibility for coordinating the work across different countries.
- Secretariat. A small group was responsible for overall management and for international level advocacy, supported particularly by GNDR, the Global Network for Disaster Reduction. This was supported by a professional and academic advisory group.

Txteagle were contracted as a mobile telecommunications specialist to coordinate the eSurvey, based on both mobile phone and internet technologies and acting through various individual mobile network operators (MNOs).

Impact: Cost and Benefits

In the VFL 2009 study, over 400 civil society organisations were mobilised to conduct over 7,000 interviews across 48 countries. The endeavour was ultimately successful, as it achieved the objective of influencing the UN system:

'Views from the Frontline shifted the agenda at GP-DRR 2009 towards a focus on execution of the Hyogo Framework at the local level'.

Margareta Wahlstrom: Assistant Secretary General for Disaster Reduction to the UN
(presentation to GNDR workshop January 2010)

The impact at the international level was complemented by impact at the national and local level. This was documented in a learning review based on surveying 49 of the participating organisations (GNDR 2010). Many respondents reported opportunities to establish new platforms and partnerships which were able to promote the translation of national policy on reducing risk from climate change-related disasters into practical implementation. In Afghanistan, for example, the Participating Organisation reported that the survey had been a major stimulus in the establishment of a national multi-stakeholder platform and the implementation of a strategic action plan for risk reduction.

Two years later, VFL 2011 extended the reach of the survey to over 20,000 interviews conducted by over 500 organisations in 69 countries. This success reflects the value that POs themselves attribute to this kind of information in their own advocacy work. A key conclusion of the 2011 survey was that 57% of all respondents believed that disaster losses were increasing, rather than decreasing. This fact reflects the trends reported by CRED (2008) demonstrating increasing climate change-related disasters. This statistic is important as the stated aim of the UN ten-year programme (of which more than half had elapsed at the time of writing) is a significant *reduction* in disaster losses. This statistic was therefore used as a central campaigning and advocacy message.

VFL is part of a dynamic cycle of activities that interact with both UN and local processes. Although it will take time for specific impacts of VFL 2011 to become evident, the network is reflecting on the effectiveness of the UN process to influence its membership to take positive actions towards achieving the goal of building the resilience of vulnerable communities.

Participating Organisations estimate that the total cost of face to face surveys works out at about US\$125/respondent, which includes training, mobilising communities, transport and logistics. However, the actual cost to GNDR is much less, at US\$53/respondent. This is because POs made significant contributions in kind, mostly by using their own staff; some also gathered much larger sample sizes where they had a particular interest in the data.

¹ Central America, Central Asia and Eastern Europe, Eastern Africa, Middle East and North Africa, Pacific, South America, South Asia, South-East Asia, Southern Africa, Southern Caucasus, and Western Africa.

CASE STUDY

Category: ICTs and Climate Change Strategy

The mobile phone based eSurvey (see Figure 5) has the potential to lower the cost of conducting a simple survey by an order of magnitude – the cost to GNRD of gathering over 36,000 surveys worked out at just under US\$5/respondent. In 2011, the total cost of the survey was therefore just under US\$1.3million – around US\$1.1million for the c.20,000 face-to-face respondents; around US\$200,000 for the 36,000 eSurveyed respondents.



Figure 5: Community Representative Participating in eSurvey, Bangladesh

Evaluation: Failure or Success

The VFL process has been a success. It has proved successful in changing policy at both the international level (see quote above), and the local level e.g. the national platform and strategic plan for Afghanistan mentioned above.

The eSurvey was a partial success. The pilot demonstrated that the technology works – mobile phone subscribers will complete a short survey. The survey was conducted in two main phases. In the first phase, Txteagle members were sent an SMS message inviting them to take part in the survey, and were given a choice of completing the survey through an exchange of SMS messages or using Txteagle's web interface.

A further pilot phase (outlined below) explored an experimental protocol which was intended to overcome limitations evident from the first phase survey. It was clear that the 'reach' of the eSurvey into low income subscribers was constrained by issues linked to airtime credit – people with no or low credit were not able to complete the survey because remuneration was awarded only on completion of the survey, and people opting to use the internet interface tended to be from higher status socio-economic groups.

CASE STUDY

Category: ICTs and Climate Change Strategy

It was interesting to find that almost all respondents in the first phase of the pilot chose, after the initial text invitation, to complete the survey using the web interface. Results were similar to those of the face to face survey. Although the eSurvey proved a cost-effective way of extending the reach of the VFL process, the methodology does not appear to have reached into vulnerable communities. Respondents to the eSurvey feel they are at lower levels of risk of disasters than face to face interviewees, confirming they are less likely to be drawn from vulnerable communities. It was proposed that low status respondents to the eSurvey might be representative of vulnerable communities, but the data does not support this.

Designing the eSurvey approach stimulated more critical thinking on the sampling methodology for VFL. By targeting key referents, the face to face process generates informed views from at-risk communities. By sending invitations to a pool of mobile phone subscribers, the eSurvey offers the potential to generate information that is representative of a given demographic. The network needs to reflect on a methodology that will be most helpful in influencing change at a local level.

Enablers/Critical Success Factors

Partners and direct interaction. VFL is more than a data gathering process. When a Participating Organisation moves into an area to conduct interviews, it engages with authorities and civil society organisations in order to secure permissions and cooperation. This has turned out to be a key activity in stimulating dialogue and mobilising communities to push for change at a local level. However, when a person completes an eSurvey questionnaire, he or she does so in isolation, so there is no opportunity to generate any sense of shared or PO identity among people with a mutual interest in disaster risk reduction. A local partner can act as a focal point for information, contacts or even leadership, playing a catalytic role in converting awareness into action.

Internet access. In the first part of the eSurvey, Txteagle generated nearly 28,000 responses from 36 developing countries. The interesting feature was that over 99% were submitted via the webpage – only in Kenya did people submit responses using SMS. The level of access to the internet, even extending to rural respondents, was a surprise, and an indicator that the internet may be more-widely usable as a data and interaction channel for climate change strategy than had previously been thought.

Constraints/Challenges

Reach. The first phase of the eSurvey tended to reach young, urban males. This simply reflects patterns of mobile phone ownership (subscriber rates among women in low and middle income countries are 79% of subscriber rates among men (GSMA 2010)) and internet access (in Africa, twice as many men use the internet as women (Gillwald et al. 2010)). Literacy, poverty and ICT literacy are additional barriers that further impede the participation of women and rural residents. The personal interaction of enumerators in face to face interviews plays an important role in overcoming barriers of literacy and gender discrimination.

Sampling. The eSurvey exercise highlighted a number of issues associated with the self-selection of respondents:

- At an international level, there were huge variations in the sample sizes obtained from different countries, highlighting a lack of control over sampling;
- Gender discrimination present in a country was manifest in samples from both face to face and eSurveys;
- NCOs can target communities according to their assessment of vulnerability, whereas mobile phone surveys are more likely to reflect patterns of mobile coverage.

CASE STUDY

Category: ICTs and Climate Change Strategy

Airtime credit. *"In Kenya, approximately 40% of mobile users don't keep a balance on their mobile phone."* (Hersman 2010). Found in many developing countries, this lack of credit makes it impossible for many people to participate in an SMS survey that reimburses them for airtime after (or during) the survey (as was the case in this survey) - they cannot even send an SMS to register their interest or accept the invitation. It also helps explain why the eSurvey was not so effective at reaching the more marginalised sectors of society (e.g. rural women) who are more likely to be among those users with no airtime credit on their phone. The invitation message from the eSurvey advised users *"You will be compensated in airtime for its completion"*, but it was clear that this caused difficulties:

- People did not have enough credit on their phones to send the full complement of 29 SMSs;
- People did not understand that they needed to complete all 29 questions before receiving compensation;
- The vast majority of respondents used the web interface, which required a much lower 'investment'.

Only in Kenya were Txteagle able to persuade the operator to credit phones with very small amounts, equivalent to the cost of a single SMS, which enabled them to compensate users on a question by question basis. The fact that Kenya was the only country where respondents submitted data using SMS highlights the importance of airtime credit issues.

UCMP-Based Second Phase eSurvey. Txteagle tried another way of overcoming the airtime credit barrier - sending questions to handsets using UCMP (see Figure 6). UCMP (Universal Cellular Messaging Protocol) is an experimental protocol using the GSM control channel, which is currently being developed by Txteagle. It initiates a 'session' by sending an invitation message to a mobile phone; if the respondent accepts then messages are exchanged over the duration of the session, typically 10 minutes.



Figure 6: Respondent Testing UCMP Pilot in Bangladesh

CASE STUDY

Category: ICTs and Climate Change Strategy

The main advantage of a UCMP survey is that there was no cost to the user. The cost to GNDR of administering the survey using UCMP was similar to the cost of the SMS survey. This approach was tested with collaborators in Bangladesh during a field visit by GNDR staff. The test showed that in principle the protocol was effective. The field observations highlighted limitations due to the protocol being 'session based' so that if people switched to another task or decided to respond later then they dropped out of the survey. Additional instructions and a simple routine for re-entering it were added in this version.

A sample of nearly 9,000 responses generated from 49 countries showed mixed results (see Table 1). For example, UCMP samples from countries in Asia were even more strongly male biased than the mobile / web samples, but in Latin American countries the gender balance was actually reversed, making the samples female biased. In all countries, the UCMP samples achieved a reasonable rural / urban balance, unlike the mobile / web samples which tended to have a strong urban bias. In most countries the UCMP sample was younger than the mobile / web sample.

	Mobile / web	UCMP
Male : female	74 : 26	72 : 28
Rural : urban	20 : 80	57 : 43
Proportion of under 18s (%)	12.5	20.5

Table 1 : Comparison of Demographic Indicators between Mobile / Web and UCMP Samples (Entire Samples)

There is no consistency in the data on changes in disaster losses or on perceived threats of disasters, so it is not possible to say whether the apparent improved reach of the UCMP survey (in terms of demographics) has actually resulted in an improved reach into vulnerable communities.

Recommendations/Lessons Learned

Mass local surveys provide an effective input to climate change strategy. The VFL experience has demonstrated that it is quite possible to add mass survey-based evidence to climate change-related strategic processes; thereby bringing local voices and local perspectives into strategic decision-making and into the monitoring and evaluation of those strategies. We hope that other national and international climate change strategic processes will find similar ways to build in the views of local communities.

ICTs are cost-effective in evidence-gathering for climate change strategies. The experience of conducting an eSurvey as part of the Views from the Frontline project has shown that this method of surveying is valuable for mapping as it achieved a wide geographical coverage cost-effectively. As a component of a climate change strategy this approach may be valuable as the impact of climate change is highly variable at the local level, such that detailed mapping based on local knowledge and experience can generate valuable information on which to shape practical implementations of adaptation strategies. As a consequence bodies such as the World Bank ICT group have expressed interest in understanding the methodology in order to apply it for other wide scale surveys.

Recognise the value of direct interaction and engagement; but consider hybrid approaches. Mobile phone surveys are able to gather data from large samples at low cost. Face to face surveys are able to overcome barriers of literacy and discrimination. However, when face to face surveys are conducted by an active, local partner, they can engage constructively with communities to work for change. The combination of respondent scope and local community mobilisation in the original VFL survey approach has proved effective in equipping partners with the evidence needed to lobby national institutions and to guide international institutions. Therefore, it seems inadvisable to "throw the baby out with the bathwater" and move to a totally ICT-based approach. Instead, some kind of hybrid may be most effective – with face to face work providing reach, engagement and qualitative data; and with mobile-based eSurveys providing a low-cost broader base of more quantitative data.

CASE STUDY

Category: ICTs and Climate Change Strategy

Consider how to build mobile into the process. The cost benefits of using mobile technology for surveys are huge, so it is worth exploring mobile-based systems to see if they can help. VFL has demonstrated the technology but needs to refine the approach and learn how to use it more effectively. There is increasing interest in the use of mobile-based surveys (and other means of gathering citizen data, such as crowdsourcing) for informing disaster risk reduction policy, climate change strategy and for monitoring programmes; there is also a growing number of mobile-based data collection tools (e.g. Frontline SMS, OpenXData, RapidSMS).

Choose languages carefully in ICT-based surveys, and do not assume English is the wrong choice. Making surveys accessible to people of local language groups is an expensive issue for any research programme – questionnaires may need to be translated, and local teams of enumerators need to be recruited. Texting is becoming ubiquitous, and it was interesting to learn that English is being adopted as the language of texting in several countries. (For example in Bangladesh people texted in a basic English vocabulary in preference to Bengali, which required multiple keystrokes). This does not mean that texting can overcome literacy barriers, but it does indicate that cross cultural research using mobiles may become easier than expected.

Match sampling approaches to strategic purposes. The differences between face to face and eSurvey approaches forced VFL to think more critically about sampling. GNDR and Txteagle believe that the eSurvey sampling methodology can be improved to successfully target vulnerable individuals. This can be done by developing a restricted range of indicators to identify target respondents; a set of selection rules can then be applied to create a sample of a given composition using a two part survey. A broad sampling strategy is more likely to be appropriate for scoping activities such as disaster preparedness mapping, whereas sampling specifically targeted populations is more likely to be relevant to monitoring or specific design activities e.g. looking at discrete geographical areas.

Assess whether what you ask is what respondents hear. When, as in the eSurvey, there is no interaction or dialogue during the survey it becomes important to perform user testing to establish whether the responses reflect an understanding of the questions as intended. For instance it was noted that the responses to individual indicator questions were relatively similar, and consultation with network members highlighted that since all questions started with the words 'does local government . . .' people tended to answer them as a question about the general performance of local government.

Consider the potential of UCMP technology. Although data indicates that UCMP was effective in overcoming some of the barriers associated with the SMS survey, some questions remain unanswered. There were issues of compatibility of the technology with physical infrastructure in different countries, so it is not clear how widely it could be used. People were not familiar with UCMP in the same way they are able to use SMS, so respondents could find it confusing e.g. with interrupted UCMP sessions not storing text responses entered earlier. As UCMP was experimental, Txteagle were addressing technical difficulties as they arose, so responses to the survey reflected a combination of user experience and technical issues. It would make sense to further explore user behaviour once the technology is more stable.

Data Sources & Further Information

This case study is drawn from the experience of GNDR in running the VFL survey and reporting process over two cycles in 2009 and 2011. The process was managed by the network secretariat and implemented by members of the network across the globe. As noted above, the cost of conducting the surveys in 2011 was US\$1.3 million (n.b. this does not include contributions in kind made by partners), and was funded by institutional donors including SIDA, the Swedish International Development Cooperation Agency, and USAID's Office of Foreign Disaster Assistance. Terry Gibson (terry.gibson@globalnetwork-dr.org) is Project Manager for GNDR, and Nigel Scott (nigel@gamos.org) analysed the survey data.

Based on their experience with mobile phone-enabled surveys, GNDR intend to use them again in

CASE STUDY

Category: ICTs and Climate Change Strategy

future surveys. The next VFL survey is likely to be a more in-depth survey covering a broader range of indicators. If interest in VFL continues to grow, then the survey is likely to grow further e.g. to 100 countries. There is also some discussion of the possibility of mobilising interest and 'social demand' at local level in different ways in the next phase of VFL, so eSurveys may be applied in different ways to generate engagement with campaign-type activities.

The eSurvey process has generated a lot of interest from other agencies e.g. UN and the World Bank – partly because it is innovative. It is difficult to gauge interest among Participating Organisations because there is no role for them in the eSurvey process, so they have not been engaged.

- Global network website: www.globalnetwork-dr.org
- Resource area (including full VFL reports and full data analysis): <http://www.globalnetwork-dr.org/views-from-the-frontline.html>
- Txteagle (now renamed Jana): www.txteagle.com / www.jana.com

References

CRED (2008) *CredCrunch no.12*, CRED, Brussels

<http://www.cred.be/sites/default/files/CredCrunch12.pdf>

Gillwald, A., Milek, A. & Stork, C. (2010) *Gender Assessment of ICT Access and Usage in Africa*,

ResearchICTAfrica http://irneasia.net/wp-content/uploads/2010/09/Gender_Paper_Sept_2010.pdf

GNDR (2010) *Learning Review*, GNDR, internal document

GNDR (2011) *If We Do Not Join Hands: Views from the Frontline*, GNDR <http://www.globalnetwork-dr.org/resources.html>

GNDR (2011a) *Action at the Frontline Case Studies*, GNDR <http://www.globalnetwork-dr.org/action-at-the-frontline.html>

GSMA (2010) *Women & Mobile: A Global Opportunity*, GSMA

http://www.cherieblairfoundation.org/uploads/pdf/women_and_mobile_a_global_opportunity.pdf

Hersman, E. (2010) *A Rising Tide: Africa's Tech Entrepreneurs*, 14 May

<http://whiteafrican.com/2010/05/14/a-rising-tide-africas-tech-entrepreneurs/>

Holmes, J. (2009) *The Humanitarian Implications of Climate Change*, speech to UK Parliamentary Event, 18 March <http://reliefweb.int/node/302253>

MobileActive (2011) *Txteagle in Flight*, MobileActive.org <http://www.mobileactive.org/case-studies/txteagle-flight-mobile-data-collection-disaster-preparedness>

UNISDR (2008) *Climate Change and Disaster Risk Reduction*, Briefing Note 1, UNISDR, Geneva

http://www.unisdr.org/files/4146_ClimateChangeDRR.pdf

UNISDR (2011) *Revealing Risk, Redefining Development*, UNISDR, Geneva

<http://www.preventionweb.net/english/hyogo/gar/>

CASE STUDY

Category: ICTs and Climate Change Strategy

EDITORS:
Richard Heeks
Angelica Valeria Ospina

Photo Credits: GNDR

The **Climate Change, Innovation and ICTs** project is an initiative led by the Centre for Development Informatics (CDI) of the University of Manchester, UK, with funding support from Canada's International Development Research Centre (IDRC). Further information about the project and related resources can be found at: <http://www.niccd.org>



2012