

# Communication facilities for disaster management

[Sociology](#), [Communication](#)



## **Communication Facilities For Disaster Management**

ITU Southern and East Africa Workshop on  
the use of Telecommunications/ICT for

Disaster Management: Savings Lives

Lusaka, Zambia, 17-18 July 2008

Role of Telecommunications and ICTs in Disaster Management

Overview of Association of Telecom Operators & ICTs Players in the SADC (Southern African Development Community, which is an economic grouping of 14 Member States) Established 28 years ago under SADC Treaty and Protocol on TCM Consultative Member of SADC on telecom and ICTs matters Sits on Telecom Sub-Sectoral Committee (SCOM) of SADC; and Has Constitution, clear Objectives, Mission and Vision and a permanent office (Maputo) led by its Executive Secretary (CEO)

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What are disasters?

- Natural
- Man-made

It is evident that by no means disasters can be fully prevented and only the loss caused by these events can be prevented or minimised.

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Impact of disasters?

- Disasters disrupt life, livelihoods, economies, political systems, belief systems - in short, everything that makes society work.

Recent Disaster in Zambia - Floods

Zambia flood victims enjoy reconstruction via ITU satellites The ITU deployed 25 satellite terminals to help restore vital communication links in the aftermath of severe floods that inundated low-lying districts across Zambia.

Nearly 400, 000 people in 19 districts across the country were affected, with as many as 36, 000 inhabitants displaced. Most victims were in Monze (Western Province), Mumbwa and Mkushi (Central Province), Mazabuka (Southern Province) and Kafue (Lusaka Province) A total of 3, 418 homes and 44 schools collapsed as a result of heavy rainfall, and ensuing floods destroyed roads and communication links, hampering the coordination and delivery of assistance.

Telecommunications and ICTs in Disaster Mitigation and Management  
Information and Communications Technology (ICT) can be used to minimize the impact of disasters in many ways. ICT is used in almost all phases of the disaster management process. In the disaster mitigation and preparedness process, ICT is widely used to create early warning systems.

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An early warning system (EWS) may use more than one ICT media in parallel and these can be either traditional (radio, television, telephone) or modern (SMS, cell broadcasting, Internet). As demonstrated by AlertNet, on-line media play an important role.

It is essential that ICT is given its due place in disaster management but it should also not be taken as panacea for all ills. ICT, like any other tool, can deliver its best when the other necessary ingredients are in place. Disaster management (also called disaster risk management) is the discipline that involves preparing, warning, supporting and rebuilding societies when natural or manmade disasters occur. It is the continuous process by which all individuals, groups and communities manage hazards in an effort to avoid or minimize the impact of disasters resulting from hazards.

Effective disaster management relies on thorough integration of emergency plans at all levels of government and non-government involvement. Activities at each level (individual, group, community) affect the other levels.

Source: UNDP : ICT in Disaster Management

Disaster Management Structure

Source: ITU - Dr. Cosmas L. Zavazava - Presentation during the Symposium on Multi-Hazard EWS for Integrated Disaster Reduction - Geneva 23 -24 May 2006

Critical Role of ICTs in Disaster Preparedness

Means for communication of information

Critical in disaster preparedness and reducing the loss of life and property. Early warning systems, television and radio broadcasting, web portals, long-distance education and telecommunications have a role to play in disaster mitigation. " Typhoons, hurricanes, forest fires, oil spills, tornadoes, tsunamis and other natural disasters that travel distances, are by their very nature able to give advance notice to significant populations of potential victims that lie in their path.

" The need for good early warning systems and signals, and prompt and effective transmission to vulnerable populations is one of the actions that the global community needs to commit to and invest in. Investing in making such information available is a fraction of, and is worth most of, the [aid] money which is collected." For ICTs to be used more effectively, a high level of co-operation, partnership and communications ability is needed from various agencies of national governments as well as provincial and local government agencies. ICT regulators, telecom suppliers, broadcasting companies and internet service providers, should also be included in the collaboration efforts

Where ICT fits in Disaster Management Mitigation - includes any activities that prevent a disaster, reduce the chance of a disaster happening, or reduce the damaging effects of unavoidable disasters.

- Preparedness- includes plans or preparations made to save lives or property, and to help the response and rescue service operations.

- Response- includes actions taken to save lives and prevent property damage, and to preserve the environment during emergencies or disasters.

The response phase is the implementation of action plans.

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- Recovery- includes actions that assist a community to return to a sense of normalcy after a disaster.

These four phases usually overlap. ICT is being used in all the phases, but the usage is more apparent in some phases than in the others.

## Use of Telecommunications and ICTs

### Radio and television:

Considered the most traditional electronic media used for disaster warning, radio and television still have a valid use.

The effectiveness of these two media is high because even in developing countries and rural environments where the tele-density is relatively low, they can be used to spread a warning quickly to a broad population.

The only possible drawback of these two media is that their effectiveness is significantly reduced at night when they are normally switched off.

## Use of Telecommunications and ICTs (cont)

### Telephone (fixed and mobile):

Telephones can play an important role in warning communities about the impending danger of a disaster.

There were many examples of how simple phone warnings saved many lives in South Asian countries during the 2004 tsunami.

Perhaps the most famous was an incident that occurred in one small coastal village of Nallavadu in Pondicherry, India.

A timely telephone call - warning about the impending tsunami - was said to

have saved the village's entire population of 3, 600 inhabitants, as well as those of three neighbouring villages.

Use of Telecommunications and ICTs (cont)

Short Message Service (SMS):

During the 2005 hurricane Katrina disaster in the US, many residents of affected coastal areas were unable to make contact with relatives and friends using traditional landline phones.

However, they could communicate with each other via SMS more easily when the network was functional.

This is because SMS works on a different band and can be sent or received even when the phone lines are congested.

SMS also has another advantage over voice calls in that one message can be sent to a group simultaneously.

Use of Telecommunications and ICTs (cont)

Cell Broadcasting:

Most of today's wireless systems support a feature called cell broadcasting. A public warning message in text can be sent to the screens of all mobiles devices, which have such a capability in any group of cells of any size, ranging from one single cell (about 8 kilometres across) to the whole country if necessary. GSM, D-AMPS, UMTS and CDMA3 phones have this capability.

Use of Telecommunications and ICTs (cont)

Satellite Radio:

Satellite radio can play a key role during both the disaster warning and disaster recovery phases.

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Its key advantage is the ability to work even outside of areas not covered by normal radio channels.

Satellite radio can also be of help when the transmission towers of the normal radio channels are damaged in a disaster.

Use of Telecommunications and ICTs (cont)

Internet and Email:

The role Internet and email can play in disaster warning depends entirely on their penetration within a community.

These media can play a prominent role in a developed country where nearly half of all homes and almost all offices have Internet connections. In many developing countries, however, less than five percent of the population uses the Internet and even those who are users, do not use it on a regular basis. In such a situation, it is difficult to expect Internet and email to play any critical role in

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However, both Internet and email can play an important role in the other phases of disaster management.

Use of Telecommunications and ICTs (cont)

On-Line Media

Reuters' AlertNet is a good example of an ICT/media initiative that contributes towards early disaster warning and management, at an international level. " AlertNet started in 1997 by Reuters Foundation - an educational and humanitarian trust - to place Reuters' core skills of speed, accuracy and freedom from bias at the service of the humanitarian community.

It is a humanitarian news network based on a popular website that aims to keep relief professionals and the wider public up-to-date on humanitarian crises around the globe." (AlertNet, 2007)

AlertNet has been in operation for more than a decade now. It was born in the aftermath of the Rwanda crisis of 1994, when the Reuters Foundation became interested in media reports of poor coordination between emergency relief charities on the ground. Reuters Foundation surveyed charities to determine what could be done to remedy this.

AlertNet now attracts more than three million users a year, it has a network of four hundred contributing humanitarian organizations and its weekly email digest is received by more than 17, 000 readers. (<http://www.alertnet.org>)

ICTs for Disaster Response and Recovery

The most difficult period of a disaster is the immediate aftermath. This period calls for prompt action, within an exceptionally short period of time. In

the aftermath of any disaster, a significant number of individuals will be injured and/or displaced.

Many of them might still be living with the trauma they have encountered, including loss of loved ones.

Affected individuals might also be without food or other essential items. They might be waiting in temporary shelters, with no idea of what to do next. Some might need immediate medical attention, while the disaster aftermath environment also creates ideal breeding grounds for possible epidemics. ICT can play a key role in such an environment in managing the available resources.

A good example of this is Sahana, a free and open source software (FOSS)-based disaster management system that grew out of the events during the 2004 Asian tsunami disaster.

This system was developed in Sri Lanka - one of the countries hardest hit by the tsunami - by a team of ICT volunteers to help track families and coordinate work among relief organizations during and after the tsunami disaster.

Subsequently, Sahana has been deployed to manage the earthquake disaster in Northern Pakistan (2005), the Guinsaugon landslide in the Philippines (2006) and the earthquake in Yogyakarta, Indonesia (2006).

Source: UNDP : ICT in Disaster Management

SAHANA - Open Source

Sahana provides four main solutions:

- *Sahana Missing Person Registry* : This is an on-line bulletin board of

missing and found people. Information about the person seeking another person is also captured, which increases the chances of people finding each other.

- **Sahana Organization Registry:** This registry keeps track of all the relief organizations and civil society groups working in the disaster region. It captures not only the places where they are active, but also information on the range of services they are providing in each area.

- **Sahana Camps Registry:** This registry keeps track of the location of all the camps in the region and provides basic data on the facilities they may have and the number of people in them. It also provides a GIS view to plot the location of the camps in the affected area.

- **Sahana Request Management System:** This is a central on-line repository where all relief organizations, relief workers, government agents and camps can effectively match requests of aid and supplies to pledges of support. It looks like an on-line aid trading system tracking request to fulfillment.

Source: <http://www.sahana.lk/>

Emergency Telecommunications Activities

undertaken by SATA

- Provide a forum for building a network of emergency planners and to promote emergency preparedness within the telecommunications and ICT industry
- Promote best practices for emergency preparedness within the telecommunications and ICT industry

- Established a process designed to facilitate mutual aid support in the event of a regional, national or international disaster
- Encourage cooperation and information sharing, raise understanding and establish a working relationship with members, government and other external organization
- Telecom/ICT Sector Issues and Challenges
- Standardization of critical infrastructure and protection across all levels
- Development of common and agreed protocols for the sharing of information across critical infrastructure at the appropriate times during a disaster
- Lack of Telecommunications /ICT infrastructure

#### Telecom/ICT Sector Issues and Challenges (cont'd)

##### How USA Experience Can help us

The USA has experienced many disasters in the last few years: Oklahoma bombs, where messages had to be carried on foot because the many tiers of authority could not talk by incompatible radio;

the Columbine school shootings - 46 agencies and little communication;

Hurricane Katrina, with its unholy alliance of lack of compatibility and substandard equipment (three channels for local emergency workers but none for outsiders);

and 9/11 - perhaps the most obscene of failings, where police in helicopters could not tell fire-fighters that the North Tower was about to collapse - with one hundred fire-fighters inside.

##### Conclusion

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As far as disaster management is concerned, there is no reason why ICT should take a secondary role