INDONESIA: CRISIS COMMUNICATION CHANNELS

Case Studies in Humanitarian Communication
Preparedness and Response

By Matt Abud
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INTRODUCTION: HUMANITARIAN CRISIS AND COMMUNICATION ECOLOGIES

Crisis communication is a vital part of disaster response that saves lives. This fact has gained greater recognition across the humanitarian sector in recent years, with more and more governments and civil society actors making communications initiatives a part of their emergency response and disaster preparedness efforts. In humanitarian disasters, communication capacity is essential. It lies at the core of a vulnerable community’s resilience and preparedness.

This has been a welcome challenge, with many organizations learning better ways to connect with and use conventional media — TV, radio, and print — to reach affected communities. The digital era presents an array of new communications techniques and tools. Mobile phones, social media, interactive maps and other ICTs have become critical opening new doors to locales that were once out-of-reach. Data collection, management tools and new methods mean that institutions and individual citizens can communicate and access information in ways that didn’t exist just a few years ago.

Practice is evolving at a great rate. Some government agencies are adding communications tools to their disaster response, ranging from online platforms and mobile applications to face-to-face information delivery. Leading technology companies including Google now provide innovative and powerful tools for humanitarian crises; several telecommunication companies are also joining the effort. Individual humanitarian organizations are now able to develop better communication methods and tools. Several media outlets and media support organizations like Internews are connecting their work better to humanitarian needs. Social media, crowd-sourced, and open-source platforms are bringing affected populations and new volunteers into response efforts unimaginable just a few years ago. Progress in this domain is impressive. Several examples that demonstrate strong coordination on communications within a humanitarian response already exist.

But there is still much to learn. One critical area is preparedness for emergency communications. Disaster Risk Reduction involves analyzing the causes of disaster vulnerability, and taking measures to reduce it. Yet while communications within a humanitarian response have advanced over several years, this practice has usually developed without prior analysis of what’s needed, and it has often been responsive, without targeting improved preparation beforehand.

For this analysis to take place in a specific location, answers are needed to several key questions. Which communication channels reach them best, and how can their impact be maximized? What’s required to make sure as much vital information as possible — predictive data, emergency warnings, or survival tips — can really reach those who need it most?

1 See http://www.google.org/crisisresponse/
How can information in one place — whether it be contained in official institutions, carried on conventional media, or generated by the crowd — flow through effectively? What’s the best way to make sure affected communities are involved and included in protecting their own welfare? How can information and communication also best support the efforts of humanitarian responders? And how can we make sure the emergency communications channels in place, can withstand disasters themselves when need is most critical? The most vulnerable communities are usually those with the least resources, and access to media and technology cannot be assumed.

In short, how do all these communications possibilities fit together? This is a question about communications ecologies; and whether what’s already in place, and how it’s already used, will be effective enough and resilient enough in a crisis; and if not, how any weaknesses or gaps can be overcome before a disaster occurs.

1.1 ‘Indonesia: Crisis Communication Channels’ Report Structure

Analyzing communication ecologies for disaster risk reduction is an increasing need, and a big task. In many ways there are already several efforts to build on: several institutions including Internsnews have undertaken studies of communication ecologies in a range of environments. A number of these studies have focused on the use of communication ecologies within a humanitarian response.2

Exploring communication ecologies, however, rather than discrete communication practices remains a difficult challenge. Indonesia: Crisis Communication Channels is one of the early attempts to develop this practice, with case-study examples and a pilot survey tool to examine a given location’s communication disaster readiness.

Internsnews believes this initiative can serve as a contribution to future efforts from humanitarian communications practitioners, in developing methods that ensure communications becomes a systematic part of Disaster Risk Reduction. Such efforts will necessarily both expand on this report, and on previous assessments of communications within humanitarian responses referenced earlier. These initiatives will also require consideration on how crisis communications can relate to other Disaster Risk Reduction frameworks such as the Hyogo Framework for Action and related principles and guidelines.3 Recognizing the breadth and complexity of crisis communication preparedness specifically, and DRR more generally, this report is offered as a first step, rather than a comprehensive roadmap in this effort.

1.1.1 TARGET CASE STUDIES

Crisis Communication Channels rests primarily on three case studies of recent disasters. While crisis communication expertise is needed across the globe, Indonesia was targeted as the country experiences a range of serious disasters across its territory. In addition and because of this, several of Indonesia’s leading humanitarian actors ranging from government agencies to non-governmental organizations to community volunteers, have developed response and preparedness initiatives. Indonesia’s own communications sector is also evolving fast, with proliferation of mobile phones and online tools. At the same time, regional differences — in development, in communication and in digital divides — are significant, with many contexts therefore incorporated within the nation’s borders.

The three case-study disasters are:

- Jakarta’s January 2013 floods
- The ongoing low-level Rokatenda volcano eruption on Palu Island in Sikka Regency, Flores, eastern Indonesia (beginning late 2012)
- Aceh’s April 2012 earthquake and tsunami warning

The case studies were selected to examine crisis communication across a range of contexts: urban and rural; areas with extensive infrastructure and without; disaster with local and national profiles, and in locations with extensive preparedness efforts and without. For example, Jakarta has very dense communication infrastructure, while Rokatenda’s Palu Island has very little. Aceh has received extensive investment in

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3 For example, the IFRC’s Guiding Principles on Community Early Warning Systems has some areas that very much overlap with issues investigated here; while other areas diverge significantly. See http://www.ifrc.org/ReveFiles/103323/1227800-IFRC-CEWS-Guiding-Principles-EN.pdf (accessed 28 May 2013).
emergency communications while Palue has received far less. These different contexts naturally framed each response, and allowed Internews to identify and highlight issues that were not confined to one particular situation.

The case studies focus especially on last-mile communications\textsuperscript{4} for affected communities, drawing in other factors that impacted on this need. This includes discussion of how key information flows through available communications systems to reach local audiences (in Jakarta and Aceh’s case, the overriding issue was disaster warnings; in Palue, it was clarity over emergency policy response, including aid availability).

The case studies are detailed but not exhaustive: communication flows are inherently complex, and capturing every single aspect at each location would require field research far beyond the scale of this project. The level of detail is, however, effective for discussing the main features affecting crisis communication and the resilience of communication channels. Where necessary, the report also draws on other relevant cases and studies, for example the 2010 Mount Merapi eruption and the Jalin Merapi response.\textsuperscript{5}

1.1.2 NATIONAL FRAMING

National policies and factors frequently affect and effect local practice. This includes policy and business decisions that help drive the nature of communication infrastructure, whether that be media, telecommunications, or other; and the leadership contests and objectives of those who set the national agenda and help decide what is communicated about, among other issues. Crisis Communication Channels outlines some of the main national issues affecting local communication preparedness.

1.1.2 COMMUNICATIONS ASSESSMENT SURVEY PILOT

The features identified in the case studies were subsequently used to design a survey to ‘test’ the preparedness of crisis communications in specific areas. This was piloted in two locations as a phone survey. The intention was to develop and test a tool that can be implemented as easily as possible, and flexible enough to adapt to other contexts as needed and as informed by further research. Internews offers this as an initial ‘first step’ tool, but one which clearly does not claim to obviate the need for complementary methods (such as for example participatory scenario testing with local actors; field or ethnographic research; or relevant macro-data analysis).

1.2 Key Crisis Communication Features

Internews identified ten key features across the three case studies, outlined in brief below. The features most relevant to a particular location are described in more detail in their respective sections.

The features highlighted here directly informed the pilot survey on crisis communication preparedness. However some of these features while holding a crucial influence on communications are still difficult or impractical to objectively measure (for example, political leadership). Some features therefore are not in the survey itself, while others are incorporated through proximate or associated indicators. See the section Section 6: Communications Assessment Survey Pilot for notes on how this was approached.

Key identified features are:

1.2.1 NEIGHBORHOOD SOCIAL NETWORKS\textsuperscript{6}

The close connections between individuals and local groups were essential in all crisis communication examples, in receiving and sharing information; and in assessing its validity and reacting to it. Perhaps the biggest challenge demonstrated is that of maintaining such networks. Several initiatives, notably by NGOs in both Jakarta and Aceh, have developed important and effective neighborhood social networks. But these social networks tend to erode once the funds for project activities that established them are depleted.\textsuperscript{7} The most successful neighborhood social networks over the long-term were those that managed to become integrated with permanent administrative or community structures that were independent of finite funding. In assessing crisis communication preparedness, then, the key questions are both how strong and effective are the existing neighborhood social networks and which communication channels can most effectively connect to and reinforce them.

\textsuperscript{4} Communications that reach to the end user of disaster affected populations.

\textsuperscript{5} For a summary of Jalin Merapi’s efforts, see \url{http://www.amarc.org/documents/Caribbean_Conference/CR_ResponseJalin_MerapiEruption_EN.pdf} (accessed 23 May 2013).

\textsuperscript{6} Although ‘social networks’ is a common term for such personal relationships, Internews has adopted ‘neighborhood social networks’ for the purposes of this report, simply to avoid any confusion with references to networks on social media.

\textsuperscript{7} This was true both for networks based in a single location, and others — for example communication chains delivering flood warnings from dam monitors upstream in Bogor to local government administrators downstream in East Jakarta relied on similar networks that eroded after direct support for these communication chains ended. See Lassa, J.; Saqala, S.; Suryadini, A., p. 11: Conceptualizing an established network of a community based flood early warning system: Case of Cawang, East Jakarta, Indonesia. 2013, IRGSC, Kupang. Available at: \url{http://www.irgsc.org/pubs/wp/IRGSCWP003Roodwarmingjakarta.pdf} (accessed 24 May 2013).
1.2.2 COMMUNICATION INFRASTRUCTURE AND REDUNDANCY
Whether vulnerable communities even have direct access to communication channels is the first question when looking at communication infrastructure, but it is far from the last. If communities do not have access to effective communication, this inherently increases their vulnerability. (If a community has access, but individuals within the community do not have access — which often occurs on the base of age, gender, and other factors — they also frequently represent a specific vulnerable group.)

Communication infrastructure, including conventional media (TV, radio, print), mobile phones, or online portals, is most effective when both communities and individual groups have access to a variety of channels. This includes the capacity of communities and individuals to provide direct input into a response, and to use communications tools — such as local radio, social media, or mobile phones — to organize autonomous response efforts among themselves, and maintain local resilience.

However even locations with extensive communications can be vulnerable to systemic failures, which may make broad access a moot point. This was most powerfully demonstrated by power failures resulting in blackouts that hit the most vulnerable flood-affected in Jakarta. Beyond access, communication infrastructure therefore needs inherent redundancy that can withstand such impact; the potential of this was most effectively indicated by the use of hand-held radios in Aceh.

1.2.4 MEDIA NARRATIVES
Media narratives direct public perceptions and understandings of the process of emergency response. Narratives that focus predominantly on official failures, even when they push government to act, are not the same as narratives that focus on providing needed information to those affected. The importance of media narratives also extends beyond the period of the crisis itself: if narratives do not support awareness-raising or spread knowledge of potential alleviation measures — for example by follow-up reports beyond immediate headlines, or by highlighting useful preparedness tools or other measures — they also represent a weakness in crisis communications and in disaster risk reduction overall.

Media narratives are typically generated in an intense dynamic, decided primarily by editorial policies, but can also influenced by media liaison approaches and resources of humanitarian responders, including both government and NGOs.

1.2.5 RESPONDERS’ MEDIA AND COMMUNICATIONS
Following the last point above, responders’ approaches to media as well as their other communication activities are an
important factor. The presence or absence of dedicated and adequately resourced media spokespersons, for both government and NGOs, is one element of this. Adequate resourcing to utilize other communication channels, for example social media, is another. To be effective, responders need to go beyond the ability to issue press releases. They must include strategies and approaches to highlight affected community needs, and promote public understanding of the actual strengths and weaknesses of a response.

Depending on a given organization’s programs and projects, media and communications approaches may also encompass broader awareness-raising and preparedness measures outside of the response, including for support neighborhood social networks’ communication and response capacities as mentioned above.

1.2.6 DATA CAPACITY
The capacity of official agencies to rapidly and effectively gather, analyze, and disseminate data clearly has a large impact on a humanitarian crisis overall. This capacity impacts communications as data capacity determines the baseline for an enormous number of other efforts, ranging from media reports, to locally-distributed warnings, to confirming or negating emergency alarms.

1.2.7 COORDINATION FOR COMMUNICATION
Effective coordination is essential for any crisis response. In many cases communication is not included as a specific focus of coordination, and appropriate partners — such as media outlets — are not incorporated into preparedness plans; this weakens the response. In other cases in which communications are included, this is often limited to awareness-raising efforts pre-disaster; which, while important, leaves out many of the roles that communications actors can themselves play when a disaster hits.

1.2.8 DIGITAL VOLUNTEERS AND COMMUNITIES OF PRACTICE
Digital volunteers have become a vital part of many disaster responses in Indonesia, with their skills and impact increasing exponentially over the past few years. (Jalin Merapi, the citizen-led response to central Java’s 2010 Merapi volcano eruption, is the most powerful example to date.) The role of digital volunteers frequently depends on the skills and experiences of a few individuals, who then mobilize a number of others — which makes the role of such volunteer groups difficult to predict in advance. A particular feature of this is the ways in which experiences and networks of individuals developed in one disaster response, then inform and support colleagues the next response. These links create communities of practice, a key dynamic among digital volunteers, and allow those who have not been involved in previous disasters to draw on the experiences of others who have. ODOS in Jakarta, and the Flobamora Blogger Community in the Rokatenda response, are two examples of this.

Indonesia however still experiences a significant digital divide. This helps frame the extent to which such mobilization can take place, and to what degree — if at all — it is currently able to include many among the most affected communities themselves, or whether mobilization and participation is confined to responders assisting those communities from outside.

1.2.9 TRAINING AND PRACTICE
No matter how good a crisis communication system is in theory, if its participants aren’t trained, and if they don’t carry out regular practice, it is precarious at best. Response drills are a critical indicator of response capacity; if specific crisis communication measures are not included in such drills, those measures are essentially untested and vulnerable to failure. This is true both for general public drills; and for drills within institutions (including media and NGOs) of in-house disaster response operating procedures and contingency plans.

1.2.10 POLITICAL LEADERSHIP
Closely-related to but also distinct from Media Narratives (above), the effectiveness, clarity, unity, and popularity of political leadership (local or national, as relevant) will frame communications both in high- and low-infrastructure settings. This is because leadership is a major determinant of communication content: media, and communities, will generally pay close attention to what direct action their leaders take and the statements they make. Effective leadership is one critical element in ensuring that affected communities get the information they need, and avoiding the risk that disasters are seen through the frame of their impact on leaders’ political fortunes.

1.2.11 POLICY CLARITY
This is related to but distinct from political leadership. Unclear policy responses heighten anxiety and create uncertainty, for both affected communities and responders. This confusion naturally flows into crisis communications, and if it is a major concern, can mean that communication efforts are directed more towards advocacy to resolve contested or unclear policy positions, rather than supporting direct material needs; Rokatenda shows a clear demonstration of this at work.
Indonesia’s communication landscape has experienced several years of proliferation in recent decades, particularly following the fall of the Suharto regime in 1998. Political and economic liberalization opened the way for an extraordinary range of media outlets. The surge in traditional and digital media combined with technological changes has yielded unprecedented access to information for Indonesians unimaginable in the 1990s.

As the seismic changes affecting conventional media, telephony and digital sectors enter a new phase, there are powerful implications for crisis communication. A simple principle frames these implications: citizens need to use communication platforms on a daily basis to become familiar with them and ultimately trust them, if they are to turn to them in a time of need. In other words, crisis communication rests on the pre-existing communication capacity available to affected communities.

In some cases the impact of changes can be obvious — for example, government-driven investment in critical digital infrastructure is central to even the possibility of more widespread online access. In others, effects may be subtle and harder to quantitatively verify in the context of disaster preparedness. For example, uncertainty around telecommunications frequency regulation can shape or restrict expanded access and the potential free speech restrictions can have a ‘stifling effect’ on media practice and limit the level of trust held by audiences.

Any influences that discourage broad-based and local participation in communication practice will likely erode the communication resilience that’s needed when a disaster strikes. It is this perspective that informs the overviews and discussion below.

2.1 Conventional Media: T.V., Radio, Print

The landscape for conventional media — by which we mean television, radio, and print — has changed markedly in the past ten years. With growing access, T.V. has become the single biggest medium and overtaken radio in audience size especially in urban areas, with over 90% of the nation’s population regular viewers; many national channels can be watched via satellite across much of the country. Radio, while declining across the country and especially in the larger centers, maintains an audience of 23.5% (higher in marginalized or isolated areas), falling from 50% in 2003. Print remains a medium of record, focused on Jakarta, with circulation reaching under 19% of the population.

2.1.1 NATIONAL MEDIA OWNERSHIP

Indonesia’s post-Suharto explosion in media outlet proliferation and diversity has reached a different stage, with the more recent trend now towards consolidated ownership of outlets by media conglomerates. The country’s raw figures can impress: in 2011 there were 10 private national TV stations and one state TV, with around 100 regional stations; around 2,800 radio stations (with about 700 of those community radio stations), as well as 1076 print media in 2010 (down from nearly 2,000 early in the post-Suharto era). But the great bulk of these are concentrated in the hands of just a few conglomerates: six own all 10 private TV stations and some of those are targeting local...
TV investment; two businesses — Kompas Gramedia and Jawa Pos — dominate print. In radio, the most diverse sector, commercial networks are also expanding their reach.\footnote{Ibid., pp. 12-14}

As demonstrated by Lim in @crossroads, media conglomerates don’t only incorporate TV, radio, and print, but in several cases also tie in leading online news and entertainment portals, and various aspects of IT, telecommunications, production houses, and education and hospitality. Several conglomerate owners hold distinct political agendas in conjunction with business interests. Lim’s table is still the most accessible display that brings data on media conglomeration together:

Notwithstanding general debates around media ownership and democracy, this concentration is also important for crisis communications. Access to infrastructure is not the sole determinant of media outlets’ abilities to help meet urgent communications needs.

Business models and editorial approach drive daily practice in media outlets, and hold significant implications for their preparedness to respond to a crisis — in particular, whether the ‘framing’ or editorial treatment of a crisis meets the communication needs of those affected. In fact, aspects of a disaster may directly implicate the interests of owners. While not part of this report’s case studies, a clear example of this is the Lapindo Mudflow case, in which Sidoarjo village was inundated by volcanic mud and rendered uninhabitable.\footnote{See for example Harsaputra, I. Lapindo mudflow victims still waiting for payment. The Jakarta Post, 30 May 2013. Available at: http://www.thejakartapost.com/news/2013/05/30/lapindo-mudflow-victims-still-waiting-payment.html (accessed May 27 2013)} Many point the finger at PT Lapindo Brantas, a natural gas company conducting drilling nearby, and accuse it of failing to take required precautions leading to the eruption. The company is owned by Aburizal Bakrie, presidential candidate for the Golkar party in the upcoming 2014 elections, and also owner of the popular TV One channel among other media. Many observers have accused the stations of playing down or re-framing its coverage of the disaster in accordance with its owner’s interests — while other media with opposing interests have also been accused
of sensationalizing the coverage to their owner’s benefit. This leaves the needs of those directly affected by the disaster on the sidelines.

Perceptions of political interest do not have to be blatant to have an effect. Many media owners are aligned with interests or parties that oppose the current Jakarta Governor ‘Jokowi’. Several interviewees stated that some of the coverage of their respective outlets was critical of the Jakarta government flood response because of opposition to policies. Internets has no way to confirm or refute this opinion — but that is exactly the point. For some audiences, even a perception of political interests is enough to undermine confidence in the facts reported whether those perceptions are merited or not and can ultimately reduce an outlet’s effectiveness in crisis response. Business models of big media can have further effects: for example, if an outlet has a consistent sensationalist focus to generate ratings via controversy, this can become embedded in its systems and is unlikely to change even if different types of coverage are more appropriate to meet affected community needs.

2.1.2 LOCAL CONVENTIONAL MEDIA
Crisis communications is not essentially about which media has the furthest reach or biggest audience. As the case studies will show, locally-targeted media is essential to deliver information and communication to vulnerable or affected communities, something national outlets are simply not set up to provide. Over time this factor may also become affected by the trend towards conglomeration, although the nature of this impact is still to become clear.

Indonesia’s local media has expanded greatly in recent years, with locally-based TV a relatively new growth area (although its audience share remains very small); radio’s expansion dates especially from 1998. However some of the larger businesses have been buying up or investing in these local outlets (in 2011 there were around 100 local TV stations, with at least 10 private local TV networks). How national conglomerate ownership affects engagement by local TV stations bears investigation: for example, to what degree will stations take national feeds above locally-generated content, and will this impact local disaster response capacity? Crisis communication preparedness rests on just these types of media development questions.

Radio has far more diversity — however even this, the cheapest and most accessible of mediums both to produce and receive, has significant ‘black spots’, with only 85% of the country covered and some 40,000 villages without access. There are an enormous number of other local stations; however radio can also be restricted by licensing regulations that results in reduced local access (see the Rokatenda case study for one example). This especially affects community radio, often dynamically connected to local communities by law such stations are required to transmit at low power covering a radius of only 2.5 kilometer, greatly restricting their range of service. In addition, out of hundreds of community radios across the country, only a small handful has received official license approval, leaving the great majority in a potentially precarious situation.

Print is dominated by the Kompas and Jawa Pos groups, with a wide range of local titles. Although clearly playing a role as media of record, and in broad disaster awareness-raising and preparedness measures, print outlets did not feature highly in this report’s case studies, as the distribution and time delays inherent in the medium create disadvantages for its roles when a disaster strikes; print is therefore not deeply discussed here.

Crisis communication needs media with a strong relationship to local audiences to be most effective. Dynamics that support that role and capacity of local media help strengthen this, and the country is in a much stronger situation than it was 15 years ago. However dynamics that restrict the strength and local engagement of media can reduce this role. The local media influences in Indonesia outlined here work in both directions.

2.2 Mobile phones

2.2.1 TELEDENSITY, ACCESS, AND GAPS
Fixed-line phones are extremely limited across the country; mobile phones are by far the dominant form of telephony. According to BuddeCom research, mobile subscribers reached 107% in early 2012, up from around 92% in 2010.
— although taking account of multiple handset ownership, the true figure of individual access may be almost 30% lower.\(^{19}\)

However this still excludes a large part of the population. For example, in 2009 an estimated 65% of households lacked access to any network\(^{20}\) — while improving since then, it is more than likely that enormous gaps remain. One reason: telecommunication profits accrue preponderantly from a few locations, namely Java and Sumatra. This creates a disincentive for investment in more sparsely populated locations. (Beyond phone access, in 2010 President Yudhoyono stated an estimated 19 million households lacked even electricity — and therefore a range of communication platforms including mobile phones.\(^{21}\))

Despite these limitations, current teledensity levels have still increased enormously in the last decade. The biggest change has been the liberalization of the telecommunications sector, long dominated by the state Telkom monopoly, with the 2005 auction of 3G frequencies a particular turning point. Currently 11 companies compete in the mobile market, with Telkomsel holding the dominant position, and Indosat and XL Axiata the two other large operators, and several smaller competitors.

### 2.2.2 Future Telecommunications Expansion

Several factors will affect the expansion of the telecommunications sector into the future. A prime one is the rollout of and shift to 4G LTE services, around which many questions remain.

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\(^{19}\) For example, Deloitte Access Economics states that “[i]n 2010, there were 220 million mobile phones in use, or 92 mobile phones per 100 inhabitants (ITU 2011). Adjusting for owners of multiple handsets, this indicates that as many as 85% of the adult population or 65% of the total population have access to a mobile phone.” ibid, p. 4. Some report that the increase in mobile internet use is leading to the customer base for internet cafés to drop by as much as 34% in the past year; see for example Lukman, E., Mobile Phones Lead Internet Growth in Indonesia, Entertainment Industry Tops the Market, 27 June 2012, TechInAsia. Available at: http://www.techinasia.com/mobile-phones-lead-internet-growth-indonesia-entertainment-industry-tops-market/ (accessed 23 May 2013).


\(^{21}\) Wattegama and Soehardjo, op. cit., p. 13. The information this chart is compiled by authors based on difference sources given. Minor discrepancies across data sets can be attributed to variations within the year and inaccuracies in reporting. Issues of minor mismatches were resolved by taking the data from most reliable source.

\(^{22}\) ibid, p.14
While the government offered further 3G frequencies for auction in February this year (Telkomsel and XL Axiata were the successful bidders), Indonesia is behind several of its neighbors in preparation for 4G LTE frequency rollout. Although a target date of 2014 has been cited for rollout to start, confusion remains surrounding the direction of government regulation in this area. With a clear process for this rollout lacking, operators and others involved in the industry are forced to watch for verbal announcements for indications of government direction; this increases uncertainty in planning.

The shift to 4G LTE poses direct business challenges to many current operators. In the context of Indonesia’s hyper-competition, this adds up to strong pressures to merge to rationalize costs and assets. Another reason: the lack of clear policy on possible mergers in the telecommunications sector which greatly impacts the licensing of frequencies. This, again, creates uncertainty for business planning.

Confusion around business plans and transparency of regulation and oversight has the potential to slow expansion of services which has dramatic implications for increased access by vulnerable communities. It does not matter whether that entails gaining access to 3G services for the first time, or upgrading to LTE services with greater capacity. Again, how Indonesia’s telecommunications sector develops overall will affect the role mobile phone platforms can take in crisis communications.

Outside the main population centers poor infrastructure leaves large swaths of the country with limited or no connection at all.

2.3 Online Access

Online participation has skyrocketed in Indonesia. It has almost doubled from about 25 million in 2008 to an estimated 45 million or 18.5 percent in 2010 according to the Ministry of Information. The Asosiasi Penyelenggara Jasa Internet Indonesia (APJII), Indonesia’s Internet Service Provider Association, has slightly different figures that indicate around 42 million citizens were online in 2010, with 63 million or approximately 25% of the population in 2012. The country has the fourth-highest number of Facebook users according to Social Bakers, with Facebook reporting 64 million Indonesians joining its site as of April this year.

2.3.1 BROADBAND AND NET CAFES

However despite this growth the simple numbers of online access can give an inaccurate picture of the reality of what is taking place. Outside the main population centers poor infrastructure leaves large swaths of the country with limited or no connection at all. Individual online access is, as Lim explores, still predominantly skewed towards the urban middle-class; many citizens on lower incomes simply can’t afford the cost of a broadband connection. In fact as shown below, most online Indonesians get access via internet cafés or warnets, which is far more limited in the context of a disaster — it is generally not possible to travel to warnets to check or upload information while fleeing or displaced.


25 For example, in an interview with AN-TV in January this year, Minister of Communication and Information Technology Tifatul Sembiring indicated there will be no new telecommunications law to deal with these issues, meaning they will be incorporated into the upcoming draft Convergence Bill (see below for more details on the Convergence Bill itself).

26 Other uncertainties also affect the industry. At the time of writing, a subsidiary of leading company Indosat was involved in a corruption case, revolving around leasing frequencies from Indosat as an ISP. Such ‘cooperative leasing’ is a common arrangement between telecommunications companies and ISPs, and the foundation of much connectiv ity provision within the restrictions of frequency license allocation and regulation. A negative verdict for the company could imply that virtually all current ISP businesses are illegal, with potentially chaotic consequences for the sector. For more detail see Harsono, N., Belajar Ilmu Telekomunikasi di Pengadilan Tipikor, 21 March 2013, IndoTelco. Available at: http://www.indotelko.com/kanal/?c=id&it=Belajar-ilmu-Teknik-Tenkomunikasi-di-Pengadilan-Tipikor (accessed 27 May 2013).


29 Graziella, M. Facebook has 64m active Indonesian users. 19 June 2013, The Jakarta Post. Available at: http://www.thejakartapost.com/news/2013/06/18/facebook-has-64m-active-indonesian-users.html (accessed 19 June 2013)

30 In 2010 broadband subscribers totalled around 7.6% of all Indonesians online. Lim, op. cit., p.4
2.3.2 Mobile Online: Access and Handsets

Increasing numbers of Indonesians are connecting through mobile phones, with figures suggesting mobile data penetration of 10%; mobile data revenues grew at over 600% in 2011. Yet which communication needs can be served via mobile access does not only depend on whether connectivity is available, but also on the type of handset. To Internews' best knowledge nationwide data on the prevalence of phone models in use does not exist. However some secondary indicators paint a picture of both the current state of the sector, and its development. For example, market research indicates the sector remains dominated by basic and feature phones, even as smartphones grow in popularity. Around 45 million phones were shipped to Indonesia in 2011, with some 13% smartphones. The percentage is small but demonstrates rapid expansion; with Android's accelerating growth and aggressive marketing by especially Samsung, many predict this will be the dominant platform used in the future.

Even as more sophisticated phones increase in market share, Indonesia also has a thriving second-hand phone market. This means that even if sales of feature phones drop from their current high levels, they are likely to remain in circulation and continue as the most widespread device used going into the

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31 Intermedia 2012, via Lim, op. cit., p. 5
33 Indonesia Smartphone Shipments Surged in Q4 2011 with 28% Growth, 16 April 2012, IDC. Available at: http://www.idc.com/getdoc.jsp?containerid=prID23440012 (accessed 23 May 2012). Long the most popular smartphone platform, BlackBerry lost ground to Android, which gained 52% of market share in 2012; see Android Overtakes BlackBerry as the Top Smartphone Operating System in Indonesia, 12 September 2012, IDC. Available at: http://www.idc.com/getdoc.jsp?containerid=prID23688812 (accessed 23 May 2013); this does not cover the period following the launch of revamped BlackBerry models.
future. For crisis communication, this means tools such as disaster-related mobile applications on smartphone platforms may be inaccessible to the most vulnerable. For any effort that aims to use mobile technology in crisis communication, this means low-end and, possibly feature phones are a crucial part of the equation. Internews’ survey of the Jakarta floods (see Section 3.5) indicates this clearly, with very high level of mobile phone use, but low use of both smartphones and feature phones.

Whether through smartphones, feature phones, or at an internet café, the increase in Indonesian citizens going online is significant. But for any disaster response approach, it’s also critical to appreciate that digital access doesn’t necessarily mean digital literacy. For example, and as discussed by Internews’ New Digital Nation report, the hardware on a number of phone handsets provides one-button connections to Facebook, with many users logging on frequently via this function rather than through general browsing. Several anecdotes show connecting to Facebook is not necessarily understood by users as being ‘online’ — access occurs, but it is not always accompanied by corresponding digital literacy. Examples such as this caution that simple numbers of Indonesians online should not be taken at face value as a corresponding indication of digital familiarity.

Despite the limitations noted here, there is no argument that mobile online access is significant and has changed several disaster responses. What is important to note is that changes in mobile online access is most prevalent among responders, rather than among affected communities. This illustrates how the digital divide is driving the roles for which online tools can be in a crisis.

2.3.3 REGIONAL AND RURAL CONNECTIVITY: GOVERNMENT PROGRAMS AND PROJECTS

Indonesia has launched a range of official projects designed to improve the country’s nationwide connectivity: with a target of 30% of the population receiving broadband access by 2014.

The nationwide Palapa Ring aims to build a fiber-optic backbone to all the country’s major islands and urban centers. Begun in 2007, the project has suffered several delays. Authorities now affirm it is slated for completion in 2014, although dates and the extent of infrastructure involved varies depending on sources.

The Desa Berdering (Circling Village) project aims to provide all of the country’s 72,000 villages with basic telephony services, although as Lim notes experiences to 2011 varied, with some villages finding the service unsustainable after initial funding to subsidize credit ceased. The Desa Pinter (Desa Punya Internet, or Village with Internet, with the shortened name also translating as Smart Village) project aims to provide internet access across the country via almost 6,000 internet centers by 2015. Other projects also include MPLiK, mobile internet vans. All these projects are financed by or receive significant contributions from Universal Service Obligation funds.
2.4 Politics, Policy, and Free Speech

A range of upcoming legislative bills, as well as political events, have the potential to not only affect media and telecommunications business decisions — but to also impact on the free flow of information, and therefore audience use of online and other platforms. Given that daily use of communications capacity underpins crisis communication preparedness, such influences also deserve mention.

2.4.1 CONVERGENCE BILL

The upcoming Media Convergence Bill (RUU Konvergensi) has critical importance for both conventional media and telecommunications — but the likely expansive breadth of this bill also reaches far beyond the economics of the sector. In process for several years, it aims to bring together the country’s Broadcasting Act, the Electronic Information and Transaction (ITE) law, and telecommunications laws. This involves merging several key institutions: the Broadcasting Commission, the Information Commission, and the Indonesian Telecommunications Regulatory Body.

Observers have raised several concerns regarding the proposed bill. First, several of the laws it involves already have vague definitions that invite abuse — the ITE law has been famously used in repressive defamation cases.45 Second, creating such a powerful ‘super-commission’ that incorporates penal provisions in its operations without sufficient safeguards creates avenues towards censorship with potential to affect the free flow of information.46

2.4.2 ONLINE CENSORSHIP

There have been several ‘moral panics’ surrounding online use, and ongoing moves towards control and censorship. This includes campaigners advocating strong controls against online pornography, and crackdowns on sites deemed ‘anti-Islamic’ (government authorities have claimed to have blocked as many as two million websites for this reason). Free speech advocates say such measures have the potential to establish expanded censorship regimes. Legislation used for censorship purposes include the Anti-Pornography Law, the Cyber Law, and the ITE Law, all passed in 2008.47

2.5 Future Trends: Watching Brief

The conventional media, telecommunications, and online service sectors are certainly moving towards the next stage, through business strategies, technological change, and legislative agendas. Current uncertainties and contesting pressures are only likely to increase in the lead up to national elections in 2014.

For crisis communications preparedness, moves that expand media, telecommunications, and internet access and participation at low-cost across the country will increase the role all these platforms can play. Alternatively, moves that extend or consolidate existing communication divides (both in infrastructure access and localized content provision) between urban centers and regional areas will mitigate against that possibility. Finally, developments that restrict free speech, including shutting off websites, have the potential to translate into reduced daily use and therefore preparedness; while the impact on democratic processes for such moves are relatively straightforward, for crisis communications the implications are likely to be more subtle and would require closer research to elucidate.

Given the wide range of market, regulatory, and technological influences at work it is impossible to predict with great nuance how they will combine to affect crisis communication capacity in the future. But affect them they will, which merits at minimum a ‘watching brief’ or ongoing assessment as they evolve.

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45 See Lim, op. cit., p. 19
46 Ibid, p. 23
Crisis communication is a vital part of disaster response that saves lives. This fact has gained greater recognition across the humanitarian sector in recent years, with more and more governments and civil society actors making communications initiatives a part of their emergency response and disaster preparedness efforts. In humanitarian disasters, communication capacity is essential. It lies at the core of a vulnerable community’s resilience and preparedness.

3.1 Background

Starting January 16, 2013 heavy monsoon rains combined with broken embankments and seasonally high tides caused extreme flooding across Indonesia’s capital, Jakarta, with around 41 casualties and some 45,000 displaced. The Jakarta Governor declared an emergency lasting from January 17th to 27th. Images of the flood circulated worldwide, including of the Hotel Indonesia roundabout — the city’s symbolic center — underwater, and of citizens trapped in the central UOB Plaza’s underground car park, where at least two drowned.

Flooding has long been a regular occurrence for the city of over ten million, but has increased in severity over recent decades. The 2013 inundation didn’t cause as much damage as the previous extreme event in 2007, which killed 70 people and displaced 350,000 residents. However 2013’s floods were more widespread, and affected areas that had not experienced water to this level before.

3.2 Highlight Features

Jakarta’s January 2013 floods demonstrated many of the features identified by Internews as significant influences affecting crisis communications. These include:

- **Neighborhood social networks.** Sustained relationships among neighborhood social networks to support crisis communication at the local level are essential. Local administrators typically bore the brunt of this responsibility, and played crucial roles in the communication that took place (see 3.4). However trust in official warning systems to deliver that information was also self-evident. The role of communications was a critical element of the degree to which need could be understood, and responded to. Examining this provides a chance to improve future responses.

Government agencies, civil society organizations, businesses and citizens all scrambled to meet the sudden humanitarian needs of those affected. While much was achieved, several gaps and strains in the response systems were also self-evident. The role of communications was a critical element of the degree to which need could be understood, and responded to. Examining this provides a chance to improve future responses.

It’s important to note that while vital, humanitarian response systems are in many ways a stop-gap for the city’s needs. Jakarta’s floods are fuelled both by climate change threats and severe development challenges, which demand large-scale changes in direction. Over-development and drainage of aquifers have created long-term subsidence which increases vulnerability and places strains on the sustainability of large parts of the city. Accelerating development in the surrounding highlands have reduced water catchment capacity and increased dangerous runoff to the city downstream, while at the same time rapid development within the city’s boundaries continues to impede its drainage capacity. Each factor creating multiplication effects that exacerbate floods. With this dynamic, it’s only a matter of time before the damage caused by Jakarta’s most serious flood is exceeded by the next one.
was often complicated. For example, despite official warning channels existing to relay warnings on high water levels at the Bogor Katulampa dam, many individuals called the dam directly rather than wait for or rely on official communication (see 3.4.1). Confusion over aid delivery that local administrators could expect further hampered effective local-level communication aimed at targeting resident needs.

Communication Infrastructure and Redundancy. Communication systems were often fragile, mostly due to power blackouts — fully one half of affected residents had no access to electricity, a common problem in both large- and frequent small-scale floods. Measures to deal with this, for example by providing generators and / or dedicated loudspeakers to displacement locations, have not been forthcoming. The fall in radio use (which can be powered by battery for extended periods) exacerbates this problem; some hand-held radios were in use both by officials and some citizens but on a very limited scale. As a result even Jakarta, the most connected location in the country, had many ‘media dark’ areas at the time of most need (see 3.4).

Media infrastructure is generally citywide, with only limited examples of local media such as community radio; citywide media with potential audiences of millions simply can’t meet localized communication needs. These gaps in media infrastructure are driven by policy over the long term (see 3.7).

Media narratives. Media outlets frequently saw themselves as ‘driving’ the response by highlighting government failures with the goal of pressuring authorities. However this ‘advocacy-style’ editorial approach, combined with the city-wide focus of most outlets, means media reported on the disaster, above providing information for communities that they could use themselves. A narrative focus on highlighting gaps — of which there were, indeed, many — can also possibly under-emphasize those efforts that were in fact successful. Media focused on the high-profile Jakarta Governor in much of their coverage — which apparently also enabled him and his office to frame at least some of the coverage through his visits to affected areas.

Some media personnel believed that overall response efforts took place because of issues highlighted by their coverage. While quite possibly true in some cases, no response organization noted this, sticking instead to their established assessment procedures. It appears at least some media outlets may hold a misconception of the type of humanitarian assessment processes involved in organizing a response (see 3.7).

Responders’ Media and Communications. Leading responder organizations, in particular among key government agencies, have media relations protocols in place. However these are often ad-hoc and at times personalized rather than institutionalized, potentially creating a strain on those individuals concerned, as they also carry other significant responsibilities (see 3.6). The civilian response organizations were largely low profile in their media relations (see 3.9).

Data capacity. The key issue is the ability of key institutions to gather and share data rapidly, and in ways in which other responders can then re-purpose data as necessary to support their efforts. Meaningful advances took place during the floods in this area, in particular between the leading government agencies. But data incompatibilities and bottlenecks between institutions created delays, which flowed through to other information efforts, including the use of digital tools, media reporting, and so on. The advances were positive but much work clearly remains to be done (see 3.6.1).

Digital Volunteers and Communities of Practice. Despite high activity on prominent digital platforms including Facebook and Twitter, this played little role for affected communities; they remain firmly on the wrong side of the digital divide. However digital platforms did help some responders organize to solicit, receive and distribute aid effectively, in ways that would not have been possible previously. This builds on an expanding network of digital volunteers that has emerged as a significant community of practice across several disaster responses in Indonesia over recent years (see 3.11).
3.3 Jakarta Floods Crisis Communications: Overview

For many poorer Jakarta residents serious flooding is not just an occasional event, but rather a recurring hardship, often occurring several times within a single rainy season. Neighborhoods and local administrators are obliged to develop and frequently implement their own responses. Flooding also occurs in different ways depending on the location: along the Ciliwung River, the city’s largest, rain in the hills surrounding Jakarta often leads to flooding even if rain in the capital is minimal. In poorer neighborhoods abutting the coast in the north, frequent low-level floods take place with seasonal high tides. Because of these experiences, residents’ expectations, understandings of, and reactions to the floods were highly localized, and fundamentally shaped the emergency response and therefore the role of communication flows within it.

In order to ground this case study in necessary local detail, Internews focused on two main areas. These were along the Ciliwung River where the river forms the border between East and South Jakarta; and in the coastal community of Muara Baru in North Jakarta. These areas showed that while some general features were consistent across the city, the role of neighborhood-level social networks were crucial, including for crisis communications.

While many experiences were highly localized, some features of the flood held true in both areas. The most striking was the reduced access to media for fully one half of those affected; and the limited ability to get answers to questions on aid delivery. Jakarta is the most information-rich location in Indonesia, but for many of those most affected by January’s floods, when the waters arrived, the power went out — and took almost all channels of communication out in one stroke. With no electricity to run or recharge devices, TVs and mobile phones were unusable. Radios, once a staple of lower-income households, have been replaced by TVs; most households Internews met simply didn’t own one. The only accessible source of information for many of those worst affected and displaced were neighbors, local administrators, and others in displacement centers.

Lack of clarity increased tension: in both Muara Baru and along the Ciliwung, several residents — especially those outside of displacement locations — were often uncertain about who received emergency supplies. Stories of unaffected neighbors claiming aid, including before it reached distribution locations, were not uncommon, as were stories of nepotism in aid disbursement. Internews was not told of any specific cases in areas visited, but the perception that this took place was frequently voiced.

It is likely that many information channels — TVs, places to charge phones, and so on — were accessible in nearby areas not hit by the floods. But most residents that Internews spoke to who had been forced to evacuate their homes remained in or near the displacement centers, anxious to maintain as close an eye as possible on their homes to guard against looting or any other contingencies. Many also had no other place to go. In media-rich Jakarta, the most affected neighborhoods were media-dark.

With no electricity to run or recharge devices, TVs and mobile phones were unusable; most households met simply didn’t own radios. In media-rich Jakarta, the most affected neighborhoods were media-dark. Photo by Febi Dwirahmadi
3.4 Neighborhood Social Networks

3.4.1 ALONG THE CILIWUNG RIVER: THE KELURAHAN53 OF CAWANG, CILILITAN, AND PENGADEGAN.

The Ciliwung River floods frequently, with the lowest-level kampungs affected several times a year; some residents closest to the river in Cawang recounted that this rainy season they had been flooded out of their homes eight times by late February, with the January floods simply being the most extreme.54 Neighborhoods rely strongly on a range of information sources and actions, developed over several years. But each source also holds limitations that significantly increase uncertainty and doubt.

Communications: Before the Flood

In the hill town of Bogor in West Java, roughly an hour’s drive from Jakarta, the Katulampa Dam is the main upstream regulator of the Ciliwung’s water flow, with dams in Manggarai and Depok also regulating water flow further downstream. Residents are well-aware that a rise in water levels in Katulampa translates into increased water flowing through their neighborhood. Several affirmed they can roughly estimate the scale of downstream local flooding based on readings in Katulampa, and have a nine-hour window to respond once water at the dam begins to register dangerous levels. The Katulampa Dam plays a key role in established early-warning systems once water levels rise. This includes warnings relayed to Bogor and Jakarta governments (to inform local administrators) and the Indonesia Red Crescent (PMI, Palang Merah Indonesia; alerted in order to be able to prepare assistance) via phone, SMS and HT (‘handie-talkie’ or hand-held radio).55

Local administrators were the last step in the emergency communication chain, with RT (Rukun Tetangga or ‘neighborhood administrators’) officials,56 passing on warnings from their administrative superiors. They were repeatedly cited by residents as the ‘bedrock’ both to provide or confirm warnings, and to refute any false rumors of impending floods. RTs notified residents by either direct door-knocking; or by communicating via a local mosque loudspeaker.

Residents have been forced to adapt to frequent floods, with some closest to the river inundated eight times by late February. Photo by Oren Murphy.

53 Kelurahan is an administrative level of government, containing several neighborhoods or ‘kampungs’. It is roughly the equivalent of the rural ‘desa’ or ‘village’ administrative level in scale and government function.


56 The lowest level of government administration, with officials directly responsible for their local neighbourhoods.
But these formal arrangements are not enough to provide certainty. One reason is because the significance of Bogor’s water levels is not absolute. Even though some residents affirm they can predict neighborhood flood levels based on Katulampa readings, in some cases this has been inaccurate. According to some sources, this is because if the river has already risen locally to some degree, or if there is heavy rain over Jakarta, the final impact of high water flowing from upstream can vary. Yet there is no established way to capture and combine those data to deliver accurate predictions. In this context, RTs can also be anxious that they may be blamed if floods strike and they have not given warnings — so some issue warnings when floods may be possible but have not been confirmed, and in some cases therefore do not eventuate.\(^{57}\)

The variations in local experience due to incomplete data causes some residents to doubt the warnings they receive. Their higher anxiety over whether a flood will or will not occur sometimes results in them adopting a ‘wait and see’ approach. In an attempt to gain certainty, many call the Katulampa directly for information, including local RTs themselves, community leaders (who relayed information to others in their neighborhood to confirm or negate rumors), journalists, and a range of others. Katulampa staff do not include anyone specifically tasked with this role, with whoever is on-duty at the time taking calls. Despite potential variations, residents along the Ciliwung consistently cited this as the single most important piece of early warning information. The fact that there is a formal notification and warning system established for high water levels (which involves Katulampa notifying identified contacts who are then tasked with relaying information and taking decisions), but that a number of residents and others still call Katulampa directly and informally to confirm or check the situation, illustrates that the formal arrangements are not enough to provide certainty. This can be taken as an indication of overall low levels of confidence among residents in information provided, and is a sign of the anxiety such uncertainty can produce.

Several residents cited television as a main, but secondary, source, via ‘ticker’ announcements of water levels running at the bottom of the screen, ultimately also sourced from Katulampa along with rain forecasts from the weather bureau.\(^{58}\) Opinions of the efficacy of this varied, generally based on how quickly information was received with several affirming data was often late by several hours. Most residents cross-referenced this information with direct calls to the Katulampa or local administrators. It is clear that TV channels, targeting a wide audience and running this information only as tickers, are not a comprehensive warning system and cannot (nor do they claim to) meet needs when floods are often extremely localized.

Communications: During the Flood

For residents met by Internews, power blackouts cut off many of the available communication sources, including mobile phones, as batteries ran flat, and mosque loudspeakers, which frequently could not operate.

In this context once again the main burden fell on local administrators, especially RTs, and informal community leaders. They were responsible for most of the displacement centers in areas visited, and were residents’ first and often last stop for information, including about what aid was coming, when, how to

\(^{57}\) Local officials can also be blamed for not giving warnings for flooding by other causes. In one case, a neighborhood flooded in mid-February reportedly due to a dam breakdown in Depok. The local RT says he received no warning — the official warning system was not set up to respond to such a rapid or unpredicted event — and the lack of rain meant he was not on alert. Some flooded residents blamed the RT for not warning them, and he believes overall confidence in flood alerts suffers from any incident such as this.

\(^{58}\) The BMKG or Meteorology, Climatology and Geophysics Centre.
access it, and how it would be locally distributed. But these processes — both receiving and distributing aid; and consequently communication around it (when communication channels were available) — were often chaotic and unclear. A prime cause of uncertainty was the sheer proliferation of sources: aid came from government agencies, from PMI, and from a range of community, business, or celebrity donors, all of which made planning and organizing local distribution extremely difficult. Many local administrators and volunteers related how they refused to accept meals for distribution that weren't sufficient for everyone displaced at a given location, because limited distributions would lead to conflict. Some established systems, such as PMI’s distribution, were organized in accordance with the numbers of displaced as provided by administrators, but many other ad-hoc efforts were not. This was true even in areas where displacement and emergency responses were a regular occurrence each rainy season, and helped foster rumors of aid arriving — or being missed — which frequently caused local tension.

3.4.2 THE NORTH COAST: MUARA BARU.

Muara Baru is an extended area63 in the northern Kelurahan of Penjaringan. It also floods regularly, but in ways that create different expectations among residents. Residents relate how severe seasonal high tides flood their neighborhoods frequently — anecdotally, some said as often as once a month. But these floods typically reach around 30 centimeters or so (‘knee-height’), and don’t require immediate evacuations.64

Communications: Before the Flood

The January floods were more dangerous because of the expectations that they would progress in the same way and reach around 30 centimeters — and because of a lack of communication on the risk, including early warning systems. However ongoing heavy rain and the collapse of a flood control embankment saw waters rise rapidly, with little or no chance to take emergency measures. Many residents remained trapped in the upper floors of homes or other buildings; a number waded or swam through water to seek safety or in search of supplies. In contrast to the door-knocking or mosque loudspeaker announcements along parts of the Ciliwung River, residents met by Internews affirmed there were no localized warning systems in place, and no notification via conventional or other media.65

FOSTERING NEIGHBORHOOD SOCIAL NETWORKS IN CRISIS COMMUNICATIONS.

Both before and during the flood, while there were several gaps in communication, neighborhoods also demonstrated undoubted resilience in seeking and sharing information as well as they could through existing structures and contacts. A recent study by Lassa, Sagala and Suryandini highlights some of the dynamics involved in this process.59 In particular, they show how neighborhood social networks (Internews’ term; the study uses the conventional ‘social network’) need to be sustained by “a strong and solid community based organization”60 for emergency communication and response to effectively function. They also highlight the importance of trust in emergency communication received — an important factor in the severe 2007 floods when many residents simply didn’t evacuate in the face of warnings — pointing out that “[trust] does not freely fall from heaven. It requires a great deal of time investment, drilling rehearsal[s], community preparedness and so on.”61

This underlines and emphasizes the fact that communication channels in neighborhood social networks exist as relationships — and that relationships need to be owned, and sustained, for communication capacity to be consolidated over the long term.62

59 Lassa, J., et. al., op. cit.
60 ibid, p.15 The network highlighted in the particular location of Lassa et. al.’s study was the local Disaster Management Committee (P2B, or Panitia Penanganan Bencana), in administrative area RW 03, Cawang. This was not noted by interviewees in the neighboring areas (also in Cawang but in administrative area RW 02) visited by Internews. Another network that played important communication roles and was present in some neighbourhoods visited along the Ciliwung River were those developed and sustained by PMI that supported some communication efforts; see Civil Society & NGOs below for more detail
61 ibid, p. 8
62 Similar features are also illustrated in PMI’s review of the Aceh early warning case study (see ‘NGOs & Civil Society’ in the Aceh case study).
63 Muara Baru is a main road, but the name is used to refer to the wider area.
64 In adaptation, several residents have raised the level of their ground floors, and added second stories wherever possible, something which has also occurred along the length of the Ciliwung River (see Lassa, F., et.al., op. cit., for more detail).
65 As the anecdote of the Depok dam break unexpectedly flooding an East Jakarta neighborhood shows, early warnings for those living along the Ciliwung River may also not arrive if floods are caused by sudden events rather than more predictable rainfall.
Communications: During the Flood

The lack of communication continued with the response; while there are many local neighborhood systems, they simply weren’t prepared for the situation that confronted them. Some residents whose own homes were not directly inundated, responded to provide help to their more affected neighbors. Several evacuated to known centers with higher ground — a local mosque, local business, the higher story of a neighbor’s home, and so on. But as along the Ciliwung, electricity blackouts meant conventional media including mobile phones were inaccessible. While word of mouth therefore also became the main channel for communication, this was fragmented as the role and capacity of local administrators to set up displacement centers was curtailed due to the flood’s sudden onset and lack of time to prepare.66

Communication — finding out what was happening, and how to get help — became a prime concern. One resident told how he regularly waded through the streets to find someone who could give him information. Some residents related stories of individuals who died, not because they drowned, but because they were ill and unable to effectively call for help. Established highly-local networks played an important role trying to respond to these needs. One example of a local network that played an immediate support role (and facilitated Internews’ visit) was the Urban Poor Consortium or UPC, a local NGO;67 see Civil Society and NGOs below for an outline of their role.

After a time awareness of the situation in Muara Baru and elsewhere across the north increased; from several residents’ perspective particularly as political leaders visited the area, bringing along with them increased media coverage. Over a period of days local-level communication gradually improved, with eventual deployments by police, military, and PMI in certain areas meaning these organizations also became conduits for some information.

3.4.3 OBSERVATIONS

An examination of affected communities shows the essential role neighborhood social networks play in emergency communication flows — especially when conventional media is not geared to meeting these local needs. Social networks were critical along the Ciliwung River in accessing information; testing its veracity across different sources including RT administrators and informal local leaders; and in responding to it — residents often watched and waited to see what their neighbors would do, and if a recognized community leader decided to evacuate, that frequently triggered others to follow. Neighborhood social networks provided a basis from which to seek information when it wasn’t being provided, as participants in local programs run by the Urban Poor Consortium or UPC (who facilitated Internews’ research; see ‘NGOs & Civil Society’ below) showed; and to respond when nothing effective had been prepared. Finally, these same networks help explain the preparations communities themselves undertake over time, something explored in the study by Lassa et. al.68 They are an essential part of emergency communication flows and of community resilience.

But even in information-rich Jakarta, informal networks among marginalized communities are often forced to take up a greater communication role than they can effectively handle at the required scale and speed. A focus on supporting communication infrastructure, including greater resilience (for example, so that power blackouts do not turn all channels off), can help fill the gaps in this essential function. Possible measures could include providing emergency generators, loudspeakers, and phone chargers at displacement locations; to training how to

66 The number of households in Muara Baru that fall under a single RT’s responsibility is also said to be far more than in locations visited in East Jakarta, meaning a single RT would struggle even in normal circumstances to carry out the same roles as his eastern colleagues.


68 See Lassa, J. et. al., op. cit.
use emergency mobile tools (including crowdsourcing tools); or better support allowing community radio stations. All were suggested by local residents, and all could make a great difference to help give them the resilient communication platforms that they need, when they need them.

### 3.5. Communication Channels in Flood Areas: The Numbers

Internews contracted an independent research organization to conduct surveys on media and information access among flood-affected communities. This research targeted the same communities along the Ciliwung River and in Muara Baru visited by Internews’ researchers themselves, in order to correlate information from those qualitative interviews with quantitative data. In addition for further comparison the survey covered three other locations: broader areas of Pluit (of which Muara Baru is a part); and Rawa Terate and Kampung Melayu, both in East Jakarta.

The survey sample size was 300, high for the size of the target population but necessary to give a level of reliability to the results. The sample targeted was 15 years old and over; in order to adequately represent younger demographics whom interviews indicated had different information consumption habits, especially using online platforms, 10% of all respondents were between 15 and 18 years old. Respondents were purposively selected to target the flood-affected, as flood impact was highly localized even within individual neighborhoods. Households within a short distance of one another suffered varying degrees of damage from the flood. This means that a randomized selection of households surveyed would not necessarily yield accurate samples. Ninety percent of respondents were selected intentionally because they were affected by the flood, with demographics randomized using the Kish grid methodology. The other 10 percent of those interviewed were targeted because they were not affected by the flood, but resided nearby and assisted those who were affected. This attempted to draw out differences in information access caused by diverse individual circumstances that were nevertheless in close proximity.

Interviewers received training and briefings from the research company, with Internews in attendance at the start-up for any orientation and clarification. Interviews were conducted face-to-face, with results recorded on paper and subsequently
The team field coordinator witnessed 10% of interviews on-site. Callback for quality control covered a further 20% of the total respondents, completed by phone. Quality control thus covered 30% of total interviews. In the event of any error discovered, the questionnaires of the interviewer concerned were then double-checked.

The survey targeted three main areas: information sources regularly accessed before the floods; information sources accessible during the floods to provide a comparison of how sources changed or were impacted by the disaster, and which sources were useful in accessing assistance or making decisions. Throughout, questions also focused on influences that were changing communication in some detail, in particular the use of mobile phones and online platforms.

3.5.1 COMMUNICATION CHANNELS BEFORE THE FLOOD

Information Sources. Consistent with Jakarta and national audience data, television was by far the most important source for information. The next most significant sources were those with the closest physical or personal relationships to respondents: local government officials (who under Indonesia’s administrative system live in or close to the same communities), family and friends.

Trustworthy sources. Television led the way when asked which source of information was most trustworthy. Jakartans turned to established and familiar media first followed by personal connections (friends and family) next. Institutional status may play a role in trust in media: for example print, though relatively less significant as a main information source, was nevertheless generally trusted, perhaps reflecting its familiarity and institutional status.

Mobile phone access. Consistent with national data (see Sections 2.2 and 2.3), mobile phone use is extremely prevalent, with 268 out of 300 respondents reporting they owned a handset and 286 having access to one. By far the majority...
of respondents own their own phone; perhaps surprisingly, the number of women owning a mobile phone was significantly higher than men for all but the youngest age bracket.

Consistent with conclusions indicated by data on phone ownership explored in Sections 2.2 and 2.3, basic phones dominate, with only a minority owning smartphones; however smartphones are already overtaking feature phones for the youngest demographic.

Mobile phone use. Again consistent with national data, by far the bulk of mobile phone use was to exchange calls and SMS with friends and family, followed by taking pictures. Mobile internet use was less, with Facebook the highest such use, at 29%. This was a slightly higher response than general internet use at 22%, again supporting the observation that many mobile Facebook users do not necessarily realize they are online and may operate without real digital literacy. (The fact that only 24% of respondents said they accessed feature or smartphones indicates that some may be on Facebook through dedicated handsets — that is, handsets with hardware keyboards that include a button to connect direct to Facebook, without navigating apps or mobile websites — and not equate that with being online.) The fact that more than 34% receive updates by SMS from news sites or organizational sources possibly suggests that phone alert and other message services using this function already has a reasonable basis of familiarity which could be expanded.

Internet access. Younger residents had far greater access to the Internet than older residents, with access levels diminishing rapidly by age group. Overall males had greater access than females, although this was only particularly pronounced in the youngest demographic.
Means of Internet access. Of those who do access the internet, the majority use mobile phones. This differs from national figures that indicate most still go online at internet cafes or warnets, and possibly corresponds to the greater mobile connectivity available in urban centers (whereas in rural areas, warnets are often the most practical means of access).\(^{71}\) It also reflects the rapid increase in mobile connectivity shown in proxy figures such as the expanding mobile data delivery and mobile online advertisement markets (see Sections 2.2 and 2.3). It is possible that warnets are more common in regional areas, and that, although Jakarta’s flood-affected communities are low income, those who are connected are nevertheless part of the capital’s move towards mobile online services. This would require additional data to analyze more fully.

3.5.2 COMMUNICATION CHANNELS DURING THE FLOOD

Flood frequency. Jakarta has suffered severe floods every five or six years since the mid-1990s. However many economically marginalized communities endure flooding on a much more frequent scale. Communities will always take measures to mitigate floods, but lack resources to reduce their overall vulnerability — for example, by moving to less vulnerable but more expensive areas — and so still remain more at risk than those who experience floods more rarely, but have greater income and access to resources. Respondents in affected areas fit this profile, with those who experience floods only every five years or so — that is, who only experience the most severe floods — came to 13%; 53% of those affected experience several floods in a given year, 31% suffering from flooding at high frequency (above three or four times annually). This does not indicate the gravity of flooding — some floods may be a few inches high, others may submerge houses — but it does indicate levels of ongoing vulnerability and impact.

Flood warnings. Just over half of those affected received warning of impending flood. Forty four percent received no warning; Internews’ interviews on the ground indicate this was most likely in Jakarta’s north among the survey sample locations, given flooding there was rapidly augmented by a significant dam break, and therefore not as predictable as flooding in the east, where water levels were monitored along the Ciliwung River.

\(^{71}\) Lim, op. cit.
Electricity access. Power failure was the biggest cause of ‘media blackouts’ and lack of information access in locations visited by Internews. This impacted just under half of those affected by the flood.

Media access. Most respondents had access to some media during the flood. In fact, more had access to media than had access to electricity. At face value this is an inconsistency, but may reflect residents who travelled at least a little way out of their neighborhood to gain access to media (e.g. watched TV), while not being able to access electricity for their own purposes (e.g. to charge a phone, for lights, or other functions such as cooking). Internews’ interviews also indicated many individuals without electricity access used mobile phones during the initial flood period while they were still charged, but could not use them once the batteries ran out; it is likely that at least some of those in this sample who relied on mobile devices could do so only for a limited period of time.

Forty six percent of the total flood affected surveyed accessed TV; the same percentage relied on mobile phone calls, with 34% using SMS. Media access dropped precipitately from there: only 10% accessed radio (radio ownership is anecdotally quite low), and 6% newspapers (which, in any case, could not be distributed effectively during this period, greatly limiting reach).

Social media played a small role in general media access, with Facebook accessed by 8% of the flood affected. 6% used Google Search, 5% BlackBerry Messenger, and 2% used Twitter.

Flood aid information. Having access to communication channels does not mean those channels were effective.

Just under half, 48%, of all flood affected respondents reported accessing information about receiving aid — meaning just over half were in circumstances that were information- or media-dark. Of the number who did receive information, the sources from which they received this broke down as follows:

Local government clearly provided by far the most information about getting aid, and were often the ones responsible for managing its distribution. While T.V. did provide information on aid, this was low when correlated with the numbers who accessed it as a source. That is, while 46% of the total flood affected population accessed T.V., as noted earlier, and 48% of the total flood affected got any information on aid — only 50% of those who got information, acquired it from T.V.

That means that 24% of the total flood-affected got information about aid from T.V., far fewer than those who were able to in fact access it. Interviews with flood-affected residents, and with media personnel and editors themselves, indicates this content was often not about local aid distribution, but mostly
about general efforts to provide aid across the city, with a few case studies in reporting (see 3.7 below for more detail).

Family and friends, and neighbors, were the next most frequent sources relied upon for information about receiving aid, with mobile calls and mobile SMS following those (with interviews indicating calls and SMS were likely to friends, family, and local government officials — that is, the same sources providing most information face-to-face). Community leaders and volunteers round out the top useful sources of information.

Only 15 people successfully accessed information on aid during the floods from online sources (14 of them via their mobile phone).

**Seeking information.** Crisis communication is not only about receiving information: communities need to be able to ask questions as well. Slightly under 48% of flood affected said they actively sought information about aid. The sources or channels they sought out closely paralleled the sources noted in Chart 12, i.e. those who provided useful information about aid, but in almost all respects were lower, suggesting a small number of those who approached these sources, did so without success.

**Useful sources.** Of the full range of sources available — TV, family and friends, occasional radio, neighbors, and so on — by far the most useful source were local government officials. However in some aspects this can be a little deceiving; for example while PMI was not cited as a significant source throughout all of these answers, they and some other humanitarian responders delivered both aid and certain information to local government authorities — thereby making it available through them to communities. Nevertheless, qualitative feedback from local authorities themselves indicates that while this did happen, it was limited.

Overall, information was overwhelmingly accessed through face-to-face contact — a vital but, on its own, highly inefficient form of communication in a time of great need. This indicates the overall lack of communication channel redundancy, and the need to build this resilience into localized flood response.

A range of measures, several requested by local government officials in particular, are possible. They could include for example supplying displacement locations with radio receivers, emergency power generators, loudspeakers, and / or handheld radios dedicated to relaying general information gathered by online and media monitoring. They could also include leveraging greater information access in nearby but relatively unaffected neighborhoods, for example by encouraging information sharing as a civic act. No possible initiative would be a 'silver bullet' and any would need to be integrated within existing structures and networks, in particular community networks and local government roles. But the potential for ‘information bridges’ to overcome relative ‘communication blackouts’ in Jakarta’s floods is clearly present.
“I don’t use Facebook or the internet. I just use a mortar and pestle.”

Cililitan resident, while her young child plays on a tablet beside her.

Facebook, old and young. Other residents maintained that they used to use Facebook, but stopped after they got married — because husbands might get jealous, or there was no time for such trivial things now with a family to support.

3.6 Government Agencies.

Three agencies led aspects of the response at the city level: the Provincial Disaster Management Agency (BPBD, Badan Penanggulangan Bencana Daerah); the National Disaster Management Agency (BNPB, Badan Nasional Penanggulangan Bencana); and the Jakarta Governor’s Office. As well as coordinating resources on the ground, roles included compiling data that informed and decided actions, and providing public information. Relationships between the three were critical to all of these elements. Internews met with representatives from the BPBD and BNPB.

3.6.1 BPBD

The local BPBD was established at the end of 2010, and is still consolidating some functions. Located next to the Governor’s Office building, it has a total staff of 17. The agency is tasked with capturing flood and aid response data from a range of government departments and sharing it with relevant stakeholders. The BPBD was also included in its brief coordinating emergency deployment of relevant departments on the ground.

Local BPBD Data Management. The BPBD collated data on the flood situation and aid response — including data on displacement, on health and aid needs, on physical damage, on casualties, and so on — from the full range of government department sources including police, military, health, public works, and so on. Data is then sent to a range of stakeholders, including the BNPB, Governor’s Office, UNOCHA, and others. The gathering and presentation of data evolved during the floods. SMS alerts were mapped to Google Maps; by the fourth or fifth day teams used Buka Peta (bukapeta.com) and Map Box (mapbox.com) tools for more flexible and accessible data presentation. One interviewee with an international aid organization related that this was the first time the BPBD had disseminated data in .shp format, which provides meta-data that can then be re-purposed beyond a single mapped display. This is a significant advance that reflects increase both in capacity, and in appreciation for the role of open data formats.

However bottlenecks still existed. The government departments sending data to the local BPBD did not have a common reporting format or platform, which caused delays in collating emergency data. A significant delay included data compatibility between the local BPBD and national BNPB offices. The BPBD was required to send data to the BNPB for further presentation and dissemination, a function which fits into the BNPB’s support role for local BPBD offices. However the BNPB’s own data system differs from that of the BPBD.

In practical terms, this means the local BPBD could not provide collated information in a finalized format. Instead, it sent data via email (fax was also mentioned), which then meant the national BNPB needed to adapt that same data before making it generally available in Google Docs format. The resulting delays had important communication impacts affecting several areas: for example it made it more difficult for media to get the most up-to-date details for reports; data used in online tools — like Google Maps — were also delayed. All these delays flowed through into various channels accessible by the public.

BPBD Media Outreach. For media and public access, data was uploaded to the agency’s website. Staff relate that hits on the site jumped dramatically in the first hours of the flood, but the site crashed under the traffic and they lacked access to resources needed to rectify the situation (volunteer developers offered to contribute solutions but this did not eventuate). Journalists and the public subsequently accessed the same

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72 These were of course not the only agencies relevant to the flood response, with a wide range of departments from police to health to meteorology also involved; but their mandates brought the efforts of these departments together.

73 The BPBD also accessed student volunteers who had previously worked on local disaster preparedness with the Open Street Map platform to process data. See Gunawan, I., Lending a Hand when it Counts: Helping Our Partners during the Jakarta Floods. Blog post, World Bank. Available at: www.gfdrr.org/node/1754 (accessed 27 May 2013.)

74 One expert estimated that the real-time Google Crisis Map of the disaster, which relied on BNPB data, was generally around 6 hours out of date when new data was incorporated, a significant factor in fast-moving floods.

75 Other issues also exist. For example, the BPBD has a reporting process for responders to provide updates on aid delivered, which includes a dedicated three-digit phone number. However many civil society responders called logistics staff whom they knew personally directly instead, making updates harder to manage. The BPBD also monitored HT radio traffic of responders. However only one staff member was available to perform this function, again creating limitations.

76 See bpbd.jakarta.go.id, not accessible at the time of writing (27 May 2013).
data on the BNPB website. BPBD also disseminated information using Twitter, Facebook, and SMS.

The Department does not have a dedicated Public Relations office, but when disasters occur assigns one of its senior members to media relations and public information work. The agency generally held press conferences once or twice a day (morning and evening), and sent media updates by email, SMS, and fax; several journalists also typically waited for information in close proximity to the office. The BPBD’s designated public information official often collaborates with public information staff from the Governor’s Office next door. However staff stated there is no shared media protocol with the BNPB, with separate press conferences sometimes occurring without coordination.

The BPBD does not have sufficient personnel to monitor either conventional media or social media. This means it cannot track how the response, or indeed its own efforts, are being reported or discussed, much less reply to any direct queries the public may raise through these channels. However it does have an three-digit public emergency number, and estimates it received between 250 and 300 calls per day.

BPBD and Early Warning Systems. The BPBD plays an important role in the flood early warning system, which includes receiving warnings on rising water levels from the Katulampa gate in Bogor, among others, via radio communication on VHF and UHF frequencies, and relaying it to relevant local authorities and the public via Facebook, Twitter, and the local BPBD website. SMS broadcasts to local administrators, volunteers, and others directly involved at the local level are also used. (See ‘Neighborhood Social Networks’ for more detail on early flood warnings.)

3.6.2 BNPB

The BNPB is the national body overseeing and supporting Indonesia’s disaster response strategy, which includes supporting relevant BPBD offices across the country. It played a lead role supporting the Governor’s Office in the Jakarta floods. For crisis communication purposes, many of the issues involve the rapid provision and sharing of data, already described above in discussing the BPBD’s role.78

BNPB Media Outreach. The BNPB has a public relations (Humas or Hubungan Masyarakat) office; however this does not take the lead with critical updates. Instead it focuses on disaster preparedness campaigns, and providing journalists with logistical details (e.g. the time and place of field visits). The PR office organizes press conferences; however these are generally initiated and delivered by the BNPB head, Mr. Sutopo Purwo Nugroho. The most up-to-date information from the BNPB to the media is provided by Mr. Nugroho personally, sometimes in response to direct calls, but more frequently through his BlackBerry Messenger group; he was cited by several as the media’s first port of call when they sought the most recent information. Apart from this BBM account, BNPB has active Facebook and Twitter accounts, and contact information on its website.79

3.6.3 JAKARTA GOVERNOR’S OFFICE

Governor Joko Widodo (known as Jokowi) and Deputy Governor Basuki Tjahaja Purnama are something of a political phenomenon in Jakarta after winning elections in 2012, with their campaign pledge for change attracting a popular wave of support. Internews was not able to visit the Office itself; however overarching roles are outlined here.

Jakarta Governor Office and Coordination. With three key institutions all involved in Jakarta’s disaster response, coordination and collaboration in a short period was a vital feature. The Jakarta Government established the incident command structure with five clusters in the operations division; communications was not one of them.80 A provincial command center at City Hall provided space and resources for Governor office staff, BNPB, BPBD, relevant local and national government departments, and civil society and private sector actors, aiming to enhance coordination.

However despite such facilitation attempts, some duplication still occurred. For example, one anecdote relates that BPBD-ordered soldier deployments to at least one flood location was mirrored without coordination by BNPB-mandated deployment to the same area. Other elements, such as the lack of shared media protocol between BPBD and BNPD, and limitations in the cross-agency operability of their respective data systems, have already been noted.


78 Ensuring local data is broadly available through its own portal and channels is part of the support the BNPB provides to local BPBD offices around the country. The BNPB itself deploys Google data tools extensively as part of its established systems; hence the transfer of BPBD data into these formats.

79 See: www.bnpb.go.id; @BNPB_Indonesia for Twitter, and bnpb_indonesia on Facebook.

**Jakarta Governor’s Office Media Relations.** The political profile and lead responsibility of the Governor’s position, plus his high level of popular personal support, made this one of the office’s most significant or noticeable roles in communication flows. Any of the Governor’s visits to the field generated enormous media attention, with local residents noting that especially ad-hoc donations (e.g. in particular from volunteer, private sector, or ‘celebrity’ sources) often spiked afterwards. Although the media narrative was predominantly critical of government (see ‘Jakarta Media’ for more detail), Governor Jokowi’s personal actions and his popularity remained an abiding feature throughout.

3.7 Media

Local power blackouts during the flood made media access a moot point for several affected neighborhoods. However, notwithstanding the few seriously-affected residents that did have access, an examination of media roles in the floods still remains relevant in three ways: on the potential influence of media coverage on responders, including government agencies; on the perceptions and understandings of the broader public outside those most drastically affected; and to see what communication could be accessible to severely-affected communities if some last-mile issues are solved.

Internews asked every respondent for their views and understandings of media coverage, and also met with three media outlets: Metro TV, El Shinta FM, and Sonora FM (part of the Kompas Gramedia group which includes the leading newspaper of the same name on-site; the two outlets also share journalists on occasion). While each has big differences in operations, from the perspective of communication ecologies and the flow of information during the floods they shared some common features.

3.7.1 Media Narratives

These were seen as a key influence in the perceptions of almost all responders with whom Internews consulted. Near-universal anecdotal discussion pointed to especially television as playing the dominant role in framing public understanding of both the flood itself, and of the response effort; for many both radio and online portals followed some distance behind (print struggled due to the speed of events and sheer difficulty of distribution through flooded streets). Again anecdotally, print and online outlets typically provided the most informative and detailed forums for ongoing coverage, whereas broadcast mediums are typically viewed as focusing on drama, and rapidly ‘moving on’ from any follow up coverage.

Discussion of media flood coverage would certainly benefit from detailed content analysis. However no organization in
Jakarta has undertaken this effort, and it is beyond the scale of a report of this nature. Without this, and with such a wide variety of outlets, it is not possible to ‘capture’ the full breadth of coverage and empirically display the narratives at work. However perceptions across different informants interviewed can provide some qualitative input.

Those few residents interviewed by Internews who were able access media generally responded positively to the coverage. However none received information that they could use in their own situation (perhaps unsurprisingly, given the city-wide focus of outlets); coverage was rather about general updates on what else was taking place across Jakarta. A frequent comment was that media generally followed the activities of political leaders and celebrities, and less the needs of those directly affected. Even so, most communities met by Internews stated that journalists had visited their areas, both with and without political leaders or celebrities; however none saw resulting coverage from those visits, and couldn’t comment on the nature of reports made about them.

Civil society responders universally noted that coverage of their own efforts was extremely low to non-existent; media were frequently criticized as sensationalist, and often not reflecting the nuanced situation of individual communities. Government representatives were equivocal when commenting on impressions of media coverage, citing some effective coverage while also noting that much of what was reported was preponderantly critical, and rarely included response efforts that were in fact effective.82

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Media outlets met during research frequently saw themselves as not just providing information, but also consciously driving the response, and described their roles in broadly similar ways: to highlight government failures with the goal of putting pressure on authorities. The goal of providing communities

COMMUNITY MEDIA

Most of Jakarta’s media targets large-scale audiences across wide areas of the city — which means the ability to provide detailed, local crisis communication needs for individual communities is a critical gap. Over the long term, gap is generated and exacerbated by policy decisions, such as the lack of support for community radio stations that do focus on detailed local needs.

Internews visited La Tansa community radio station in Gaga Semanan in West Jakarta, which played exactly this local crisis communication role, informing residents and sharing updates about what was happening with flooding in their own neighborhood, and how to get help. La Tansa is an example of filling highly-localized information gaps. However across Jakarta this option has reduced over time: some community stations that had previously operated in the city have closed down over recent years, frequently because their broadcast signal had been overwhelmed by a stronger signal from a larger, commercial rival on an overlapping frequency; the stations in question had few avenues to appeal.

Community radio has a long and impressive history of providing essential support to local areas in natural disasters — including in Indonesia.81 This means that policy that obstructs or undermines the potential for such localized media also makes communities more vulnerable.

with information they needed in order to access aid or otherwise help themselves was not mentioned by any media outlet (except in cases when individuals contacted an outlet directly searching for information). In other words, even when aid delivery was a focus of reporting, media outlets did not focus on conveying emergency information directly to affected communities — often a very powerful role supporting aid response — but rather focused on reporting for general audiences. In many ways this is a structural issue: most outlets target as large an audience across Jakarta as they can, and so are ill-equipped to report on small but essential details that may affect a handful of smaller communities.

Some examples can illustrate editorial approaches. El Shinta expressly stated its goal was to ‘push the government to act’, with journalists seeking areas receiving no aid to report on, and then leaving to seek another once aid arrived. Metro TV differentiated its reporting across three locations: editors affirmed that the Ciliwung River, which floods frequently, required ‘little help from the government’ as communities were already accustomed to the situation — and for the station, this meant it was not a target for reporting. In the north, which was less accustomed and unprepared, the station aimed to be a ‘bridge’ between government and citizens to inform authorities of what was required. In central Jakarta however, which flooded due to embankment failures, the station targeted government failures as the cause of the disaster.

3.7.2 MEDIA SOURCES

Citizen alerts or phone-ins were prime sources for all outlets. Both El Shinta and Sonora FM placed dedicated staff to receive calls from listeners on their situations and needs — in Sonora FM’s case, four extra staff; listener call-ins are the main feature of El Shinta’s daily programming which means dedicated staff are permanently on shift.83 (Alerts also came of course via social media; see below for more detail.)

Each outlet listed some responders as sources for coverage; these were generally sources commonly accessed during everyday news coverage, in particular the police (including for traffic updates), the Governor’s Office, and to a lesser extent the military or the fire department. One common exception was the national disaster agency BNPB, with particularly its head Mr. Sutopo Purwo Nugroho, and his BlackBerry Messenger group, cited as a key source. Other sources within BNPB or BPBD were generally described as too slow or ineffective for news purposes (see ‘Government Agencies’ for more detail on the BNPB and BPBD roles in flood communications).

However outlets did not systematically access other response organizations, in particular the PMI,84 for updated information (see ‘Civil Society & NGOs’ for more detail on PMI media relations). This is in part a consequence of the flood taking place in the capital where leading outlets have their headquarters and greatest concentration of resources and reporters.

Two outlets also expressed the belief that responders (including government, police, and PMI) specifically developed many of their efforts based on the information in media coverage.

Yet no response organization noted this effect, putting instead great effort into deploying their own assessment teams or (in the case of official disaster agencies) compiling the data of other government assessments. On the face of it, this appears to indicate a misconception by media outlets of how a response is in fact organized.

It appears likely that some official aid efforts (perhaps especially from volunteer, private sector, and ‘celebrity’ donors) responded to the profile particular cases gained in coverage, although beyond occasional anecdotes this is difficult to assess.85 But in any even, feedback indicates the process of response assessment, planning, and deployment did not factor into reporting, meaning any consolidated information gathered during assessments, including its gaps and limitations, appears not to have been systematically incorporated into coverage.

3.7.3 MEDIA OUTLETS & ONLINE PRESENCE

All leading conventional media were active on social media platforms, using it as a key source for identifying stories and for disseminating content. Platforms used were predominantly Twitter, Facebook, and BlackBerry Messenger, with some variations (for example, SMS was a more important method for Sonora to receive information than Twitter, while Metro TV barely used SMS86). Outlets played a major role in this space, with for example the accounts of some among the most mentioned users on Twitter (see ‘Tweet it Loud’, page 35).

83 El Shinta’s rolling ‘news and talk’ format is organized around listener phone-in and discussion around incidents and issues. In some ways the station has become a ‘forum’ for citizen queries and crowd-sourced updates.

84 Sonora FM did however link up with environmental groups with dinghies, in a collaboration that allowed journalists to gain access to inundated areas.

85 Many cited Kampung Melayu, a neighborhood that was seriously affected but also anecdotally got a greater proportion of leaders’ visits and media coverage when compared to some others.

86 The two radio stations also used crowdourcing to check information they received from the public, usually by asking on air for listeners to confirm.
Outlets typically engaged far less with other online tools. For example, none of those met by Internews used online maps to source or manage information as part of their coverage (apart from some use of Google Maps screen shots to mock up TV graphics); apart from internal office management systems no other tools or sites, mobile or desktop, were mentioned.

3.7.4 MEDIA PREPAREDNESS
Staff training and systems is a key part of media capacity to report on disasters. Each outlet had significant experience: both Sonora FM and El Shinta are part of radio networks covering several cities, with staff contributing to disaster reporting efforts elsewhere (for example in Yogyakarta after Merapi’s 2010 eruption; see below for more detail). Each outlet also expressed the need to not exploit those affected by disaster in reporting, as a mark of respect, though of course content monitoring would be required to assess how broad this commitment was across all media.

As examples of preparedness, El Shinta states it has a training program and undertakes an evaluation process once any disaster coverage winds up. However journalists have a mixed role at the station: El Shinta also has a charity arm, ‘El Shinta Peduli’, which delivers aid directly to those affected; journalists in the field are required to be both reporter, and provider — combined elements which are assessed in evaluations.87 Metro TV also states it has a training program, manual, and disaster reporting systems, which includes providing journalists with survival kits (a select few are also trained to skydive and pilot speedboats should their reporting require it).88

3.8 Telecommunications
As outlined in ‘Neighborhood Social Networks’, mobile phones formed a critical component of communication ecology for severely flood-affected communities — until the batteries ran flat, with nowhere to charge them. The role of telecommunications companies themselves can be critical in overcoming crisis communication gaps, and several in Indonesia have experience contributing to response efforts, which have included providing free calls in affected areas, or establishing connectivity in vulnerable but commercially non-viable locations.

However despite some individual contributions — for example, the provider Telkom reportedly supplied the Jakarta Government’s incident command center with mobile phones — they did not play a highly-visible role in flood response communications, possibly due to the disaster’s relatively short time-frame. This does not mean that they played no role at all; for example the provider Indosat has ongoing humanitarian disaster programs as part of its Corporate Social Responsibility obligations, which included providing support to emergency relief efforts of three organizations (including PMI).

3.9 NGOs & Civil Society
Non-Government Organizations did not feature as strong contributors in the Jakarta Floods information ecosystem. Media outlets did not use them significantly, and citizens relied upon social media platforms in which NGOs had a relatively low presence compared to other information flows.89 The exception to this pattern was face-to-face communication at displacement locations; however this was limited to NGO representatives who already had an established program presence in those areas, and did not generally reflect broader NGO communication methods. Internews focused on two organizations with this presence. The first — not strictly an NGO — is the country’s single largest civil society humanitarian responder Palang Merah Indonesia (PMI, Indonesian Red Crescent), particularly in East Jakarta; the second the Urban Poor Consortium in North Jakarta.

3.9.1 PALANG MERAH INDONESIA (PMI, INDONESIAN RED CRESCENT)
PMI Local Volunteers. Sustaining last-mile communications among local neighborhood networks is one of the biggest challenges in crisis preparedness and response. In this area PMI’s greatest crisis communications strength during Jakarta’s floods was the long-term presence through field staff and volunteers in several affected areas, where they had been involved in preparedness and other activities for an extended period. This helps sustain the neighborhood social networks that support last mile communications in a crisis — a need highlighted by Lassa et al.’s Cawang study,90 and reinforced by the Flores and Aceh case studies below. It meant PMI individuals knew local conditions and residents, including through collaboration with local government administration, whom they provided with both aid and some information during the relief effort.

87 In the last two years the station has also established an emergency ‘El Shinta Rescue’ team, although they are not typically reporting at the same time. If rescues are not required in for example a flood scenario, the team is capable of establishing clean water distribution posts.
88 Internews confirmed whether media outlets implemented disaster reporting training, but did not access its content or methodology, and therefore does not attempt to discuss the quality of this training.
89 See the analysis provided by Provetic in the ‘Tweet it Loud’ insert, under ‘Media’ above.
90 Lassa, J. et. al., op. cit.
Locations mentioned followed the most flood-affected areas, although of course this by no means indicates the tweets were from those areas; for example the references to Plaza UOB almost inevitably refers to the citizens trapped in the Plaza’s underground car-park.

At nearly 70,000 mentions, Jakarta was unsurprisingly mentioned the most, with Pluit second at 3335 mentions and Bekasi at 3025. Other cities suffering floods, including Surabaya and Jogja, also featured.

Users mentioned featured several prominent media outlets, with an emphasis on those with online; for example the top mentioned user, Detik.com, is exclusively online.

Most active users, however, were not dominated by media or prominent institutions, with a range of sources including individuals accessing and re-tweeting posts.

Most used hashtags combined several of the users and locations:

91 See http://provetic.com; their report Banjir Januari 2013 was provided directly to Internews.
Neighborhood-level PMI representatives were able to give local coordinators information on immediate aid and other support they provided directly provided; they were not tasked with providing or facilitating broader information (such as on aid provision generally, or the overall situation across Jakarta). The flip-side of this is that in areas where PMI does not have an established local presence such information was not available; this included several extensive areas in Jakarta’s January floods.

PMI’s deliberate approach, while designed to maintain the strength and reliability of those networks, also have some limitations both in overall scale, and in expanding responses at the time of a disaster. The organization’s current method rests on a system of inducting volunteers into the organization’s system and database (for example of volunteer doctors or other medical staff). This allows available skills to be clearly documented, for volunteers to gain familiarity with the organization and its methods, so that they can be effectively deployed when needed. However sustaining volunteer networks, as well as building up to a large scale, can be a challenge with this process; where methods to do this are lacking, the utility and effectiveness of local volunteers, including for the provision of face-to-face information, can erode.

PMI Media Relations. PMI has long-term relations with some media outlets, including Memoranda of Understanding with Metro TV and Radio Republik Indonesia; however these MoUs are for media participation in and support for PMI donation drives and general awareness-raising efforts. They do not transfer to closer collaboration or even necessarily understanding during a disaster. Instead, media communications during a crisis are largely limited to printed press releases, and part of regular online updates (see ‘Social Media’ below). No media outlets met by Internews nominated PMI, or indeed any NGO, as a significant information source, including when specifically questioned; and several PMI staff and volunteers on the ground noted that their efforts and the information they had access to did not form a meaningful part of media coverage.93 (However PMI also notes several followers of their social media accounts are media editors and producers, who give positive feedback — see Social Media below.) There are variations on this scenario; for example in large-scale disasters that attract significant international coverage, PMI and members of the International Federation of the Red Cross93 combine public information and spokesperson efforts. Media outlets also commented that for disasters in isolated areas far from their own offices, PMI was more frequently accessed as a source, without the organization needing a targeted media strategy to ensure this happened.94 However in the Jakarta floods, with so many journalists present, this was not the case.

PMI Social Media. The national PMI office has a Twitter account, with over 100,000 followers; a Facebook page with over 65,000 likes; and a website (www.pmi.or.id) with contact details and email bulletin subscription. During the floods most of the messages received over Twitter were direct requests for aid, and offers of volunteer support, but monitoring and responding was difficult at scale. It is also difficult to assess the impact of these tools: for example while it is possible PMI updates were shared well beyond immediate followers; yet PMI did not feature in a Twitter traffic analysis of the most common terms, hash-tags, or accounts used or reference during the flood by marketing firm Provetic.95 The organization is not necessarily equipped to maximize use of these tools: the one communications staff member dedicated to social media was recently shifted, with other colleagues required to share the resulting workload; and while the national office has some capacity in this area, local offices — which are closer to the ground for aid requests — may not.

Beyond the channels noted above — field staff and volunteers, and social media — there were few other means by which affected communities could ask questions. The PMI East Jakarta Branch included a phone hotline, which staff estimate received around 20 calls during the floods. The branch used ‘SMS trees’, a Facebook group, and BlackBerry Messenger to communicate with staff and volunteers, but these platforms did not expand to incorporate broader public outreach (Twitter was not used by the branch, though some staff had individual accounts).96

93 IFRC or the International Federation of the Red Cross Red Crescent Societies represents all the National societies of the Red Cross Red Crescent movement; see http://www.ifrc.org/ (accessed 23 May 2013). National societies with representation and activities supporting the PMI in Indonesia and with whom Internews met include the French Red Cross and American Red Cross.
94 In large disasters, where local PMI branches request national support, such information can be provided through the national office; in smaller ones local branches handle on their own — but they are unlikely to receive national coverage.
95 See ‘Tweet it Loud’ insert under ‘Media’, above.
96 BBM was also used to connect with a local BPBD aid post. In Jakarta Internews only visited PMI’s East Jakarta Branch; variations in practice may occur elsewhere.
PMI and IFRC: some contextual notes. Indonesia has seen some ground-breaking best practice in crisis communications that continues to develop both there and abroad, with the PMI and IFRC (International Federation of the Red Cross) taking a leading role. This includes post-tsunami recovery ‘communication loops’ that combined media channels — SMS, TV, radio, print, and face-to-face — with targeted advocacy to increase affected communities’ participation in recovery efforts. The lessons from several of these efforts are still gradually being applied and expanded within the PMI and IFRC Indonesia offices. Despite advances however, local-level resources for expanded crisis communications remain a challenge, and evolving practices take time to disseminate throughout the organization. Other IFRC members are working in Indonesia to adapt practices learned elsewhere to a local context. This includes the American Red Cross, which aims to develop targeted online apps that can meet information needs (possible examples include First Aid techniques, supporting field health surveys, and so on; experiences managing social media by the Red Cross in the US are also eyed with interest.) Internationally, IFRC is also leading TERA, which is a global operating system that allows instant SMS ‘blasts’ to mobile phone owners in targeted vulnerable areas.97 Discussions between PMI and relevant companies and government departments to implement TERA in Indonesia are reportedly ongoing.

3.9.2 URBAN POOR CONSORTIUM
The UPC is an NGO that supports community organizing and advocacy; it is not primarily focused on disaster response or disaster communications, but carried out some of these roles in North Jakarta as part of its mandate to work alongside communities in their location. Internews met with UPC members and residents they work with in Jakarta’s Muara Baru neighborhood. The speed and unexpected nature of North Jakarta’s floods meant aid was delayed as roads were cut off, and then arrived from a great variety of donors with accompanying confusion; local administration networks had less time or warning to prepare. In this context UPC members and regular participants in their activities worked together to gather a picture of local needs, share information, both about what was both happening locally and — when available through mobile phones or online — elsewhere in Jakarta. They organized a central posko (aid distribution point) that could guide local distribution of aid arriving from a range of sources, with data on needs collected by their members from local RT administrators and others. The lack of time to prepare and plan meant there was a high level of improvisation in these efforts; however they rested on neighborhood networks developed over several years. Some coordination initially relied on SMS to check conditions across different locations, but lack of power to charge mobile phones became a challenge.

UPC Media Relations and Social Media. UPC efforts included trying to put information about the situation in North Jakarta into the city’s public sphere. The north flooded a few days after other parts of the city were already hit, and media and official attention was already fully stretched; residents and organizers felt they were not being heard. One strategy pursued by UPC — for as long as their phones were charged — was to post repeated updates on the situation using the social media feeds or Twitter hashtags of authorities and media outlets. Organization members believe this had a positive effect; while it is impossible to objectively assess the impact of this strategy without greater content analysis of data that is currently unavailable, it represents a distinct ‘bottom up’ effort to influence — rather than just amplify — the media narrative.

3.10 Coordination
The most critical response coordination occurred with the Jakarta Government’s incident response command structure and center; see Section 3.6.3 for more detail. As noted, this did not include specific coordination around communication. Other already-established coordination structures also played a role, including the UN’s Humanitarian Country Team with government bi-lateral donor partners.99

3.11 Digital Volunteers & Communities of Practice
Digital volunteers, including several active in Jalin Merapi and beyond, played a dynamic role in Jakarta’s 2013 flood relief efforts. Twitter-based ODOS (One Day One Service, @ODOSMov) was one of the most organized and effective of these efforts,100 and through individual networks drew on skills established


98 Another important actor is the Humanitarian Forum, which brings together a number of Indonesia’s national NGOs. Internews was unable to conduct an interview with the Forum during the research period. For more detail see http://www.humanitarianforumindonesia.org/ (accessed 20 June 2013).


100 A range of other response efforts included mobilization around the Twitter handle @bantujakarta by the Indonesian Youth Conference; for more detail see http://bantujakarta.sinergimuda.org/ (accessed 23 May 2013). Several blogs also started up around flood needs, some dedicated to specific areas.
through earlier technology-enabled disaster responses, including Jalin Merapi, and technology development organizations such as ICTWatch. As its name suggests, ODOS formed rapidly with the expectation that citizens would require flood aid only for a day, but then expanded as the floods spread. It serves as a clear illustration of the networks and connections at work in digital volunteer communities of practice.

ODOSS began informally, initiated by individuals participating in training at the time of the floods at alternative media outlet and café-meeting place Lentera in South Jakarta. Even for a relatively small response in a short period of time, the fluidity and dynamism of ODOS means that it is difficult (and possibly beside the point) to capture every permutation of their activities; this account draws on conversations with three principle participants.

“We tried to reach the places that others didn’t see.”

Bhaga, ODOS

Twitter was ODOS’ main organizing platform; the first volunteers came from a network of social activists and regular Twitter users, with others quickly joining. By the end of the first day (Thursday, January 17) ODOS counted somewhere over 15 volunteers; by the second, 50, reaching a peak of around 137 by day four. (Volunteers famously included TV celebrity Chef Haryo, who worked in the emergency kitchen.) They received donations both financial and in-kind; purchased essential supplies; prepared food; and distributed to emergency displaced locations across South Jakarta, extending into East Jakarta in the later stages. Lentera Café was the initial base, with operations shifting to the Scouts headquarters in Jagakarsa (near Depok, on the outskirts of town) after around four days — again through personal contacts.

A small number of experienced personnel provided the crux of ODOS’ organization and structure. One, Bhaga (Bhagavad Sambadha), who had volunteered with Jalin Merapi and other disaster responses, took an overall coordination role. Muki Ginanjar, who knew the local area well, played a key role in needs assessments. Ndaru, with connections to ICTWatch and others in this field, supported the use of various platforms; 102 there were several other key participants with whom interns did not get the chance to meet. The experiences and connections of these individuals, and the skills they accessed, were the critical element in organizing volunteers’ efforts. This ‘organic’ crossover from one disaster to another is a critical element of Indonesia’s digital volunteer responses, rather than any established ‘Standard Operation Procedures’ or ‘Standby Volunteer Corps’.

Eventually ODOS comprised five teams: Field Assessment; Administration (including checking Twitter, and finances); Logistics (such as cooking food and receiving material donations); Transportation; and Volunteer Coordination (which included inventories of skills and resources volunteers could provide).103 ODOS used a range of digital platforms and tools for many purposes. Again, this account doesn’t aim to identify every single one in meticulous detail but rather to provide an overarching view of how such tools were deployed in a rapid, informal volunteer setting. This can illustrate both the strengths and gaps in a quick digital volunteer mobilization.

ODOSS prioritized local knowledge; for example, volunteers who knew particular areas were assigned to assess or deliver aid to those locations. Field Assessment teams identified areas of need at first by reviewing flood-vulnerable areas on the map. Targeting especially smaller groups of flood displaced could fall through the cracks of larger aid efforts, teams visited displaced locations and gathered data on needs from coordinators (often but not always from the local neighborhood administration). These need assessments determined requests for in-kind supplies sent over Twitter, and purchases from cash donations. ODOS frequently maintained contact with location coordinators via SMS and continued to provide aid throughout the response.

BlackBerry Messenger was the main channel of communication within ODOS itself (in part because Bhaga did not use other group chatting services). Volunteers also communicated among each other using What’s App and SMS. Ndaru suggested ICTWatch remove data (which tracked the NGO’s projects) from its existing Ushahidi-based map to save time establishing another map. If assessment team members carried Android phones they recorded the coordinates of displacement locations on Google Maps, or alternatively on BlackBerry; this was then manually re-mapped onto ICT Watch’s site (ictwatch.com/peta). If assessors lacked handsets with either of these platforms, detailed physical descriptions were a substitute, with the location identified either on Google Maps or Open Street Maps, depending on which physically-identifying features each map displayed. Assessors also often took Twitpics to disseminate.

101 For more detail, see http://www.lenteratimur.com (accessed 23 May 2013).

102 Ndaru is a freelancer who often works with leading technology groups; although he provided critical technical support this was mostly through orientation, some training, and facilitating individual connections; he didn’t describe himself as ‘part of’ ODOS.

103 ‘Titles’ of teams are approximate and not formalized.
A MAP OF MAPS

Several organizations and individuals generated crisis maps during Jakarta’s floods.\textsuperscript{104}

The most authoritative data came from Jakarta’s local disaster agency BPBD, with data updated as described under ‘Government Agencies’ above:\textsuperscript{105}

\textsuperscript{104} For one overview, see the map resources gathered by the UN Office for the Coordination of Humanitarian Affairs UNOCHA in Jakarta, at http://indonesia.humanitarianresponse.info/emergencies/jakarta-floods/visuals (accessed 23 May 2013). For another collection including more crowd-sourced material, see the Jakarta Floods presentation developed by the marketing company Stratego as part of their Social Media Landscape series, available at http://www.slideshare.net/socialmedialandscape/jakarta-floods-january-2013 (accessed 23 May 2013).

\textsuperscript{105} Hosted at http://www.aifdr.org/demo/wp-content/uploads/2013/01/Jakarta_flood_16_1_13_2400.jpg (accessed 23 May 2013)

Citizens also used the Google My Maps function to create a crowd-sourced map.\textsuperscript{107}

The HOT (Humanitarian OpenStreetMaps Team), building on continuing disaster preparedness work on the Open Street Maps platform in Jakarta, also produced updated flood maps:\textsuperscript{108}

An Ushahidi team developed a crowd-sourced map that also tested the use of satellite infrared data to present a layered picture of flood impact.\textsuperscript{109}

\textsuperscript{107} Available at https://maps.google.com/maps/ms?\texttt{t=m\&msa=0\&msid=210646426167132067981.0004d362a5c9e6a592eb6\&ie=UTF8\&source=embed\&ll=-6.152331,106.745868\&spn=0.011456,0.021136\&mid=1371536236}. Some research interviewees criticized the accuracy of data gathered on this platform; Internews did not have the opportunity to independently evaluate that data.


\textsuperscript{109} Available at: http://openir.media.mit.edu/hackathon/Ushahidi/ (accessed 23 May 2013).
As described under 'Digital Volunteers & Communities of Practice', ICTWatch also adapted their existing Ushahidi-platform map to display flood data.\textsuperscript{110}

Another ongoing Ushahidi-based initiative that highlights concerns across a range of themes in the city, Klikjkt, also included information on the floods:\textsuperscript{111}

Other map examples include further Ushahidi-based efforts and Waze, a mapping effort dedicated to presenting updated information on Jakarta’s notorious traffic.\textsuperscript{112}

\textsuperscript{110} Available at: http://ictwatch.com/peta/ (accessed 23 May 2013).
\textsuperscript{111} Available at: http://klikjkt.or.id/ (accessed 23 May 2013).
\textsuperscript{112} See Stratego’s presentation, cited above, for more detail.
Needs requests sent from the public over Twitter were reposted to Google Docs. Facilitated by Ndaru, a small network of volunteers across the country (a total of 10 people in Jakarta, Ambon, Yogyakarta, and Padang), most with prior disaster response experience, verified these requests and passed the ones that checked out to ODOS for response. All data, both requests and responses, were recorded in Google Docs and displayed publicly on the blog odosmov.wordpress.com.

ODOS participants met by Internews estimate they covered 25 displacement locations with around 25 thousand displaced, and although they were not the sole providers in these locations, they filled several gaps. A highlighted example of local impact is a local community in the South Jakarta neighborhood Pengadegan, along the Ciliwung River. A local coordinator Joko Suhartono relates how he and his colleagues were responsible for over 1,200 displaced locals; despite efforts access to emergency aid was limited for the first few days of the flood, with meals and water late or insufficient. After two or three days the ODOS assessment team visited, and provided adequate and timely aid including food and water from then on. This was Mr. Suhartono’s first encounter with Twitter or any other online networking platform; as a result he now strongly recommends his colleagues and others in local administration roles learn more about the platform, although he believes that will be a challenge for the older generation.

ODOS’ experience shows the vitality and rapid reaction of digital volunteer networks, resting on a mix of informal and organizational communities of practice built up over several disaster responses. However the small number of key individuals involved with the vital skills technical skills needed to pull these efforts together also points to their fragility. There is still quite a way to go before these skills become so generalized that a ‘critical mass’ is guaranteed to exist when and wherever the next disaster strikes in Indonesia, even in the country’s capital. However the momentum is unmistakable, and such volunteer responses are likely to only play an increasing role in meeting future needs. ODOS itself continues to distribute information on subsequent flood incidents through its Twitter account.

It’s important to note that several other organizations, including NGOs, media outlets, and government institutions, also used online platforms including social media extensively. However they were not organized or mobilized around those platforms. This online engagement is noted in the respective notes for each sector.
ROKATENDA VOLCANO AND PALUE ISLAND

4.1 Background

Some 12,000 people live on Palue Island, about two hours’ travel by ferry at the closest point off the coast of Flores in Indonesia’s eastern Nusa Tenggara Timur province. The Rokatenda volcano dominates the island, and began low-level activity in November 2012, classed as Level 3 (Siaga 3) by the Bandung-based Centre for Volcanology and Geological Disaster Mitigation.

Since that month, the island has felt repeated tremors with smoke, ash, and debris ejected from the volcano, with the biggest eruption prior to Internews’ visit on February 02, 2013.\(^{113}\) Three villages closest to the volcano have in particular been affected: Nitlung, Lidi, and Rokirole. According to the local Indonesia Red Crescent or PMI branch 2706 people were displaced at the time of Internews’ visit, based on government data. Further eruptions took place on March 23 and 24, with the national disaster management agency BNPB subsequently quoted as saying 4,855 people had then been displaced.\(^{114}\) The displaced are mostly in Flores’ Ende regency, which is closest to the island, and Sikka regency, particularly the capital Maumere (to which Palue Island actually belongs).

Internews visited Sikka’s capital Maumere, and communities in Ende, but sea conditions prevented travel to Palue itself. However the researchers were able to interview both regular visitors to the island, and contacts based there by phone.

4.2 Highlight Features

Neighborhood social networks. The personal connections between residents of Palue Island, and those who had fled to nearby Flores, were often the main or even sole channel of communication for those affected by the disaster, and shows again the importance of such networks. However the capacity of these networks was extremely stretched due to isolation from other supporting communication channels (see 4.4).

Communication Infrastructure and Redundancy. Palue Island residents were media-dark or near-dark communication environments. This is due to a combination of low resources and limited infrastructure (see 4.3); blocks in relevant policy implementation (in particular local radio licenses) (see 4.6); and electricity and mobile phone infrastructure impacted by the disaster. Critical communication was largely limited to face-to-face and limited phone connections (see 4.4, 4.8).

Media narratives were locally driven by policy confusion and perceived inaction by political leadership (see below); even while local needs were reported, this was cited as a constant concern. Many national outlets are accessible in or near the affected area, but the isolation and scale of the disaster meant the disaster did not get coverage in, most national media narratives. Minimal coverage spawned the level of official humanitarian effort (see 4.6).

\(^{113}\) Many residents who had fled from November onwards were reportedly encouraged by authorities to return just days before the larger February 02 eruption, and fled again immediately after that event along with new displaced residents. Several cited this experience as damaging the trust in government assurances and information.

Responders’ Media and Communications. As with media narratives, factors of policy and political leadership drove many non-government responders’ communication efforts, which took on a strong advocacy aspect (see 4.8).

Data capacity. The local disaster agency did not use digital tools; data was gathered and managed by hand. However the extended timeframe and relative small scale of needs meant data gathering was not highlighted by the disaster agency as a pressing need (see 4.5).

Coordination for Communication. The local Disaster Risk Reduction forum was cited as important for civil society responders, but with little government participation limiting its potential roles and impact (see 4.9).

Digital Volunteers and Communities of Practice. Over a longer time frame and a smaller scale than Jakarta, local blogger networks still demonstrated the spreading practice and interlinked networks of digital volunteers supporting a humanitarian response (see 4.10).

Training and practice. Few if any evacuation drills, inclusive of communication around potential evacuation procedures, have taken place leading up to or even during the initial stages of the disaster. Small-scale spontaneous evacuation decisions by residents have been surrounded by confusion on potential assistance. This has increased anxiety (see for example 4.4).

Political Leadership. At the time of research, upcoming elections pitted the incumbent Mayor and his running mate the head of the local disaster agency against the incumbent Vice-Mayor. Near-universal feedback indicated the political contest has resulted in lack of policy and communication clarity, which flowed through and framed all communication activities (see 4.3, 4.5).

Policy clarity. The Rokatenda volcano eruption was not declared an official emergency by the Mayor, with input from the Bandung-based Centre for Volcanology and Geological Disaster Mitigation (PVMBG) placing it below the danger of imminent eruption. However residents closest to the volcano experienced significant damage to livelihood and housing and fled in fear as a result. Confusion over exactly what is required for an emergency to be declared, and how rigidly it needs to stick to PVMBG assessments, were frequent; the lack of a declared emergency was often ascribed to pre-election political moves (see 4.3, 4.5).

4.3 Rokatenda Crisis Communications: Overview

Almost universally, sources across the board cited a lack of clarity on the part of governing institutions as creating confusion over humanitarian measures. This was exacerbated by inadequate communications between communities in affected villages and the Sikka government itself, which appeared to rely largely on information passed down a hierarchical chain from regency, to district, to local administrators, with no apparent measures to communicate directly with communities.115

Palue has a severe lack of communication infrastructure, relying on radio broadcasts from Flores, national and regional satellite TV, and a single Telkomsel mobile phone tower that only services some villages. Electricity is either solar or via diesel generator, mostly privately-owned. Interviewees related that all of these information channels had been compromised by the volcano activity, particularly for the closest and most-affected villages. Ash from the mountain caused breakdowns in solar power supply; alternative generators were in short supply and expensive to run. Many reported that the single Telkomsel mobile phone tower was also reportedly damaged, restricting its range of coverage further. Internews was unable to independently confirm the fact or extent of the tower’s damage; many respondents noted it as a problem, but to what degree varied depending on sources. (This uncertainty over a key piece of communication infrastructure is, in its own way, also illustrative of gaps in the detailed information and communication from affected communities needed in an emergency response.)

4.4 Neighborhood Social Networks

Internews visited two communities who had fled Palue, one in a displacement location in Sikka regency’s capital, Maumere; the other staying with host families in a northern coastal village in Ende. This minimal sample doesn’t aim to reflect the wide variety of circumstances of the thousands displaced. The choice of contrasting locations and circumstances did, however, attempt to illustrate some of the broad circumstances many of the displaced have experienced.

115 Some sources related that community members were told their queries or demands could only receive a response if they were first submitted in a letter to local administrators, although Internews was unable to meet administrators directly to confirm this.
4.4.1 MAUMERE, SIKKA

Maumere’s Transit Centre was one of the main displacement locations in town, and housed residents from Palue’s Nitlung village, one of the three most affected by the volcano. Community leader Felianus Lemba said many had fled early in the crisis, with several encouraged to return by the government in late January but fleeing again following larger eruptions on February 2nd. Access to aid had varied over several months (at one stage they received information that BPBD had decided to not provide food aid in an effort to encourage people to return), and documentation requirements to register for aid reportedly created obstacles to access. At the time of Internews’ visit food aid was supplied by BPBD (although drinking water was limited); medical care came from the health department; and a local NGO worked with children.

Some information on aid and accessing it was provided by those organizations when they visited, as well as by Caritas; but for specific questions, they had to travel to the BPBD office to ask directly. Community members related that their local government representative had also evacuated from the village and was in Maumere. However they had no ongoing contact with him, nor was there information sharing between different displacement locations.

Community members swapped daily phone calls and SMS with communities and family members still on the island, which was the main source of information for both sides. Prior to the volcanic activity, community members had access to several satellite TV stations and one radio station (RRI from Ende regency), but nothing direct from Maumere or Sikka regency. Access to media relied on solar power which had been destroyed or curtailed by volcano ash; the mobile phones currently used on the island were recharged via generator at significant expense.

Displaced community members expressed high levels of anxiety, and wanted both certainty regarding their situation and support, and better communication on the island. The need for HT (‘handie-talkie’) radios for key contacts and officials was highlighted by residents who had fled the island, as well as some humanitarian responders. (As shown in the Aceh case study, this is a simple, resilient, and effective communications tool when other technology fails.)

4.4.2 ROPA VILLAGE, ENDE

Several extended families had relocated to Ropa village on the northern Ende regency coast, which is much closer to Palue Island than Sikka. There, Internews met an extended family from Lidi village, staying with a local host family, in total ten families sharing a large single-room hut. Family heads Tomas Wake and Petrus Pençe related that they left the island after the February 02 eruption, which damaged their house and destroyed trees and crops. They estimate around 100 families of a total 360 have evacuated, with many including their own family members remaining because they had nowhere to go, wanted to supervise their properties, and feel a close bond to the island. They received strong local community support in Ropa (some families in the area reportedly originally came from Palue and settled in and around Ropa after an eruption in the mid-1980s). The family owns a fishing boat, and occasionally members travel back to Palue to check in on family there, provide some assistance (especially water), and share information. Although they had access to satellite TV on Palue, in Ropa they follow their host family’s schedule, which means they cannot seek specific news or other programs that may communicate information relevant to their plight; as a result they do not have access to communication beyond word-of-mouth.

Sources relate that several displaced families try to visit frequently, either with their own boats or by ferry, to deliver aid; through word of mouth their observations are also an important information source — though this is clearly limited.
They receive aid on a weekly basis from the local distribution point (posko) run by the local administration about a kilometer away. Aid comes from government sources (including BPBD, the Department of Social Services, and Ende’s Mayor’s Office), the Church and parish groups, some businesses, and the local community; however the posko is not a source of information. The displaced residents’ prime concern was the need for a long-term place to stay, both due to likely tension if they remained with host families, and because based on local history they expect volcanic activity to last as long as three years. Internews also visited the posko, where the local administrator in charge confirmed that government aid agencies do not pass information on to him, and had last visited a month earlier to gather data on relief needs. There was no communication regarding contingency plans if the eruptions were to continue or increase leading to larger-scale evacuations to the area, a potential scenario that was creating local anxiety. Lack of any information providing clarity or even an in-principle reassurance on the response — including whether the crisis would receive official recognition as a ‘national disaster’, and whether aid would be provided over the longer term if needed — was another source of local anxiety.

Sharing information over neighborhood social networks with minimal supporting technology (mostly mobile phones) has become almost the sole source of regular information dissemination for the displaced. On one hand, this shows the importance of those networks. But on the other these networks play an outsized role in critical crisis communications, operating in a vacuum of uncertainty due in large part to a policy response that does not correlate to their own experience. There is a limited communications infrastructure and — as outlined in the sections below — sub-optimal use of the limited infrastructure that is in place.

4.5 Government Agencies

4.5.1 SIKKA LOCAL (REGENCY) GOVERNMENT

Sources ranging from local community representatives to journalists to civil society representatives emphasized both poor government communication infrastructure, and local administration politics, as key factors in the Rokatenda crisis. Internews does not attempt to give a detailed analysis of local political dynamics and their impact in the crisis. But it is necessary to outline them as they were related by numerous interlocutors, as these perceptions framed and drove many actors’ communications within the humanitarian response.

Sikka Mayoral (or Bupati) elections were scheduled for late March, a few weeks after Internews’ visit. The incumbent Vice-Mayor Wera Damianus, who comes from Palu, had put forward his candidacy for the top job. The incumbent Bupati Sosimus Mitang was also running for re-election, with the current head of the local BPBD disaster agency branch Silvanus Tibo as his candidate for deputy. The over-riding perception and understanding in almost every interview conducted by Internews was that the humanitarian response had become caught up in electoral politics, hampering its effectiveness and clounding policy judgments, with several different motives and plans ascribed to the main protagonists.

Apart from perceived political dynamics, Government officials had also not declared an emergency as a result of Rokatenda activity — a function ascribed to the Mayor or Bupati — which limited the scale of official mobilization in the humanitarian response. This decision relied heavily on the assessment of the national Bandung-based Center for Volcanology and Geological Disaster Mitigation (PVMBG), which placed the danger at Level 3 (Siaga 3) — below that which required evacuation. However both residents and many responders alike emphasized the belief that Rokatenda required greater calibration of warning level and response, given that much of the subsistence-farming livelihood in the most vulnerable areas had been damaged or destroyed. In addition, sources pointed to the fact that if volcanic activity jumps to a critical level, the remaining ten thousand residents will not be able to evacuate quickly, simply because the island only has access to a handful of boats — all factors that do not fall under the Center’s assessment remit. No source was aware of any large-scale evacuation contingency plans if such a scenario were to occur.

Whether the Sikka government relied completely on the Center’s assessment to decide its response was unclear, and was a significant cause of confusion. This confusion impacted all levels of the response — indeed, the lack of any official directive to evacuate questions whether it could be considered...
a formal ‘response’, notwithstanding the needs of those who had fled and the aid they received. This confusion, and perceptions of political agendas, infused all communication efforts and demonstrates how policy is a major factor in information ecology ‘flows’; clarity must be viewed as a key element for effective crisis communication.

4.5.2 BPBD (LOCAL PROVINCIAL DISASTER MANAGEMENT AGENCY)

Staff member Bakri Kari is responsible for communications activities at the Local Disaster Management Agency (BPBD, Badan Pelanggaran Bencana Daerah). His roles include media relations, passing information to journalists, and use of radio, in particular providing written statements (‘radiograms’) for presenters to read out (as outlined for BPBD Jakarta, the Agency gathers data from a range of relevant government departments, including Health, Social Services, and so on). BPBD coordinates aid distribution points (‘poskos’) in the field, including assessments of the needs of the displaced. Dr. Kari affirmed that displaced communities are able to ask those coordinating poskos for information regarding aid provision and the overall situation, and that in addition they have access (via the surrounding community) to newspapers, radio, and TV. Community members could also visit the BPBD office directly to ask questions. The BPBD did not use digital tools in its office systems, including email.

4.6 Media

This section focuses on media accessible to Palue residents, whether on the island itself or in locations of displacement. Other media plays a role in coverage of needs, the response of authorities, and the circulation of information generally. For example, media in the provincial capital Kupang, is dominated by print while the issue receives limited coverage on TV (most of all on the national TVRI network) and little on radio. This likely both reflects and affects levels of concern and awareness in the provincial capital itself. As mentioned below, coverage by national channels is limited, with many noting that the lack of fatalities and relatively low numbers of people affected prevents the story from reaching the national news agenda. This in turn hampers efforts of many civil society actors to raise the profile of the situation and push for a more comprehensive response.

4.6.1 RADIO

Simply radio is under utilized. It is among the most resilient crisis communication channels, particularly in areas of low media infrastructure such as Palue Island.

Sonia FM is a private station in the Sikka capital Maumere, previously temporarily off-air due to antenna damage, now repaired. However while it used to reach significant parts of Palue, the capacity of the new antenna has been reduced and management is unsure of — and has not investigated — the station’s current footprint. It does, however, cover the area surrounding Maumere, to where several Palue residents have been displaced. Program Manager Joe Pedro says community concern over Palue is high, with many calls, song dedications, and so on; the station also gathered aid donations from listeners which were delivered to the church for distribution. The station says it does not receive information from the BPBD, but gets some data from its small pool of journalists and friends active in some

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121 Sikka BPBD also affirmed the use of HT radio to communicate with local government representatives on the island; others, however, have said these radio posts do not function, or that the local government representatives who operate them had themselves fled. Internews could not confirm this situation, but notes that nobody reported accessing or passing information through HT radio systems.

122 Media reported some community members staged a demonstration outside the BPBD office in mid-January demanding greater certainty in the aid response; there was also reportedly a demonstration staged outside the local parliament in December 2012.
areas of the response. Not one responder, including civil society NGOs, has approached the station regarding possible crisis communication initiatives. Sonia FM is a potential resource that has not been tapped by any humanitarian responders, even to the level of confirming its reach for those affected.

Rogate FM, linked to the Church and also located in Maumere, has been off-air for an extended period since authorities informed management its licensed frequency clashed with those used for air control. Its subsequent application for a license still has not received a response. The station previously had a footprint of some 45 to 50 km, with former manager Antonius Fernandez stating this was enough to reach some of the higher areas of Palue Island. The confusion over Rogate FM’s previous license, and the slow response to its new license application, is an example of poor policy implementation rather than economic factors reducing essential communication infrastructure.

Several regency-level governments across Indonesia have their own radio stations for public information broadcasts. Sikka Regency reportedly had this at one stage; according to the BPBD it had not been functional for the previous five months but was likely to be on-air again in the future. Radio Republik Indonesia in the neighboring Ende regency’s capital on the other side of Flores, does reach parts of Palue Island, but reportedly has little dedicated programming for residents there (Internews was unable to visit RRI due to distance and time constraints; however several sources including Palue Island residents and civil society figures gave this feedback). Finally, both the Church and PMI separately expressed the intention to establish community radios that could directly serve Palue residents. However gaining formal licenses for community stations is extremely difficult in Indonesia, and the process is expected to take several years.

Even though communication infrastructure in Sikka regency is lacking, an overview of the use of radio on its own indicates that Palue Island residents do not need to be in such a ‘media-dark’ environment. While assets are limited, those that do exist — including Sonia FM and possibly RRI Ende — are not used to their capacity. Rogate FM’s situation also illustrates how the current context is the result of several decisions including policy implementation, and not an inevitable consequence of limited resources. A focus on crisis communications both in preparedness and during an emergency has the clear potential to generate significant impact.

4.6.2 T.V.

Anecdotally TV is the most popular medium for Palue residents, with several having access to national channels via satellite. These are national channels, and their national focus means they are not a feasible source of targeted information for such a small-localized audience.

Instead, their prime influence comes from the profile they can
give to the Rokatenda situation through their coverage. Local journalists and observers note the crisis has received very little national reporting as, given the regular scale of disasters in Indonesia, two thousand displaced and no deaths\textsuperscript{124} is not seen as a major news story. At least one station, TransTV, sent its provincial correspondent to cover the situation in early January — before the Jakarta floods took over the news agenda. That said the correspondent said he had to lobby for over a month to gain story approval. Regency-based correspondents also follow the story, with TV1 cited by many and RCTI and MNCTV also mentioned, although their footage does not necessarily make it to broadcast.\textsuperscript{125}

4.6.3 PRINT
Newspapers in both Flores and the provincial capital Kupang maintain their established role as the medium of record, and contain the greatest detail in coverage of Rokatenda. Papers available in Flores include Victory News, Pos Kupang, and the Church-affiliated Flores Pos.

Several of those responsible for or involved in providing humanitarian aid accessed newspapers, and their reporting influenced the debate on key issues, including those of government responsibility and policy mentioned above. This of course is a key role of information flows; however despite some affirmations that some copies of papers are sent to Palu, Internews was unable to find indications that print formed an important information source for affected Palu residents themselves either on the island or in locations of displacement.\textsuperscript{126}

4.7 Telecommunications
Although many interviewees stated that the mobile phone tower was damaged, it still provided coverage to a few areas on the island. Both key responders and a number of displaced residents regularly called contacts or family members who had remained on the island to receive and provide updates on their respective situations (see ‘Neighborhood Social Networks’); all interviewees reported using phone services for SMS and voice, with no data usage mentioned. One NGO representative had approached Telkomsel to request they repair the Palu tower. However beyond this, while expansion of coverage through new towers could make an enormous difference, Internews found no indications that this action, or telecommunications crisis support more broadly, was on the agenda.

4.8 NGOs & Civil Society
Several NGOs played a key role in both general aid and crisis communication efforts. Internews focused the largest such organization, Caritas; however many others, including local national or international organizations with local offices, also play important roles. These include regular gatherings with journalists; direct meetings with affected communities in the course of response efforts, in which information is shared (largely informally); and sharing information with personal contacts within disaster response networks, including Jakarta-based offices.

4.8.1 CARITAS
The dominant presence of the Catholic Church across Flores is one of the reasons its affiliated NGO, Caritas, plays such a large role; many of its activities work in conjunction with Church structures themselves. Caritas is following several communications strategies. This is both to provide information to affected communities; but also, given the dynamics surrounding Palu aid provision, includes significant communication advocacy efforts pushing for greater profile and response from government officials. This is a clear demonstration of the way in which policy response has framed crisis communication efforts and to a significant degree subsequently drives information flows.

As the largest non-governmental humanitarian organization, Caritas has taken the lead in organizing chartered boats to deliver aid to the island, inviting not only other humanitarian actors but also journalists to join to promote coverage.

The Parish on Palu also plays a critical role: its priest Father Romo was instructed to remain by the Church hierarchy and is a key point of contact for both Caritas and other civil society representatives, as well as an important source for journalists covering Rokatenda, and a source of information for residents still on the island.

Caritas also issues frequent press statements, and maintains extensive relationships with local journalists.\textsuperscript{127} Caritas was also producing a short film on the needs and dangers faced by Palu residents. The first edit, available at the time of Internews’ visit, included direct involvement in media outlets. Flores Pos newspaper is affiliated with the Church, as is Rogate FM, mentioned above.

\textsuperscript{124} At least one death had been reported in December, but from flash flooding, rather than a direct result of volcanic activity.
\textsuperscript{125} TVRI in Kupang also follows the Rokatenda situation, although their broadcast is limited to a short daily local feed, with the rest of the broadcast relayed from Jakarta. That, and funding for journalists, restricts their level of coverage.
\textsuperscript{126} It’s worth reiterating that, due to resource constraints, the Rokatenda case study lacks the kind of quantitative information consumption survey as deployed for Jakarta’s January floods. Observations on media access were reiterated by a significant number of interviewees, both Rokatenda residents and those closely associated with the, but do not have the same quantitative authority as a direct survey can ensure.
\textsuperscript{127} This includes direct involvement in media outlets. Flores Pos newspaper is affiliated with the Church, as is Rogate FM, mentioned above.
has already been screened on the island and at some displaced communities, as both a means to convey information, and to stimulate discussion towards community-level organization and responses.

The NGO uses a Facebook page and Twitter to support its work. Overseen by Retno Ika, the Facebook posts mainly report on Caritas activities (how aid has been delivered, and so on), while Twitter is used to solicit donations. Caritas participates actively in the Bencana Google group email list,128 where it has frequently sourced technical support for various activities. This is the only social media outreach for local NGOs mentioned by Internews’ respondents. It is not linked to the blogger group Flobamora (see ‘Digital Volunteers’ below), although the individuals involved share some of the same online networks outside Sikka regency. This is likely an indication that digital tools and the people able to use them are not as integrated as they could be in the response, reducing the chance for interaction.

4.9 Coordination

A local Disaster Risk Reduction forum exists, and is held as highly important by leading humanitarian responders met by Internews, including Caritas. However several cited a low level of participation by relevant government offices in this same forum, restricting its potential. Most civil society actors stated that they coordinated actions among themselves; for example, Caritas has chartered boats to carry aid to Palue Island, and invites other organizations to also participate.

4.10 Digital Volunteers & Communities of Practice

Localized blogger communities are a significant network across Indonesia and a means by which online skills have been introduced and developed in many areas, including those with relatively poor infrastructure and connectivity. Flobamora Community129 (also called Komunitas Blogger NTT) is an open group in Flores, for a wide range of bloggers; it did not have an established crisis response focus, but several members decided to act following the Rokatenda eruptions.

Based in Ende, capital of the regency of the same name, Tuteh has been one of the leading figures of Flobamora’s humanitarian efforts. Through a network of information online contacts she communicated with Palue’s Father Romo, from whom she was able to confirm appropriate needs. The group requested donations both online and directly from local community networks. At the time Internews met them, Flobamora had delivered donations twice and was planning the third. Flobamora sometimes borrowed transport and sometimes hired vans, and have also used SMS to maintain contact with the displaced between visits. They now focus on Palue residents displaced within Ende, and aim to begin teaching basic digital skills to children among the displaced (this is conceived as a social service to the support a better future for the children and is not part of emergency humanitarian needs).

“We’re citizen journalists, we must act to make things better.” Tuteh, Flobamora blogger, says conventional media is not focusing enough on Rokatenda, so it’s up to them to respond.

Flobamora is connected to digital responders elsewhere, with for example Jalin Merapi and ICT Watch, helping to disseminate their information and requests, but without adopting many of the practices those networks have developed. (They are also not the only online groups supporting Palue, with for example Facebook groups in other parts of the province also active.) They do not, however, receive much information or interact to a great degree with other responders, for example Caritas.

In a different context and therefore a slower timescale than for example ODOS in Jakarta (see the Jakarta section for Digital Volunteers and Communities of Practice), Flobamora’s activities illustrate the gradual extension of digital skills and expansion of the use of digital platforms by citizen networks in local humanitarian response. They demonstrate a potential basis on which to build the digital side of crisis communications even in relatively low-connectivity areas. However apart from Caritas’ own Facebook and Twitter activities, so far it appears there have not been sustained moves to integrate the potential of digital volunteers together with other elements of the Rokatenda response.

5.1 Background

Following the catastrophic 2004 tsunami, few places in developing countries have received as extensive investment in early warning systems (EWS) and crisis communications as Aceh. The province — indeed much of Sumatra — remains highly vulnerable to earthquakes and tsunamis.

Two earthquakes struck off the west coast of northern Sumatera, in the afternoon of 11 April 2012, measuring 8.6 and 8.2, respectively, on the Richter scale. The first quake triggered a tsunami evacuation warning — but across large parts of the province the warning, and thus an evacuation, didn’t work. Large numbers of citizens were stranded.

Unlike Jakarta’s floods or Rokatenda’s eruption, Aceh’s 2012 earthquake case study only focuses on one element of crisis communication — early warning and evacuation. Thankfully a tsunami didn’t follow. But the fact that Aceh received such a sustained level of support for precisely this purpose led several partners involved in crisis communications and EWS to take a serious look at what worked, what didn’t, and why, offering a rich level of data on a critical area. This case study benefits from two separate research efforts into the early warning itself: one by the Indonesia Red Crescent (PMI, Palang Merah Indonesia) together with the local government disaster management agency BPBD, American Red Cross, and Canadian Red Cross; and a second by the Lembaga Ilmu Pengetahuan Indonesia (LIPI, Indonesian Institute of Sciences). Internews has combined findings and data from these reports as discussed below, together with targeted field interviews that further expand on the role and flow of communication and information during the emergency warning period.

5.2 Highlight Features

Neighborhood social networks. Once again these were critical, not so much for disseminating information over a short time frame, but rather in helping to provide clarity for community members’ response, in particular evacuation procedures. The Indonesian Red Crescent's networks among communities in particular highlight this (see 5.3, 5.4).

Communication Infrastructure and Redundancy. Emergency warning procedures relied on electricity but widespread power blackouts were instantaneous (see Coordination below). Individual and many institutional response actions relied on GSM mobile telephones; these jammed rapidly, and widespread power cuts affected other communication channels (see 5.3, 5.7).

However the role of the hand-held radio association, RAPI, showed how redundancy and resilience in communication plays a vital role, rapidly linking citizens, officials, and media outlets, even on such a short timeframe as an earthquake response. Yet
with no automatic backup.\footnote{133} The BMKG attempted to activate the system from a distance via GSM, but the GSM network was congested. The warning was eventually initiated by the head of Aceh’s disaster response authority (BPBA) although this took place some 30 minutes later, once power was restored. Even then, some of the sirens hadn’t been maintained or tested effectively and didn’t function. In the provincial capital Banda Aceh in particular, many people didn’t follow evacuation procedures, attempting to flee in their vehicles and becoming trapped in traffic jams, which would have been fatal for many had a tsunami in fact hit.

While the PMI and LIPI reports on the Aceh 2012 earthquake and tsunami warning cover a broad range of issues, several relate directly to disaster response communications. Given the substantial work that has gone into each of these reports, it is worth extracting the relevant points that overlap with this case study in a little detail.

Problems or breakdowns in the 11 April 2012 early warning include:

- The BMKG sent its warning to several key institutions, including national media outlets. However almost all Aceh media outlets were not connected to the early warning system, and relied on national reports to relay information locally. Local media had no other clear channel of communication with the BMKG and were largely unaware, for example, that they could receive information direct via email, fax, or the online portal.

- There was no clear channel of communication between local media and local authorities as no disaster communication system had been set up for that purpose. (This despite regular contacts between journalists and government personnel as news sources)

- Although national media outlets broadcast warnings, including to Aceh audiences, electricity blackouts and panic meant the population didn’t receive them. SMS or online messages from friends who saw these reports outside Aceh were far more common, although they were generally delayed by GSM congestion\footnote{134} and power failure.

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\footnote{132}{The Centre’s location also meant that it was only staffed during normal business hours, and would have been unattended had the earthquake occurred outside those times.}
Many communities highlighted communication as a major concern. Warnings were poorly understood, unclear, late, or did not come at all. When warnings did occur, many were confused regarding their meaning. Even where warnings were delivered — or when residents decided to act without waiting to receive a warning — many communities were confused about what action to take. For example, they were unsure of evacuation routes even when they were clear they needed to evacuate.

The reports also highlighted the relative effectiveness of some positive measures at the community level, including:

- Communities that had relatively regular face-to-face communication on disaster preparedness were more able to respond effectively. (This was demonstrated in locations where the PMI’s volunteer network ICBRR or Integrated Community Based Risk Reduction program maintained activities.)
- Some communities or individuals with access to HT (or ‘Handie Talkie’, hand-held) radios had greater access to information. The HT radio association network RAPI (Radio Antar Penduduk Indonesia, sometimes translated as the People’s Radio Network, see ‘NGOs & Civil Society’ below for detail) played a useful role but was not integrated into overall efforts.

Public expectations and understandings varied markedly around how the warnings would sound, what they meant, and how to respond. Some didn’t begin to evacuate because they were waiting for a warning to sound. Some believed that when the warning eventually sounded, it meant a tsunami was definitely coming — rather than a precaution against the possibility of one.

Many evacuation routes themselves were unclear — signs had been left in disrepair or disappeared; the evacuation locations at higher ground had not been maintained and lacked shelter; and many people didn’t know the way. Particularly in Banda Aceh, communities did not follow evacuation procedures: most of all, many tried to evacuate in their vehicles, leading to extensive traffic jams in tsunami-vulnerable areas. Furthermore of the three purpose-built evacuation buildings around Banda Aceh only one was used: according to the PMI report, the others were locked by local authorities after acts of vandalism; some members of the public also lacked confidence in the buildings’ resilience if a tsunami were to occur.

This is more a function of local preparedness and education than simply due to the flow of information at the time in question. However it is mentioned here because, as demonstrated in the previous two case studies, local expectations and prior understanding are a critical element that influences how communication and information is shared and acted upon at the community level.

For more detail see https://en.wikipedia.org/wiki/Walkie-talkie (accessed May 23, 2013)
Communication infrastructure varies widely across different parts of the province. Internews only visited the provincial capital Banda Aceh with the richest communication infrastructure, but also spoke with sources from rural areas with fewer communication resources.

According to Aceh’s provincial government, the capital Banda Aceh has 15 radio stations, and three newspapers; at least three TV stations broadcast to the city. In contrast the more rural Aceh Jaya district in the west has only one radio station.

Several telecommunications providers operate across Aceh, with Telkomsel the largest with a province-wide network. Connectivity is greater in urban areas.

5.4 Neighborhood Social Networks

This section draws heavily on the PMI report, as a significant part of their focus compared reactions across purposely-selected locations. This again showed the importance of established and sustained neighborhood-level social networks in ensuring effective response.

Observations from several sources noted the difference between community reactions in the capital Banda Aceh, with large-scale confusion and traffic jams, and those in smaller rural communities particularly in Aceh Jaya district, where villages evacuated immediately and largely en masse — though not completely smoothly and with a meaningful level of confusion — after the quake despite little to no communication infrastructure. Several reasons were proffered for village reactions, including the fact that if communication is not anticipated people don’t take the risk of waiting for it.

At a more detailed level, the Red Cross report found that communities where programs that developed and supported CBAT (Community-Based Action Teams) volunteers were more prepared and had greater access to information and communication, as they were more connected to networks within PMI and the government, some of which had HT radios; those who could access this information directly then related it to others within the neighborhood network as the final step in the ‘last mile’. This was not uniform — for example hand sirens provided by PMI were not used as members evacuated themselves and their families first, and several of PMI’s own communication tools, including its own HT radio system, largely didn’t function.

The program that supported CBAT had finished some time before the emergency. The level to which CBAT members

139 Other media sources have stated the city has access to at least 11 newspapers, including weeklies and two produced in Medan. Internews sought detailed information on local radio and TV stations from the Aceh branch of the Indonesia Broadcasting Commission (KPI, Komisi Penyiaran Indonesia), but was unable to confirm these figures at the time of writing.


141 These were supported as part of the PMI’s ICRR or Integrated Community Based Risk Reduction Program.

142 The reasons for this vary, including theft of equipment that subsequently had not been replaced, and lack of backup power during the blackout, among others.
were able to assist generally reflected the degree to which those networks had been actively maintained, especially when they were integrated with more permanent structures. As in Jakarta’s floods, this is a direct demonstration of the need for neighborhood social networks involved in disaster response to be ‘owned’ in order to be sustained and effective.\(^{143}\) There was significant variation — CBAT networks were more effective in village areas, where social networks and organization were tighter — but the principle of the importance of a sustained, integrated social network in both sharing information and mobilization appears clear. The challenge, as PMI itself notes, is how to maintain networks facilitated through program activities once a program has finished.

5.5 Government Agencies

5.5.1 BPBA

The Badan Penanggulangan Bencana Aceh (BPBA, Aceh Provincial Disaster Management Agency) was established in 2009 and along with the Provincial Government is the body responsible for the systems established for emergency response across the province. This includes those used in April 2012, which have come under wide review since the emergency warning and the lessons it provided. These lessons include needs ranging from backup power supply at emergency warning sirens and clear evacuation signs to a system of regular locally-managed emergency drills, and incorporating the State Electricity Company’s (PLN, Perusahaan Listrik Negara) Standard Operating Procedure (SOP) within those of the rest of the government.\(^{144}\) The BPBA led stakeholder review of the emergency response, with communication concerns highlighted by many. These broader needs are part of ongoing discussions; they include for example recommendations to assign a common emergency radio communications frequency. Since the 2012 warning the Governor’s Office has established an Emergency Command (Tangap Darurat), which includes a Humas (Hubungan Masyarakat or Public Relations) function. As outlined to Internews this is not a permanent team, but is to be assembled from relevant institutions including BPBA in the event of a disaster. Some drills with the Emergency Command have reportedly taken place, although it is unclear if they included the PR functions.

The BPBA also expressed the intention to develop closer cooperation with media outlets, and notes that they already work with some (for example, participating in talk shows on the radio station Rumoh PMI). However, no formal mechanism such as MoUs has been established as yet, and it remains to be seen how work will progress in this area.

Outside of the BPBA, other critical initiatives to improve crisis communications have also taken place. In particular the district BMKG office has compiled a contact list of key personnel to inform in the case of any future early warning. This includes police, military, PMI, and RAPI representatives.

5.6 Media

Many of the issues confronting media outlets hold true across all major conventional platforms of radio, TV, and print. Given the sudden and short-term nature of the emergency, print was unable to play a major role.\(^{145}\) While some individual outlets play ongoing and meaningful roles, both in the emergency itself and in disaster education coverage, one overarching feature is that media outlets themselves do not participate in planning forums on community disaster preparedness measures.

5.6.1 RADIO

Local radio stations were relatively less hampered by power cuts and reportedly able to access audiences. Stations made a concerted effort to provide emergency information during crisis, with three — Rumoh PMI; Serambi FM; and Djati FM — cited by many sources. Internews visited two stations.

*Rumoh PMI* was as the name indicates established by the PMI, following the 2004 tsunami. Previously funded by Irish Red Cross, it is now part of PMI in Aceh. Disaster preparedness is a core mandate, and the station broadcasts programming including talk shows and public service announcements that focus on this. At the time of the earthquake staff initially fled the building, but quickly returned to continue broadcasting. They received information over HT radio (see RAPI below) and mobile phone, although the phones didn’t work effectively for some 30 minutes after the quake. The station relied on personal networks for sources rather than official communications channels, which were slower, inaccessible, or didn’t exist.\(^{146}\)

\(^{143}\) See PMI, op. cit., p. 9

\(^{144}\) The PMI (in which BPBA participated) and LIPI reviews of the emergency highlighted several issues relating to the agency, ranging from deficiencies in several systems and lack of dissemination and practice of relevant SOPs.

\(^{145}\) However some print outlets have covered both preparedness efforts and lessons learned from the 2012 emergency warning, with national daily Kompas in particular cited by sources

\(^{146}\) This includes sources within the PMI itself: PMI does not have a Media or Public Relations department, and for various reasons there is no mechanism whereby PMI volunteers or staff can be broadly-utilised to provide rapid reports or updates.
Following the earthquake the station has taken a number of initiatives. This includes producing programming to look at the lessons learned, and how early warning systems and the community’s own reactions can improve. The station also aims to strengthen its own resilience: at the time of the earthquake it did not have its own disaster response plan or SOP, and has been working since to develop one. This includes a greater use of its own assets; for example the station owns Outside Broadcasting equipment — an important mobile broadcast backup if buildings are at risk and evacuation necessary. However the station owns no vehicle to dedicate to an outside broadcast setup — which means any emergency deployment has to rely on good fortune that a vehicle will be available when required; even if such a vehicle were accessible, the station would inevitably lose time while the equipment is installed. However for all initiatives, funding remains a challenge, since the Irish Red Cross wound down post-tsunami support. It is not directly participate in forums where disaster preparedness measures are discussed (see below).

Serambi FM is a local media group which includes the Serambi newspaper, Aceh’s leading local daily. The station is located in a building bought after the 2004 tsunami, chosen due to its location far from the ocean and close to the airport, with four hours’ generator power available. After 2004 all of its journalists were equipped with HT radios (after 2012, with the failure of the GSM network, this was extended to all staff); its broadcast continued with input from contributors across the province. Serambi FM also drew heavily on information from the HT network RAPI (see below), interviewing them live. The station did not use official sources during the early hours of the emergency, but accessed them later to gather data on the degree of damage caused.

The station learns from experience, as shown by the measures adopted post-2004 which enabled it to maintain coverage, and the expansion of HT radios to all staff after April 2012. But it does not intend to introduce and drill staff on its own disaster response plan or SOP. Journalists do follow local drills organized in their own areas, both to participate and report. Both pre- and post-disaster the station’s programming includes preparedness issues, produced together with the Tsunami and Disaster Mitigation Research Centre (TDMRC). It is not connected to the BKMG’s Warning Relay System, and does not directly participate in forums where disaster preparedness measures are discussed (see below).

5.6.2 T.V.

Despite the popularity of TV, the nature of the sudden early warning and power blackout means that it did not play a significant role in the emergency, and was not equipped to do so. As noted, the BMKG sent its tsunami warning to national media outlets. However although those outlets broadcast the warnings, including to Aceh audiences, electricity blackouts and panic meant the bulk of the population didn’t receive them. Only one local outlet, Aceh TV, had the BMKG’s Warning Receiver System (WRS) installed, but its effectiveness also suffered from the same power blackout.

5.7 Telecommunications

Mobile phone proliferation means it has become a mainstay of both individual and organizational communication. Aceh has several providers, with Telkomsel acknowledged as the largest. The GSM network[148] jammed rapidly with traffic minutes after the earthquake which was unanticipated by responders. Some messages trickled through hours later.

Within that scenario individual experiences varied greatly, with some individuals reporting that certain platforms functioned for them (such as BlackBerry Messenger), or that particular providers delivered messages or connections; however this feedback was not consistent. Several responders, including media outlets, were able to use mobile phones some time after the initial earthquake, although this also varied — some say connectivity improved after half an hour, others an hour or more. Anecdotally this affected all mobile phone connectivity functions, including voice, SMS, and data.

5.7.1 TELKOMSEL

Detailed mapping of every technical detail involved in this scenario is beyond the scope of this report. However, as the provider acknowledged as having the largest number of subscribers, Telkomsel’s role was the most significant and indicative of telecommunications crisis functionality more generally.

The company has an SOP for disaster response, which includes a crisis management team, drills programmed every six months, and backup power at mobile phone towers. Contingency plans include the capacity to provide replacements for damaged towers that do not function; however this was not needed in April 2012. While the GSM service suffered substantial congestion,

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[147] Station producers also access RAPI for daily programming, for example on crime and accident reports. Many of the station’s staff are also RAPI members, and overlap with RAPI office bearers.

the company reports that its CDMA service functioned well — although of course it has far fewer subscribers (none of the sources met by Internews used CDMA). As with other respondents, representatives reported that HT radio was the most reliable communications tool, with several staff also members of RAPI — although they used this channel primarily to monitor information rather than contribute themselves.

Following April 2012 Telkomsel has established a Fast Response Team (Tim Reaksi Cepat) to draw upon during any future disasters. Company representatives also participate in the Disaster Risk Reduction forum that brings together government and civil society representatives (see below), which lays the basis for greater collaborative preparation in the future. However it is not formally included within BPBA response plans, and reported that no specific measures to circumvent future GSM congestion are currently under discussion.

5.8 NGOs & Civil Society

Disaster response NGOs and civil society organizations are as vital to crisis communications in Aceh as they were in Jakarta’s floods or the Rokatenda eruption, and many have established frequent contact with media outlets as sources. Beyond this, their observations on and in some cases participation in crisis communication roles are discussed below in the context of the DRR Forum and, in the example of PMI, in that of the CBAT networks. The exception is RAPI, whose role in Aceh’s case holds several remarkable features.

5.8.1 RAPI

Radio Antar Penduduk Indonesia (RAPI, sometimes translated as People’s Radio Network) is a membership-based association of HT radio users, with allocated frequencies. It is a prime example of communication resilience through appropriate technology, and was cited by sources across the board — whether they were in media, NGOs, or government officials. Established in the 1980s RAPI exists nationwide; however it has a particularly high profile in Aceh with office-bearers estimating a total of around 8,000 members across the province and 1,000 in the capital Banda Aceh, many of whom joined after the 2004 earthquake and tsunami. Members form a broad network that incorporates the general public as well as key response personnel, including journalists, police officers, private business owners, military commanders, and government and NGO disaster responders. Indeed, part of RAPI’s strength is the fact that its community is constantly active, sharing information on local incidents among themselves and with media outlets, and even aiming to provide regular ‘RAPI news’ to members. This constant use and familiarity among members helps provide the association with the resilience to respond in an emergency.

During the 2012 emergency RAPI members operated informally, with many communicating observations from their location, some watching the ocean from higher ground. Anecdotes relate some members connecting their HT handsets to Mosque loudspeakers to allow the public to hear radio traffic. Several officials both contributed to and monitored information flowing over the network, including radio stations which interviewed and broadcast members in turn. Traffic was coordinated through RAPI’s office in a space provided above a bus terminal in Banda Aceh.

RAPI is not currently incorporated into disaster response plans, but its resources and capacity has been a significant part of conversations and evaluations since the April 2012 emergency. RAPI office-bearers plan to develop the capacity to set up ‘emergency communication posts’ in any future disasters, which can both source and provide information at a local level. They also propose their frequency to become the official emergency frequency — currently there is no common frequency.

149 Code Division Multiple Access, which is less used in Aceh but able to hold more calls on its respective towers; it was particularly used post-2004 tsunami. For an introduction see https://en.wikipedia.org/wiki/Code_division_multiple_access (accessed May 23, 2013).

150 Company representatives also note that they are in communication with the state electricity company PLN, and say that during the crisis they contacted PLN to request power be restored as quickly as possible.
with different institutions ranging from government to PMI operating on separate channels and unable to share — unless of course they are RAPI members. However several commentators cited difficulties in verifying information shared over the network, with proposals on how to move forward still in debate.

RAPI is a prime demonstration of the need for redundancy across different communication technologies to create the resilience needed in an emergency. The question is how to best link various channels like RAPI, disaster agencies, conventional media, and online resources in ways that can best strengthen fast and trusted information and communication flow across the board in disaster settings.

5.9 Coordination

5.9.1 DISASTER RISK REDUCTION FORUM

Established in 2010 with support from UNDP, Aceh’s Disaster Risk Reduction Forum brings together civil society organizations involved in disaster preparedness, and representatives from the BPBA. It has an office within the BPBA, although Forum members noted that communication is not part of the Provincial Government’s overall disaster response plan.

The Forum represents a critical local mechanism for improved disaster response across a range of areas. This includes disaster communication, with Information and Communication one of its four focus areas. One of the goals noted by a Forum member is the need to establish an information center with clear lines of control to serve when disasters strike, something

151 The BPBA notes that the national BNPB does have an emergency frequency that could be used, but the fact that it is currently not utilized across the province means no comparable community of users has developed around it.

152 The Forum was established as part of a much larger project, “Making Aceh Safer through Disaster Risk Reduction in Development (DRR-A),” For an overview of the project’s goals and rationale, see http://www.multidonorfund.org/doc/pdf/20080527_project_appraisal_document_drr.pdf (accessed 23 May, 2013).

153 The other areas are Knowledge, Technology, and Education; Human Resources; and Institutional Capacity-Building.
that is currently lacking. However the Forum faces significant obstacles, with lack of funding at top of the list. Budget shortfalls have prevented the Forum from being able to carry out a number of its planned activities. In addition, leading figures in the Forum note that it has not recruited experienced media personnel to implement its Information and Communication activities. The focus is on awareness-raising rather than systems of emergency communication as a need in crisis, which helps explain the fact, noted above, that key local media outlets do not participate in the Forum itself. This framing and membership reduces the potential for critical collaboration on crisis communications, despite several reviews after the emergency highlighting exactly this as a key need.

But the potential is still there. For example, in the wake of April 2012’s warning, many groups ranging from media outlets to RAPI, have said they need to develop SOPs. This is precisely the kind of task that is far more effective if shared in its development, dissemination, and simulated practice, not only among media and communication practitioners themselves, but with others in disaster response.

5.10 Digital Volunteers & Communities of Practice

Since 2004, Aceh has a strong history of deploying innovative new technologies in disaster response. It is where leading disaster technology response NGO Air Putih first began; and where the Irish Red Cross initiated leading cross-platform communication efforts combining SMS, conventional media, and face-to-face volunteers to promote effective aid accountability, to name just two.

However digital volunteers and local digital tools were not generally used strategically in both preparedness activities before the emergency, and in the response itself. This is not simply down to the fact that GSM congestion and power blackouts stymied connectivity early on. The experience and practice of digital volunteers has primarily focused on supply of aid post-evacuation, and practices have evolved accordingly. There is room to investigate how such tools and skills might be harnessed to early warning and evacuation systems themselves, especially through possibly linking across other communication channels to ensure resilience.

Post-emergency, some small steps have begun in this direction. For example, RAPI has begun using Google Maps to mark the locations of volunteers, with the intention of assisting targeted mobilization when a disaster next starts. TDMRC has developed online maps with GIS tools to assist disaster response, but is considering the potential of alternative tools more accessible to public participation, including Open Street Maps and AIFDR’s InaSAFE tool. However these initiatives are in the early stages of implementation or discussion, and are not part of any general examination of the potential of digital tool use within Aceh.

Just as Jakarta’s floods indicate possibilities for greater integration of digital tools to help spread positive practice in aid response, Aceh’s 2012 earthquakes can help reveal how digital tools could better assist early warning systems in relatively low-connectivity settings.

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155 Some have affirmed to Internews that media SOPs for disaster response do exist; however no media outlets expressed awareness of this when questioned.

156 This goes beyond the absence of groups such as Jakarta’s ODOS, the response to Rokatenda by Flores’ Flobamora, and so on (see Sections 3.11 and 4.10); some general-use existing tools — such as BMKG’s early-warning and information methods, including SMS and its own site — were also notable in their absence, already as noted, emphasising the degree to which potential digital practice was missing from the early warning response.
While more detail is desirable and even possible, in most cases scarce resources make this impractical. Ongoing efforts to both recognize the importance, and improve the delivery of communication in disaster preparedness demands tools that can be applied quickly and easily — not as a substitute for detailed ground research, but as a support where such research is not possible. The most critical issue in a crisis, however, is not to simply see how communications did take place, but to try to analyze and anticipate how communications will take place, before a disaster happens. If measures can be targeted this will improve performance and is a critical part of disaster preparedness.

Towards this end, Internews used the data and analysis from the three previous case studies to develop a pilot assessment survey, which can be conducted either in person or by phone. The survey targets the main actors identified throughout the case studies: Government agencies; media outlets; NGOs; digital volunteers; and telecommunications providers. Given the impracticality of even meaningfully identifying, let alone interviewing, neighborhood social networks from a distance, exploration of this critical element was incorporated within questions asked of other actors.

While the pilot survey questions drew on the lessons learned from the case studies, they were adapted for practical reasons. For example, media narratives can be a critical influence on communication, as already discussed. Yet such a qualitative influence does not easily lend itself to a relatively rapid tool like this survey. Therefore questions focused on what might be called communication ‘mechanics’: for example, whether there was a Disaster Preparedness Coordination Forum, with communication featured as an area within that; whether disaster preparedness drills were implemented; or if there was the presence of active links between humanitarian responders and media outlets.

The pilot survey aims to highlight the basics of the crisis communications landscape in targeted areas and highlight ‘big picture’ needs. It does not attempt map the critical nuances of communication influences and flows, which can only be gained by more intensive methods — whether that be surveys and qualitative interviews, as in these case studies; simulations that bring together key actors; or other approaches.

Internews divided the pilot survey questions into two parts. The first, general questions were uniform for all stakeholders, and explored:

- Existence and frequency of interactions with other actors (for example, contacts between disaster agencies and local media);
- Existence of and drills for government disaster Standard Operations Procedures, including levels of public understanding, range of actors participating, and communication channels used;
- Individual perceptions of levels of disaster preparedness;
- Existence of and drills for Early Warning Systems, again including levels of understanding, participating actors, and communication channels used;
- Existence of and actors’ participation in any Disaster Risk Reduction or Preparedness Forums, including any communication focus;
- Available data on and perceptions of community access to communication channels, both media and social institutions (local government, religious, and cultural institutions), including perceptions of effectiveness and trust.

Asking the same questions to each interviewee allowed for triangulation of responses. For example, if half the stakeholders responded that no disaster preparedness forum existed, and the other half responded that it did, triangulation allows the conclusion that while the forum exists its role and activities are...
not broadly known.

The second set of questions was largely designed to target a particular stakeholder, whether that be media, government agencies, and so on. These questions varied, but in general included exploration of whether interviewees’ organizations themselves had plans and drills in place for disasters; media relations; basic organizational data capacity, and staff disaster training and communication and transport options.

Internews implemented the pilot survey by phone for two locations: Bukittinggi, in western Sumatra; and Kupang, in eastern Indonesia. While each location has suffered minor disasters, such as small-scale flooding or landslides, neither has undergone a significant or major disaster in recent years. This allowed the survey to target features highlighted in the case studies, as a way of extrapolating observations on crisis communication preparedness before a disaster happens.

6.1 Bukittinggi Survey Pilot Deployment

Bukittinggi is a city of over 90,000 residents in inland Western Sumatra province. Although the province’s capital Padang suffered great damage in the 2009 earthquake, Bukittinggi did not. However it remains in a vulnerable earthquake area, and close to several active volcanoes; floods and landslides are regular hazards of a relatively smaller scale.

Internews sourced interviewees through a network of humanitarian responders and media, including national and local PMI and IFRC staff, media associations, and national government disaster agency contacts. Interviews were conducted by telephone from Jakarta.

Interviewees included:

Government: the Local Disaster Management Agency BPBD; local Kecamatan (above village level) governments of Aur Birugo Tigo Kecamatan and Guguk Panjang.

NGO: PMI Bukittinggi branch.

Media: Bukittinggi TV; radio station Jam Gadan FM; Barito Minang newspaper.

Telecommunication: Telkom Bukittinggi office.

Despite extended enquiries, Internews could not identify any active digital volunteer group of the nature of ODOS in Jakarta or Flobamora bloggers in Ende.

Survey responses, while basic by design, allowed several relevant observations.

STRENGTHS

Bukittinggi evidenced a range of local groups at the neighborhood level, an essential element of crisis communications preparedness. These included CBAT groups established through PMI efforts, to student, prayer, and silat martial arts groups, all of which had active connections with media, NGO, or government actors that play roles in crisis communications. Some of these networks have been integrated at certain levels into disaster preparedness initiatives; others have not, but maintain this potential. Several respondents also noted their use of hand-held radios, either within their own institutional arrangements or as members of RAPI or ORARI, a similar hand-held radio association.

GAPS

Bukittinggi however also demonstrated a range of gaps that have strong potential to hamper crisis communications in the event of a disaster. Some examples are:

The lack of data on communication channels used by audiences. This is likely common across much of the country, as it is relatively specialized and expensive to obtain. However without this data, effective plans on communication channels to use are seriously hampered. The understanding of which channels worked effectively to reach vulnerable communities varied wildly across a wide range of respondents, including those working in the media themselves. For example, when asked to indicate the likely reach of different communication channels, estimates of audiences accessing national TV ranged from 100% to 60%; estimates for smartphones ranged from 70% to 1%. National statistics outlined in Section 2 indicate many of these figures are highly improbable; the point is that without

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157 See Appendix for the full questionnaires Decide if you want to include them, or: The surveys themselves are quite extensive and so impractical to include here. For those interested in further exploring and developing this tool as a pilot, Internews is happy to share the full responses on request. OK?

158 Internews tested the pilot survey in Bukittinggi in part because the French Red Cross had already undertaken qualitative research through focus groups on potential disaster preparedness communication efforts using radio and other media, which also helped orient first pilot survey through identifying important media outlets.

159 Internews was unable to interview state media in Bukittinggi. Given that state media often has greater ties with disaster agencies, as demonstrated in the Kupang pilot survey results below, this should be taken into account when evaluating the limited connection between those two sectors.

160 In contrast to RAPI, ORARI has a more international focus. Several interviewees stated that its membership includes a larger proportion of officials across regions, rather than focused within a given local area.
even general data — whether local surveys or extrapolated from national trends — any planning for crisis communications initiatives is significantly hampered.

Respondents generally indicated the same range of non-media communication channels as important, including local and provincial governments; religious institutions; and cultural and community institutions (for example sports or cultural bodies). Local government and religious institutions were generally indicated as both the most effective and most trusted sources. The lack of media outlets’ explicit inclusion in disaster preparedness efforts. Two out of three media outlets cited no relationship with disaster agencies, and understanding of whether a disaster preparedness forum existed, let alone its membership, varied.

Finally, a number of respondents indicated that their own institution, whether media or local government, did not have an internal SOP or contingency plan ready or rehearsed if a disaster struck. Media outlets indicated that their own staff did not in general have disaster response reporting training.

PERCEPTIONS
When asked to rate Bukittinggi’s level of disaster preparedness, ‘scores’ ranged from 10/10 to 4/10 (the local BPBD put it at between 5.5 and 6.5 out of 10), with a fairly even spread across that range, notwithstanding the extremely small sample size. Understandings of basic measures in place varied greatly. Some respondents indicated no disaster preparedness forum existed; others that it did, with the same responses across understandings of whether an Early Warning System was in place or not. These differences in understanding were not confined to respondents of one particular sector or another.

FUTURE CONSIDERATIONS
Although some responses included a range of detail — for example, some listed communications tools used in drills ranging from sirens to radio — the variation in understanding whether drills in fact occurred, or disaster forums were in place, means respondent answers cannot be fruitfully explored in more detail; there is too much uncertainty expressed across different respondents on the basic features.

This indicates either that awareness of what is in place is extremely low; or that initiatives are highly localized, and not widespread across the city. In either case, the prognosis for effective crisis communication in the event of a disaster is low. The development of effective crisis communications measures depends more upon ongoing efforts to strengthen these processes — disaster preparedness forums, drills and their implementation — with media and other communications efforts building upon such infrastructure.

6.2 Kupang Survey Pilot Deployment
On Timor island, Kupang is a city of around 350,000 people and the capital of Nusa Tenggara Timur province, which includes Flores and Sikka Regency, where Rokatenda is located. As with Bukittinggi — and indeed much of Indonesia — Kupang and the surrounding area has experienced relatively smaller disasters including floods in recent years, but nothing on a major scale. Internews travelled through Kupang en route to Sikka for the Rokatenda case study; although researchers did not investigate Kupang’s own disaster preparedness, this transit visit allowed appropriate interviewees to be identified for the purposes of the pilot survey, again through a network of humanitarian responders, media, and disaster agency contacts. As with Bukittinggi, interviews were conducted by telephone from Jakarta.

Interviewees included:
Government: the Local Disaster Management Agency BPBD; local Kecamatan (above village level) governments of Alak and Maulafa.
NGO: PIKUL (Penguatan Institusi dan Kapasitas Lokal, a rights-based community development organization); MPBI (Masyarakat Penanggulangan Bencana Indonesia, which focuses on community-level preparedness); PMPB (Perkumpulan Masyarakat Penanganan Bencana, which focuses on disaster response capacity-building).
Media: Pos Kupang newspaper; Radio Republik Indonesia (state-owned); TV Republik Indonesia (state-owned); AFB TV (a local TV station)
Digital Volunteers: KoAR (Koalisi Akar Rumput, a youth-based network with extensive online activities); Flobamora Community (connected to Flobamora in the Rokatenda case study, but a different network of individuals)

Despite extensive efforts, Kupang-based telecommunications did not respond to survey requests.

STRENGTHS
Kupang’s crisis communications preparedness shows several strengths, both actual and potential. At a basic level, the pilot indicates that the city’s measures are more advanced than in the previous example of Bukittinggi: the majority of interviewees were clear that disaster drills were implemented; that an
Emergency Warning System was in place; and that a Disaster Preparedness or Risk Reduction Forum existed and was active. Details on these measures varied — for example the frequency of drills or the makeup of Forum membership — but a stronger base level of awareness existed.

Communications in all these areas of activity were often noted and listed. The role of communication channels in drills and SOPs were frequently cited, with the most common tools such as sirens, radio, mobile phones, and some social or online media. TV, radio, and other outlets and platforms were also cited as participants in the disaster preparedness forum. (This was not completely consistent — for example private outlets interviewed were unaware of the forum — which points to important gaps). The survey was not designed to explore the nature of this involvement — for example it does not show whether it entailed actual crisis communication preparedness, or was geared more towards pre-disaster awareness-raising as in the Aceh case study. Nevertheless an appreciation of the importance of communication channels in disaster response is present, implying a floor plan for further elaboration on crisis communication efforts.

Overall the connections between different actors, ranging from disaster agencies to media outlets to NGOs and community-level groups, were generally more diverse; this does not, of course, attest to the quality of concrete collaboration but as a baseline, indicates critical exchanges and connections do exist. The role played by other government departments in emergency preparedness and response, such as social services or health, was also frequently mentioned. A range of social institutions and community networks were consistently mentioned as important sources of information. Local government and local religious institutions were perceived to be most effective and thereby trusted.

Frequent mentions of hand-held HT radio as a resource available both to government and other institutions indicates a level of communication resilience, something that was lacking, for example, in the nearby Rokatenda case study. This was less the case for informal networks such as digital volunteers.

Finally, several interviewees showed a clear ability to be ‘communication catalysts’ via their active connections to a wide range of key actors. This included NGOs with active connections spanning community networks, media outlets, and some government agencies; or digital volunteers with connections to NGOs, telecommunications, media, and sources of technical support beyond Kupang itself.

GAPS

Once again, and perhaps unsurprisingly, there was little concrete data on audience access to and trust in particular communication channels; one source did mention the existence of such a survey, but believed it was not used in any disaster response planning. As a result, interviewees listed their impressions of the most useful channels, which varied greatly; estimates of access to national TV channels ranged from 100% to 40% of local audiences; Internet access ranged from 80% to 20%; impressions on the use of all media channels varied by comparable margins, frequently at great odds with figures that could be extrapolated from national data for a context like that of Kupang. As in Bukittinggi, the lack of such data or its use means many elements in any plans for crisis communications would inevitably be based on guesswork.

Relations between government institutions and media in disaster preparedness was strongest with state media (RRI and TVRI), and less so with private media. Although private outlets naturally engage with government institutions in the course of reporting, this is of course not the same as collaborating in disaster preparedness efforts.

Many organizations lacked their own emergency SOPs, drills, or internal disaster response plans, pointing towards potential vulnerability in a crisis just when their public contribution could be most vital. Staff preparedness — such as disaster reporting training for journalists — was generally low and at times non-existent.

PERCEPTIONS

As noted above, while understandings of disaster preparedness measures as outlined via the pilot survey were in general quite detailed, there was also significant variation. Some of these differences may be down to local differences — for example preparedness drills may occur in one kecamatan (an administrative area) but not in another — yet others would appear to reflect lack of overall understanding.

This includes, for example, variation in the membership and roles of the disaster preparedness forum. Many respondents felt confident in their understanding of who participated in the forum, and listed the types of institutions involved in detail; but these lists had significant variation. This would appear to indicate that, while some basic mechanisms for crisis communication initiatives are in place, there is still plenty of space for consolidation and extension.

Indeed, when asked whether Kupang was adequately prepared for a disaster, answers spread fairly evenly across a broad spectrum, ranging from 3/10 to 8.5-9.5 / 10. (Interestingly, official
institutions tended towards the lower end of the scale, with the BPBD itself estimating a range between 6.5 and 7.5 / 10; the highest scores generally came from NGOs.)

FUTURE CONSIDERATIONS
Any ongoing crisis communications efforts in Kupang clearly already has a number of tools or partners to work with. The issue is not finding partners but rather reinforcing relationships between organizations or community groups as well as strengthening preparedness through regular practice sessions. The availability of audience data, and its use in crisis communication planning, could help any such process significantly. Finally, utilizing the most active individuals and groups — whether they are media outlets, digital volunteers, or neighborhood networks — as ‘catalysts’ to stimulate or deepen these processes could be well worth exploring.

FINAL NOTE
As outlined, the Pilot Survey is just that — a pilot. Further iterations of such a tool can become a useful element in targeting crisis communications vulnerability without inevitably resorting only to extensive and expensive ground research. However any development of this tool should, as a matter of course, initially take place along with those more extensive research methods in the early stages, to test the effectiveness and gaps in the data that the pilot survey itself can capture. Once these limitations are understood, appropriate weighting can be given to the resulting data, maintaining the essential credibility of its input into any potential initiatives.
APPENDIX 1

Acronyms

AIFDR     Australia Indonesia Facility for Disaster Reduction
APJII     Indonesia Internet Service Provider Association (Asosiasi Penyelenggara Jasa Internet Indonesia)
BBM      BlackBerry Messenger
BPBA     Aceh Provincial Disaster Management Agency (Badan Penanggulangan Bencana Aceh)
BMKG     Meteorology, Climatology and Geophysics Agency (Badan Meteorologi, Klimatologi, dan Geofisika)
BNPB     National Disaster Management Agency (Badan Nasional Penanggulangan Bencana)
BPBD     Local Disaster Management Agency (Badan Penanggulangan Bencana Daerah)
CBAT     Community-Based Action Teams
CDMA     Code Division Multiple Access
DRR      Disaster Risk Reduction
EWS      Emergency Warning System
GIS      Geographic Information System
GSM      Global System for Mobile Communications
HOT      Humanitarian OpenStreetMaps Team
HT       ‘Handie-talkie’ or hand-held radio
ICBRR    Integrated Community Based Risk Reduction
IFRC     International Federation of Red Cross and Red Crescent Societies
LIPI     Indonesian Institute of Sciences (Lembaga Ilmu Pengetahuan Indonesia)
NGO      Non Government Organization
NTT      Nusa Tenggara Timur, a province in eastern Indonesia
ODOS     One Day One Service
ORARI    Indonesia Amateur Radio Organization (Organisasi Amatir Radio Indonesia)
PLN      State Electricity Company (Perusahaan Listrik Negara)
PMI      Indonesia Red Crescent (Palang Merah Indonesia)
PR       Public Relations (also Humas or Hubungan Masyarakat)
PVMG     Centre for Volcanology and Geological Disaster Mitigation (Pusat Vulkanologi dan Mitigasi Bencana Geologi)
RT       ‘Neighborhood administrator’ (Rukun Tetangga)
RW       Administrators of a larger geographic area and level of responsibility above Rukun Tetangga (Rukun Warga)
SMS      Short Message Service
SOP      Standard Operating Procedure
TDMRC    Tsunami and Disaster Mitigation Research Centre
UNOCHA   United Nations Office for the Coordination of Humanitarian Affairs
UNDP     United Nations Development Program
UPC      Urban Poor Consortium
WRS      Warning Receiver System
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