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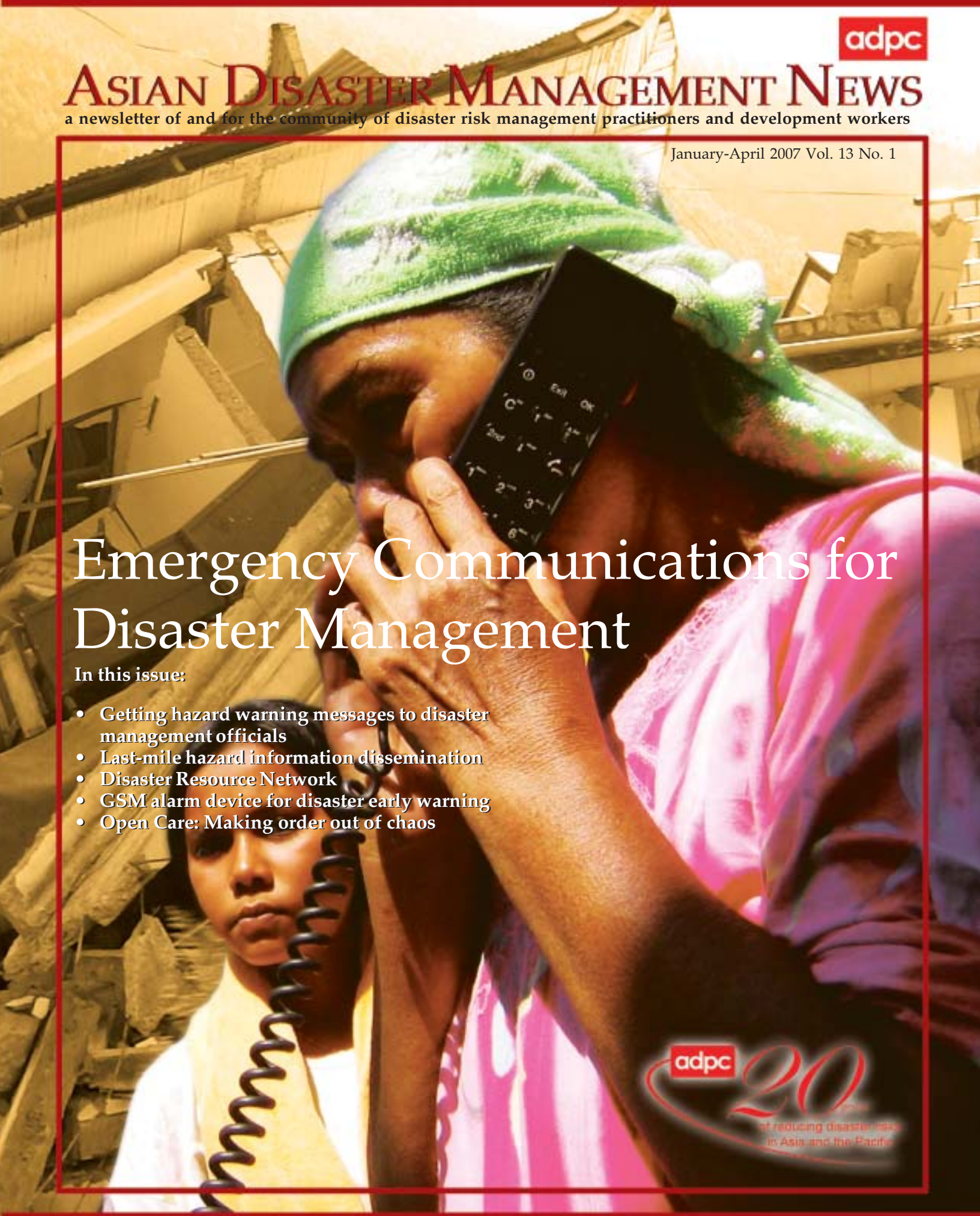

Emergency Communications for Disaster Management

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Asian Disaster Preparednesss Center

editor's note

Dear Readers,

The first issue of the Asian Disaster Management News in 2007 comes to you highlighting Emergency Communications, a critical, evolving area with great potential for deliberation and action.

Communications technologies play a crucial role in providing the means for propagating and disseminating disaster related information. Effective and robust communications in any emergency or in the promotion of preparedness and awareness can provide communities with the necessary advance knowledge or warnings to take mitigating action. After the 2004 tsunami, many countries have made progress in improving their communication systems to incorporate the needs for and to cope with natural disasters and for disaster management. Yet there remains the need for a collective effort across all industries, communities and all countries to bring to attention the gaps, challenges and problems alongside the lessons learned in providing these capacities. In addition, despite the need to be consistent in the application of these technologies, we must not allow these to preclude the local context for these warnings. No matter how expensive or sophisticated systems are, they would be totally ineffective without education. A combined approach of indigenous and modern technologies with widespread continuous education on the potential risks and hazards faced can provide an end-to-end emergency communications framework.

ADPC acknowledges and thanks all the invited contributors with special mention to the Climate Risk Management unit of ADPC in the production of the publication.

I present to you the concepts and technologies of emergency communications.

Dr. Luis Jorge Perez-Calderon
Deputy Executive Director

felicitation

ADPC staff honored

ADPC, at its gala new year celebration on 19 Jan 2007, paid special tribute to the commitment and dedication of 18 of its staff who have marked 5-10 years of service to the organization.

Four staff, Mr. Loy Rego, Ms. Hla Hla, Ms. Benjaporn Sutthiprapa and Ms. Suree Sungcharoen were recognised and praised for their long service of ten years or more. Fourteen others, Ms. Hnin Nwe Win, Ms. Clarence M. Carlos, Ms. Wannapa Boonprasom, Mr. Prasarn Pueng-ngoen, Ms. Janette Ugsang, Ms. Cinthuja Leon, Ms. Lolita Bildan, Ms. Budsarin Chuensombat, Ms. Chutima Saengnapabovorn, Ms. Ling Ling Jiang, Mr. N.M.S.I Aranmepola, Ms. Sirikarn Kahattha, Ms. Anchalee Sirivadhanakul, Mr. Frederick John Abo and Mr. A.R. Subbiah were recognized for their contributions of over five years.

Emergency Communications for Disaster Management

S.H.M. Fakhruddin
fakhruddin@adpc.net
Asian Disaster Preparedness Center


Photo credit: S.H.M.Fakhruddin, ADPC 2006

All disaster emergencies and crisis events are by nature chaotic and highly dynamic, creating physical, emotional, and social disorder. In such crisis events and emergencies, communications is critical at all phases of disaster management. Communications during emergencies incorporates a wide range of measures to manage risks to communities and the environment. Drawing from various sources that include telecommunication satellites, radar, telemetry, meteorology and remote sensing, early warning is made possible.

Before disasters strike, telecommunications can be used as a conduit for disseminating information about the impending danger thus, making it possible for people to take the necessary precautions to mitigate the impact of these hazards. Other telecommunication applications, including remote sensing and global positioning system (GPS), have critical roles to play in tracking approaching hazards, alerting authorities, warning affected populations, coordinating relief operations, assessing damages and mobilizing support for reconstruction. It is clear therefore that telecommunications play a pivotal role in disaster prevention, mitigation, and management.

The 2004 tsunami was a wake up call for the whole world on the importance of timely emergency communications for disaster management. There is no doubt that we have reached the era of unlimited, real-time information sharing and mobile communications. Why, may one ask, are communications for disaster management still a topic for discussion, when news travel around the globe in minutes and cellular phones provide instant personal communication links? Unfortunately, the reality looks different.

Policy and Institutional Framework for Emergency Communications

Policy and regulations are important elements of emergency communications planning and management. One of the main hindrances to effective establishment of telecommunications for disaster mitigation is the lack of a legal and regulatory regime. Before 2004, institutional frameworks and policies of regulatory commissions were far from incorporating contingency planning for disaster management. Horizontal cooperation among specialized services at each level is as essential as the vertical lines of communication for emergency communications. This requires established links between disaster coordinators, telecommunications authorities and service providers at each level. Governments need to take important steps to eliminate the monopoly of public telecommunications enterprise and to undertake a review of current telecommunications legislation, including regulations incorporating emergency telecommunication systems and protocols to support emergency services. For example, SMS messages are more resilient against blocking than voice calls in GSM networks, as they are distributed in a different way, hence emergency messages can be delivered via SMS broadcasts to select user groups. As there are no clauses to support emergency responders or disaster management while issuing telecommunication licenses, issues like cost involvement and sharing was raised by private operators demonstrating the importance of raising awareness among authorities as well as the public.

Public mobile networks are used as much as possible to transfer data from sensors, via SMS or data channels. This facility can be negotiated with commercial operators and secured by means of service agreements. The cost will normally be lower than the cost of ownership for private radio links when operation and maintenance, service/ repair and spare parts are taken into account. Priority and national roaming will be enabled for certain user groups in the commercial mobile networks, thus, avoiding the main objections that arose against the use of these networks in emergencies. These initiatives have to follow a step-wise approach and maintain a close cooperation with operators.

The Tampere Convention provides a legal framework for the use of telecommunications in international humanitarian assistance, reduces regulatory barriers, and protects providers of telecommunication assistance while safeguarding the interests of the host country. The International Telecommunication Union (ITU) is looking at practical ways of helping countries ratify the Tampere Convention and is making an assessment on the implementation of this treaty. This will no doubt, help countries determine how best to smooth the rough edges

of the implementation process so as to pave the way for a faster, unhindered, and effective deployment of telecommunications resources by all humanitarian actors before, during and after disasters strike.

Emergency Communications for Disaster Preparedness

It is said that keeping people connected is keeping people safe. Communication is a part of every day life. Think of a day without communications! It has long been recognized that if a community is capable of receiving or communicating advance information on hazards, their associated adverse effects can be minimized. Effective early warning and proper evacuation orders empower individuals and communities to respond appropriately to a threat in order to reduce the risk of death, injury, and property loss and damage. The communication of warning message should inform what is happening, what it is relevant to that person, and what that person can do. It should be communicated in a clear, simple language and delivered with enough lead-time for the recipient to take any necessary action.

Multiple communication channels are required by communities to ensure receipt of warning information from all levels of government structures. An early warning system ensures the delivery of point-to-point warnings or related information through a reliable communication system. Recent disasters in the region have once more pressured governments to review their existing communication system particularly concerning their contingency planning. No single system can serve for all circumstances and an effective public warning system should use as many information communication/ dissemination channels as possible. This optimum use of all available means of telecommunication is indispensable to effective disaster preparedness.

There are two type of communication methods available for warning dissemination: (1) mass notification methods and (2) addressable notification methods. Mass notification methods are not individually addressable and generally provide the same alert or message to everyone within a particular geographic area, regardless of level of individual risk. These include: outdoor systems – sirens, local sirens/ loud speakers, mobile electronic signs and mass broadcasting systems – conventional radio and television, cable television and low power radio. Addressable notification methods are tailored and targets alerts and messages only to those at risk or to specific groups (such as emergency responders). Some latest addressable technologies are flexible enough to support many of the same functions of traditional mass notification systems. These include:

- Broadcasting systems – provincial radio broadcasting, amateur radio, VHF/HF radios, weather radio, micro phone, mosque, temple
- Telecommunication systems – telephone, fax, cellular mobile, Short Message Service, paging and tone-alert radio, internet, VoIP, and satellite
- Inter personal communication – door-to-door, residential route-warning, etc.

Emergency Communications for Disaster Response

Rapid and accurate information exchange is essential for the disaster response period. An increasing complexity of organizational structures and the distribution of responsibilities in the response among authorities go parallel to an increasing number of available communication links. Public networks, such as fixed line and mobile telephone system, are the basis of first responders. With involvement of partners from outside the immediate vicinity of an event, responsibilities and, thus, communication requirements shift to larger dimensions. Decision-making in such unpredictable operational conditions becomes a process involving a multitude of institutions. In these circumstances, private networks, such as dedicated radio networks including satellite links, are needed to bridge information gaps and facilitate information exchange. Contingency initiatives among and between operators and telecommunication providers will enhance redundancy and safety.

Very few telecommunication systems are designed to carry all traffic that the users could possibly generate during an emergency or events with large casualties. Though the designers make various assumptions about what the highest load on a busy working day is likely to be, traffic on any network is likely to increase dramatically after a disaster. It is therefore important to study how systems behave during acute overload situations. In some systems, a public switch will respond to an overload situation by sending a signal to surrounding switches advising them that the incoming routes to the switch are closed. In this case it will not be possible to reach any subscriber on that switch from outside, but it will still be possible for users of that switch to make outgoing calls. Disaster managers should reflect this when designing information flows within their organizations and with outsiders. Priority can be offered to some users of the network, but details of how this is done and how priority users can be identified are potentially sensitive issues and mutual agreement between operators. In all cases where competition between operators exists, mandatory application of the same determination criteria for all providers of public network services is crucial.

Emergency Communications for Disaster Prevention

In disaster prevention, the avoidance of hazards, telecommunications have a key role in the distribution of knowledge and in raising awareness. They are vital tools for day-to-day prevention and early warning. Preparedness to respond to emergencies is a task of institutional responders, commonly known as emergency services. Due to the character of such services, their telecommunication equipment and network can be expected to be in a permanent state of readiness. Response to disasters, including relief operations following such events, is likely to involve institutional responders, national and international humanitarian organizations. Different from usual local emergency services, these responders need to be prepared to operate in unpredictable locations and under widely

different conditions. Telecommunications under these circumstances are a great challenge.

One of the important aspects related to disaster prevention is a well-designed telecommunication network and information system that is suitable in coping with chaotic situations during and after disaster emergencies. Telecommunication and IT facilities are the two expected aspects in dealing with disaster and emergency situations. Many countries have developed this kind of system in coping with disasters and emergency situations. Japan for example, a country with constant disaster threats is a good example of a country that has developed a robust prevention and mitigation system for disaster and emergency situations, demonstrating that investing in a good communication system is integral to providing accurate information during disaster emergencies.

Emerging Technologies and Trends

Fast evolving and emerging technologies are mainly in two main areas: the core network and the access network including inter-operability. Internet Protocol (IP) technology is being generalized in the core network. Data rates on the air are increasing to allow new applications like multimedia, video, and telemedicine, etc. The use of a Common Alert Protocol, which will become an ITU Standard by mid-2007 was encouraged as a means of ensuring that all media can effectively deliver alerts and information.

Generally, the simpler time-tested forms of radio-communication work best in disaster situations. There are robust versions of equipment designed to meet the rigors of transportation and operations in the field. Nevertheless, some newer technologies offer features that may facilitate emergency telecommunications. These include cellular telephones, digital dispatch radios, facsimile, data communications, television and satellites. Each has their advantages and disadvantages, which should be weighed carefully in the planning process. The ideal emergency telecommunications system is one that has the capability of functioning in disaster and other emergency conditions. Second best option is capability exercised periodically, such as weekly or monthly, under simulated emergency conditions.

The capability to communicate with local public protection organizations such as police, fire and medical, the local military, international disaster relief organizations and neighboring countries is an important consideration. There may be circumstances where it should be possible for any station to be able to communicate with any other station in the disaster area. Such a feature can cut across the formal structure and send communications directly to the intended party without experiencing delays and possible misinterpretation by intermediaries. Unfortunately, there are other circumstances where separate channels are needed for different groups of stations and it would be difficult, if not impractical, for everyone to be on one channel. To achieve effective warning, it should be complete with timely coverage, redundancy, and seamless meshing of new and existing systems. Regardless of the systems, it is critical that there be consistency in application and message, widespread and current public knowledge of potential risks, as well as continuous education about the alerts.

It is also critical to realize the fact that emergency telecommunication activities must be on-going and not once-and-for-all. Disasters may strike at any time of the day, any day of the year, and at different frequencies. On the other hand, communication technologies evolve over time. The fanciest piece of equipment today may no longer be relevant in the future. Therefore, only constant alertness, coupled with diligent lookout for practical telecommunication technology, may lead to the best means of emergency telecommunications.

Improvements in the regulatory environment for the optimum use of telecommunications in emergency preparedness and prevention can only be achieved by a joint effort of all organizations involved. It is the task of all national and international providers of assistance to create the necessary awareness among national regulators and local authorities. It is the task of the providers of telecommunication services and the suppliers of equipment to include provisions for the use of their goods and services in emergency telecommunications. It is the task of national representatives at conferences run by international organizations to articulate the need for all entities to render support to all initiatives that favor the development, deployment and use of emergency communications. A common and coordinated approach by all stakeholders results in a win-win outcome. The private sector that manufactures and provides the right equipment, creates a market for themselves and participate through their corporate responsibility; assistance providers benefit from efficient and appropriate telecommunications; national authorities fulfill their role of ensuring a quality life for the public; and those affected by a disaster end up being the ultimate beneficiaries, as humanitarian assistance delivery will be facilitated by efficient information flow.

Experience with both natural and man-made disasters highlights the simple truth that communications are useful only to the extent that they are accessible and useable by people in communities at-risk. During disaster events, many vulnerable communities are often cut off from national response systems due to a lack of appropriate communications that should have been in place before a disaster occurs. We have to remember that effectiveness is partially reflective of preparedness. In this regard, training plays a critical role, no matter how sophisticated or robust the system. An effective notification system always requires continuous public education and awareness about the purpose and capabilities of the system. Whatever existing communication methods are chosen for disaster management, all groups that are part of the disaster cycles should be involved in the planning, implementation and operation of their systems.

IN BRIEF

The Tampere Convention– A Life-Saving Treaty

When disaster strikes, communication links are often disrupted; yet for relief workers who arrive on the scene these links are essential. Victims of disasters will now be able to benefit from faster and more effective rescue operations, thanks to the Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations that came into force on 8 January 2005, following the ratification by 30 countries. Until now, transborder use of telecommunication equipment by humanitarian organizations was often impeded by regulatory barriers that make it extremely difficult to import and rapidly deploy telecommunications equipment for emergency without prior consent of local authorities. The treaty simplifies the use of life-saving telecommunication equipment.

The Tampere Convention calls on States to facilitate the provision of prompt telecommunication assistance to mitigate the impact of a disaster, and covers both the installation and operation of reliable, flexible telecommunication services. Regulatory barriers that impede the use of telecommunication resources for disasters are waived. These barriers include licensing requirements to use allocated frequencies, restrictions on the import of telecommunication equipment, as well as limitations on the movement of humanitarian teams.

The Convention describes the procedures for request and provision of telecommunication assistance, recognizing the right of a State to direct, control and coordinate assistance provided under the Convention within its territory. It defines specific elements and aspects of the provision of telecommunication assistance, such as termination of assistance. It requires States to make an inventory of the resources – both human and material – available for disaster mitigation and relief, and to develop a telecommunication action plan that identifies the steps necessary to deploy those resources.

The ITU will assist in fulfilling the objectives of the Tampere Convention. This life-saving international treaty was unanimously adopted on 18 June 1998 by 75 countries at the Intergovernmental Conference on Emergency Telecommunications (ICET-98).

Conference on Disaster: Relief and Management-International Cooperation & Role of ICT

The Conference on Disaster: Relief and Management-International Cooperation & Role of ICT organized by the International Telecommunication Union (ITU), the League of Arab States (LAS), WHO, UNEP, Center for Environment and Development for the Arab Region and Europe (CEDARE), and hosted by the Government of Egypt, was held from 14-17 April 2007 in Alexandria, Egypt.

Following are the recommendations of the conference:

1. Countries are encouraged to establish early warning systems/networks that should handle multi-hazards early warning and end-to-end warning system approaches. The countries should establish national emergency telecommunications plans.
2. Telecommunication resources to enhance national capacity in emergency preparedness and disaster reduction/mitigation and response. These resources include trained personnel, financial and technological systems. The use of remote sensing technique is encouraged especially for earthquakes, fires and tsunamis.
3. A cooperation and coordination mechanism in disaster management should be established at international, regional and national levels to involve government authorities, United Nations Agencies, and non-governmental organizations. The private sector should play a more active role in this cooperation and coordination in terms of making resources available for humanitarian actors. The ITU Framework for Cooperation in Emergencies seeking to coordinate satellite operators and other telecommunication providers, and sources of finance aimed at creating a strong standby fund that can be used for the benefit of countries affected by disasters, should be implemented globally to benefit any Member State requiring such assistance.
4. Countries are encouraged to make every effort possible to ratify the Tampere Convention, and ITU should provide all the assistance required by the Member States as outlined in Resolution 36 of the ITU Plenipotentiary Conference (Antalya, 2006), Resolution 34 of the World Telecommunication Development Conference (Doha, 2006), and Programme 6 of the Doha Action Plan. Regional harmonization of laws related to disaster management and use of telecommunications is strongly encouraged.
5. Telemedicine was seen as critical in saving lives when disasters strike. Health entities to include WHO and telecommunications specialists such as ITU should make every effort to make such services available in the aftermath of disasters.
6. The use of a hybrid of technological solutions was encouraged to include such systems as satellite, TETRA, GSM, WI-MAX, etc.
7. The use of a Common Alert Protocol, which will become an ITU Standard by mid-2007, was encouraged as an effective way of ensuring that all media can effectively deliver alerts.
8. In taking measures to mitigate disasters, the link between environment and environmental-related management in one hand and telecommunications/ ICT in the other hand was highlighted.
9. Compile base maps of high risk areas and integrate with population distribution infrastructure and building stock databases, and prepare new tectonic maps in these areas.

Getting Hazard Warning Messages to Disaster Management Officials-Current Best Practices in the Asia-Pacific Region

Edward H. Young, Jr.,
Edward.Young@noaa.gov
US NOAA/National Weather Service/Pacific Region

As the population of people living within the coastal regions of the Asia-Pacific Region increases, emergency managers and disaster management officials must receive warnings about impending natural hazard threats from local, national, and regional multi-hazard centers operated with the region. This requires the collection of a sufficient density of environmental observational data and the communications infrastructure to support data monitoring, analysis, hazard prediction and rapid communication of hazard risk information.

Some natural hazards within this region, such as earthquakes, extreme heat, floods, tropical cyclones, tsunamis, volcanoes, , and even wildfires, can occur in a matter of minutes. Early warning systems must meet stringent requirements to collect a comprehensive suite of regional information and send warnings to responsible officials, including those in the most remote communities, who must ensure warnings reach the last kilometer. These early warning systems must be robust to remain effective even when the primary terrestrial communication links may fail during a hazardous event.

"Early warning systems must be understood, trusted and used by the communities which they serve.

Warnings have little value unless they reach those people most at risk – who must be trained to react to it."

These are calls to action by Ms. Amy Minsk, Senior Officer at the International Federation for the Red Cross/Red Crescent Societies at the 1st International Coordination Meeting for the Development of a Tsunami Warning and Mitigation System for the Indian Ocean (source UNESCO/IOC/Tsunami Teacher). They recognized that community disaster managers are key to helping community learn how to be prepared and respond to events and reflect the importance of their collaboration with forecasters who deliver warnings.

Once such system, the Emergency Managers Weather Information System (EMWIN), operated by the US National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS), continues to support emergency management officials in the central and eastern regions of the north and south Pacific countries, and all areas in North, Central, and South America.

The current EMWIN system, which began broadcasting on the NOAA GEOS East and West geostationary satellites in 1996 as a low cost (~$1,000 US) weather dissemination system using L-band receiving stations, remains the primary tool used by Pacific Island national meteorological and national disaster management offices in 24 nations and territories to receive natural hazard information, including warnings. In the past 3 years, RANET (Radio-Internet) systems have been established in some Western Pacific Island countries using the Worldspace Asia Star satellite, including Indonesia, as a reliable quick satellite dissemination path, supplemented by a network of HF-email systems, VHF and FM community radio stations to reach rural and remote communities.

For more information on the EMWIN, visit **http://www.weather.gov/emwin/** and for information on RANET, visit - **http://www.ranetproject.net.**

Figure 1. Typical EMWIN System used in the the Pacific Islands

Figure 2. Receiver

Figure 3. RANET Satellite Receiver

Although newer early warning system technologies have risen since EMWIN was established, such as SMS text messaging on mobile phones, compact and rugged satellite telephone systems, radio-activated siren systems, VHF and HF e-mail systems, EMWIN systems are still relied upon to deliver warning messages from multi-hazard centers within 1-2 minutes of warning message issuance. More emphasis in the Pacific Islands will be placed on EMWIN and RANET re-broadcasts of hazard warning information to greater numbers of communities, involving broader community stakeholder participation, so these technologies will become more integrated across the different communications platforms so that warning messages do reach to the last kilometer, especially remote locations where only simple alerting devices are required.

Figure 4. HF Digital E-mail System

Figure 5. RANET YAGI Satellite ANTENNA

Multi Agency Communications (MAC)

In disasters, communication difficulties are often hard to separate from coordination difficulties, and the greatest coordination difficulties are inter-organizational. Therefore, many of the communications problems are those related to inter-agency information sharing. Frequently, the means for communication exists, but for a number of reasons, persons are hesitant to communicate with others outside their own organization.

Inter-organizational communication is fostered by those factors which promote trust in other organizations and familiarity with how they function. These include: informal contacts, joint planning and training, preplanned agreements for the division of disaster responsibilities, and the use of similar terminology, procedures, and performance criteria. Inter-organizational radio networks, common mapping systems, and computer networks also contribute to effective communications.

Last-Mile Hazard Information Dissemination: Challenges and Opportunities for Sri Lanka

Peter S. Anderson
anderson@sfu.ca
Simon Fraser University and Nuwan Waidyanatha, LIRNEasia

Analysis of the Indian Ocean Tsunami of December 2004 shows that thousands of lives could have been saved if Sri Lanka and other affected countries had effective warning systems in place at national and local levels.

Institutional, technological and societal failures combine to prevent timely sharing of information even within countries. Sri Lanka was particularly hard-hit in terms of loss of life, infrastructure, and economic assets from the tsunami waves. Within ninety minutes after the first earthquake, tsunami waves began striking Ampara District along the southeast coast; then over a four hour period, simultaneously spread in northward and southward directions, wrapping themselves around the island and eventually covering more than 1,000 km, or two-thirds of the coastline. If only the rest of the island had been alerted soon after, coastal evacuation could have significantly reduced the death toll elsewhere. But this didn't happen.

In the wake of the tsunami, the United Nations and development donors initiated an inter-governmental process to build a high-tech tsunami detection and early warning system in the Indian Ocean, to be operational by 2010. Even the most advanced early warning systems face a formidable task - to disseminate effective and credible warnings to the largest number of people at risk in the shortest possible time.

Last Mile Challenges for Sri Lanka

Sri Lanka has made significant strides in extending electricity (in over 70 percent of households), electronic media (radio in almost 80 percent; TV in over 70 percent) and some kind of mobile or fixed telecommunications device (in over 25 per cent) networks throughout the country. While a national warning system using the media and other electronic means may serve urban dwellers more adequately, Sri Lankan rural residents, especially those living near the sea, are more vulnerable and require special warning arrangements for several reasons. For example, the disparity in access to media along the urban-rural divide is one reason why traditional media channels need to be supplemented with last-mile communication systems in coastal villages. In any case, media-based warnings are effective only when sets are turned on. Furthermore, urban centres have greater densities of emergency services with more organizations having greater resources to respond in a timely manner to hazard situations than have villages. In rural areas, residents are often left to their own resources to respond to hazard situations. Community-centred education and training about hazards, risks and how to respond to hazard warnings, along with effective last mile communication systems, are therefore crucial requirements in rural areas.

Last Mile Hazard Warning System Research Project

In December 2005, LIRNE*asia*, a Sri Lanka-based research organization, with funding support from the International Development Research Centre, initiated a pilot research project to evaluate the "last-mile" communication component of an all-hazards warning system (HazInfo) for Sri Lanka. The research focuses on the non-government organization (NGO) contribution to complement other action being taken at national and regional levels. The project is designed around a governance structure whereby Sri Lanka's largest community-based organization, Sarvodaya, provides oversight, training, and a hazard information hub (HIH) for the monitoring of hazard threats and dissemination of alert messages to local communities within the Sarvodaya network of villages, utilizing combinations of different information and communication technologies (ICTs). Designated first responders selected from the communities are responsible for overseeing local emergency preparedness, message dissemination, and emergency response. Sarvodaya follows a development model involving five socio-economic evolutionary stages and encompassing 15,000 of the 30,000 villages in Sri Lanka.

The primary objective is to study, experiment with, evaluate and understand the suitability of various ICTs and community mobilization methods as the basis of a last mile hazard warning system in Sri Lanka. Six factors are being considered:

- Reliability of the ICTs
- Effectiveness of the ICTs
- Effectiveness of the training regime
- Level of organizational development
- Gender specific response
- Integration of ICTs into everyday life

During the past year, the project has actively engaged 32 tsunami impacted Sarvodaya villages in fieldtesting, assessing and reporting on the effectiveness of various combinations of ICTs and their varying capabilities such as: early warning wake-up, addressability and provision of information in three languages (English, Sinhalese and Tamil). While effective, economical and appropriate methods of communication and their corresponding ICTs are being investigated and employed, the emphasis of

the project has been on community involvement with an accent on contingency planning, including evacuation preparedness. Part of this process has included training young people from Sarvodaya Shanthi Sena [peace brigade] as trainers. Further, the exercise is not confined to tsunamis alone; among other hazards addressed are coastal erosion, cyclones, drought and floods. The project partners hope this process will pave the way for providing disaster mitigation training and last-mile connectivity to all coastal villages and, eventually, to every village in Sri Lanka, making them disaster resilient.

A number of key hardware and software ICT components have been designed and developed specifically for the project, with some developed entirely in Sri Lanka. The five specific ICTs being assessed are:

1. Remote Alarm Devices - standalone GSM phone units that incorporate SMS message display, remotely activated alarms, flashing light and, a broadcast radio receiver that can be remotely turned off or on. These have been developed by the University of Moratuwa's Dialog Telekom Lab, with the participation of MicroImage and other partners.
2. GSM Java enabled SMS mobile phones that can receive, sound and display alerts in Sinhalese, Tamil and English languages. The language functionalities were developed by MicroImage.
3. Disaster Warning Recovery and Response Addressable Satellite Radio - a WorldSpace system that can transmit hazard information directly to receiving units in those areas at risk using Global Positioning System and addressable technology.
4. Very Small Aperture C-Band Satellite Terminals that provide up to a 512 kbps Internet connection and enable testing of the Internet Public Alerting System, a client application installed on a computer that enables pop-up messages to appear on a PC screen and an audio alert tone to be played on the computer's sound system.
5. CDMA Fixed Wireless Phones with built-in speakerphones to provide voice communication via the main public switched telephone network.

A major component of the project is the use of the Common Alerting Protocol (CAP) to enable data interchange between the HIH and the ICTs. The CAP standard has been adopted by many national emergency management organizations, as well as hazard monitoring and reporting organizations such as NOAA and national meteorological organizations for disseminating hazard information, alert and warning bulletins, including tsunami information bulletins.

Preliminary Results

Evaluations of the ICTs have included not only standard technical assessments of transmission and receipt of messages, but more importantly, their use during emergency simulations and exercises.

Preliminary findings indicate that all ICTs are reasonably robust and are capable of being integrated into last-mile warning programs. However, to be relevant, each requires upgrading to support better message text and language integration and display. Other findings range from highlighting difficulties experienced in communicating hazard alerts to villages when mobile GSM and fixed CDMA telecommunications networks are disabled due to internal civil conflict, to correcting simple end-user habits, such as not leaving newspapers on top of sensitive electronic equipment, which can overheat and shut down as a result. Greater emphasis is also placed on redundancy and multiple pathways, as more than one of the technologies will be used when the project moves to the implementation stage.

While some ICTs performed better than others, the objective was not to declare a winner among the technologies, but rather to find out how they can be improved to perform reliably in the difficult conditions of Sri Lankan villages. In any case, the findings of the field trials are now in the hands of the developers who are already making improvements to the equipment so that they will perform better not only in Sri Lanka, but also in the other countries interested in these applications.

COMMON ALERTING PROTOCOL (CAP)

The Common Alerting Protocol (CAP) is a simple but general format for exchanging all-hazard emergency alerts and public warnings over all kinds of networks. CAP allows a consistent warning message to be disseminated simultaneously over many different warning systems, thus increasing warning effectiveness while simplifying the warning task. CAP also facilitates the detection of emerging patterns in local warnings of various kinds, such as might indicate an undetected hazard or hostile act. CAP provides a template for effective warning messages based on best practices identified in academic research and real-world experience. Warning systems are a chaotic patchwork of technologies and procedures. None of the existing national systems are entirely suited to the needs. As a result, dozens of different technical and operational warning systems have sprouted, seemingly at random. The Common Alerting Protocol will benefit a) the public, b) public agencies and private concerns (such as industrial plant operators) with warning responsibilities, and c) developers of new sensor, threat-evaluation and warning-dissemination technologies. The Common Alerting Protocol will enhance government's "situational awareness" at the state, regional and national levels by providing a continual real-time database of all warnings, even local ones. By decoupling the diverse elements of the national warning infrastructure the Common Alerting Protocol will allow technology developers and sponsors to expand, upgrade or even replace existing facilities without disrupting entire systems. A mechanism for warning-system "interoperability" will free system providers to innovate and improve their services without facing barriers due to technological "legacies." For details: http://xml.coverpages.org

Disaster Resource Network

Compiled by Irene Stephen for

DRM Programme, UNDP India

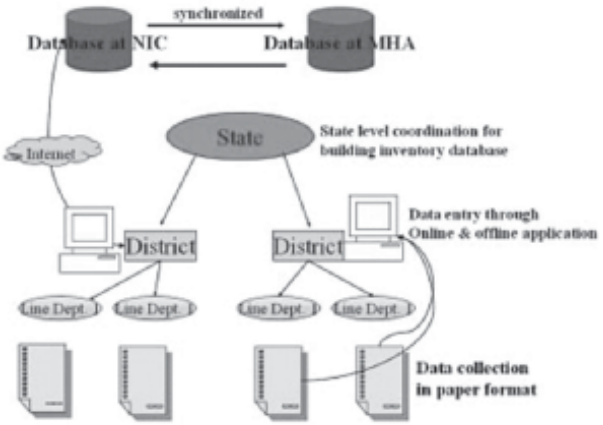
India's spatial vulnerability to recurrent multi-hazards is mainly due to India's unique geo-climatic condition. The natural hazards, such as cyclones impacts long stretches of the east and the west coast, while the regions of sub-Himalayan and Western Ghats are prone to landslides. Above 40 million hectares of river basins are prone to floods, while 68% of the cropped areas are affected due to drought and 59% of the country's area is vulnerable to earthquakes. In the last 15 years, India has been affected by a spate of natural disasters impacting communities and development processes, drawing attention to the need to make substantial efforts for recovery. The Government of India has stressed on the need to shift from post-disaster response and relief towards a holistic multi-dimensional management of disasters with an inter-sectoral approach. With this aim to manage and reduce risks, the new approach has been translated into the ***National Disaster Management Framework*** by the Government of India.

In 2002, the Government of India and UNDP launched the Disaster Risk Management Programme with the following objectives: (1) national capacity building to institutionalize the disaster risk management programme in Ministry of Home Affairs; (2) environment building, education, awareness programmes and strengthening capacities at all levels in natural disaster risk management and sustainable recovery; (3) multi-hazard preparedness, response and mitigation plans for disaster risk management at state, district, block, village and ward levels in 169 most multi-hazard prone districts of 17 selected states; and (4) networking knowledge on effective approaches, methods and tools for disaster risk management, and developing and promoting policy frameworks at state and national levels.

In India, emergency managers, while responding to natural eventualities, have experienced the inadequacy of information on the availability of resources, which hindered quick response in terms of relief distribution and coordination for search and rescue operations. A need to develop an electronic inventory of specialized resources that would be used during disaster response operations was felt. Accordingly, as part of the Disaster Risk Management Programme, the *India Disaster Resource Network (IDRN*) was initiated.

IDRN[1] was launched in September 2003 by the Ministry of Home Affairs, Government of India, in collaboration with UNDP India. Technical support was extended to formulate resource inventory. The inventory was in-built with a structure to organize, collate and categorize information from sources provided by district and state level authorities.

Figure 1. Structure of IDRN Database



As of January 2007, the portal has 92,500 data records covering 574 districts (out of total 604 districts) of 35 States/ Union Territory in India. The on-line inventory of data in-built in the portal in a sequential manner lists out the details of specific equipments, types, functions, including human expertise in search and rescue operations along with the contact details of expertise and suppliers for prompt mobilization. Designed as a web-enabled information system, the network provides up-to-date inventory of related items every quarter that is entered at two levels, firstly at district level and secondly, at the state level. Updating information and providing of relevant data inventories has been carried out by the District Collector's office. The portal has been hosted at the central server of the National Information Centre, Government of India, to provide adequate institutional authorization and security support to the Ministry of Home

[1] *The user manual can be accessed at http://www.idrn.gov.in*

Affairs. The portal has an online dual access interface system for users at the State Disaster Management/ Relief & Rehabilitation Departments (Relief Commissioners), for district administrators (District Collectors) and other state and district nodal officers, corporate members of the Confederation of Indian Industry (CII). The rest of the community can browse through the portal to obtain catalogued information as well as query-based list of resources available at district level.

After this successful inventory of voluminous data on emergency related equipment and resources available at various sources in the country, it was decided to include the inventory of resources used by the corporate sector. Accordingly, to further expand the network, a partnership with the members of Confederation of Indian Industry (CII) and Builders' Association of India (BAI) was established in improving the inventory of emergency industrial and building equipment resources and required skilled personnel. The existing capacity of IDRN web portal has been extended to accommodate the database on *Corporate Sector Resources*, compiled from sources of registered members of the cooperating agencies.

Figure 2. IDRN Website

The IDRN model also has been replicated by the Governments of Maldives and Sri Lanka in 2006 to strengthen their capacity on disaster resource inventory. Based on the IDRN framework used in India, support was extended to both the countries, to initiate the disaster resource network that has been contextualized in reference to their geographic and administrative structures.

For more information: Mr. Sushil Kumar, DRM Programme (sushil.kumar@undp.org)

ADPC Training Announcements

ADPC Regional Training Schedule for 2007, Bangkok

Course Code	Course Title	Date
CBDRM-16	Community Based Disaster Risk Management	16-27 Jul
GRSDM-1	Use of Geographic Information Systems (GIS) and Remote Sensing (RS) in DRM	27 Aug-7 Sep
FDRM 8	Flood Disaster Risk Management	8-19 Oct
DMC 36	Disaster Management Course	12-30 Nov

ADPC Regional Training Schedule for 2008, Bangkok

CBDRM-17	Community Based Disaster Risk Management	5-16 May
GRSDM-2	Use of GIS and RS in DRM	18-29 Aug
FDRM-9	Flood Disaster Risk Management	6-17 Oct
DMC-37	Disaster Management Course	10-28 Nov
RA-1	Risk Assessment Course	1-5 Dec

A GSM Alarm Device for Disaster Early Warning

Gamini Jayasinghe, Farazy Fahmy, Nuwan Gajaweera, Dileeka Dias
({gaminij,farazy,nuwang,dileeka}@ent.mrt.ac.lk)
Dialog-University of Moratuwa Mobile Communications Research Laboratory
University of Moratuwa, Sri Lanka

Following the disaster that engulfed the Sri Lankan coastal belt on 26 December 2004, Dialog Telekom Ltd., the Dialog-UOM Mobile Communications Research Laboratory and Microimage (Pvt) Ltd. initiated a collaborative effort to develop a reliable early warning dissemination system for the country, as part of their contribution towards the national effort to avert loss of life in future emergencies.

Research and development was focused on the GSM family of technologies. In line with the international standardization activities related to emergency communications, the system was designed to have a Common Alert Protocol (CAP) - compliant delivery mechanism [8].

In each country, information on an emergency situation is received by a relevant authority. Currently, the modes of disseminating the warning are television, radio, cellular phones, PSTN, and satellite-based systems.

A novel approach for such a system has been adopted by WorldSpace Inc in collaboration with Raytheon Corporation [3], which utilizes a combination of satellite technology and radios for warning. Warning messages are transmitted by satellites, which are in turn picked up by the so called satellite radio units. This would trigger a radio to be turned on, which will then be heard by the public.

The Alarm Device proposed is based on a similar concept. However, the warning will be delivered over the ubiquitous GSM Network, via a technique that would not cause or be affected by network congestion.

GSM for Warning

Congestion problem in an emergency situation is a challenge of the PSTN/PLMN. Therefore, on no account should the PLMN or PSTN be considered the primary communication medium for any disaster management system.

The Pre-emptive capability is a feature of most mobile switches [1] that can be used to get priority on special accounts. In such a case, a regular subscriber's call will be dropped to allow a high priority subscriber to make a call. SMS doesn't use voice traffic channels to pass the message. The bottleneck in this case would be the message handling capacity of the SMS Center (SMSC). Since a store-and-forward mechanism is employed in a high load scenario, the delay of the SMS may vary from a few seconds to few hours. By employing a priority scheme, this delay can be minimized up to a few minutes, thus making SMS more reliable than voice calls under emergency situations.

Cell Broadcast Messages (CBM) is a useful feature found in GSM [5]. With CBM, a text message is transmitted on a downlink only stream to all mobiles registered with the target base station.

CBM does not use a regular traffic channel and is therefore very useful for mass messaging. Unlike SMS, CBMs can only be generated by the CBM Center. Since authorized users alone can generate CBMs, the security and reliability of a CBM-based mass alerting system is far superior to SMS. The disadvantage of CBM is its broadcast nature.

The DEWN System

The Disaster Emergency Warning Network (DEWN)[4] is based entirely on widely available mobile communications technologies such as Short Messages and CBM, aimed at rendering a cost effective and reliable mass alert system.

The system is compliant with CAP [8], which enables the authorized entity to distribute the same warning message to multiple media (radio and TV broadcast stations, cellular networks, satellite radio systems, fixed telephone networks etc.) in one operation.

DEWN comprises of two basic elements – the DEWN Server and DEWN Clients. The DEWN Server will reside in a secure facility and will be used by authorized persons to generate warning messages via SMS or CBM. The DEWN clients are the intended recipients of the above mentioned messages. Upon reception of the messages the clients will take necessary measures to inform the users. The DEWN Clients are two fold- the Java/Symbion application for mobile phones developed by Microimage (Pvt) Ltd and the DEWN Alarm Device.

The DEWN Alarm Device

The Alarm Device (Alarm) will be registered with the DEWN and will be located in police stations and identified religious/social community centers around the island. A responsible authority would generate an alarm message from the DEWN controlling centre, which would be received by mobile phones as well as Alarm Devices.

Once a warning message is received, the Alarm Device responds by either emitting an audible alarm, by flashing a light, or by turning on a radio as directed by the message. The device will also include a call back function, which will allow users to call a dynamic hotline, in order to get more information.

SMS-based alerting is used to activate selected alarms/ individuals, while the CBM is used to activate all alarms.

The message types employed in the DEWN are two fold: warning messages, which carry the actual alerts, can either be sent as SMS or CBM. Administration messages on the other hand will only employ SMS. This allows the

Alarm and thus DEWN to benefit from the advantages of both type of messaging systems for each purpose.

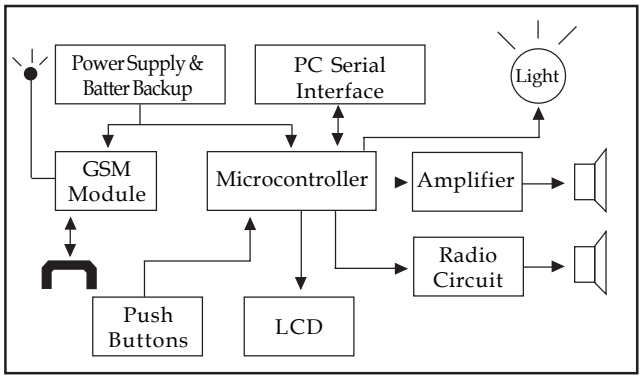
It is likely that entities authorized to generate warning messages through the DEWN will be informed of impending emergency situations early. Thus it is fair to assume that the messages can be disseminated to the corresponding alarms before the network gets congested, or perhaps destroyed.

Features of the Device

The overall capabilities of this Alarm Device are as follows:

1. It may be triggered by either SMS or a CBM.
2. Once triggered, the device will display the message on an LCD, emit an audible alarm, flash a light and/or turn on an in-built radio in response to the trigger.
3. Responds only to warning message in a pre-determined format and generated by a recognized source.
4. A hotline number can be sent with message, which the device can dial that number and make a call for more information/instructions.
5. A serial interface to allow communication with a PC for logging, debugging and firmware upgrade purposes.
6. Facilities to test the device locally and remotely to verify that it is functional.
7. The device is powered from the mains supply under normal operation, and includes a backup for operation in the absence of mains power failure.
8. The device is portable.

Figure 1. Block Diagram of the Alarm Device



The Microcontroller and the GSM module are the key components of the Alarm Device. A suitable microcontroller was selected after taking various factors such as reliability, ruggedness, and ease of use. The microcontroller also houses a multitude of peripheral devices such as internal program flash memory, Data Memory, general purpose I/O, and USARTS. The firmware for the device was developed using C, and the popular ARV-GCC C compiler was selected.

The GSM core used in the design was a popular, stable GSM modem module. The Microcontroller initializes, controls and communicates with the GSM module using AT commands [7] issued through serial interface.

Once in operation, the GSM module listens for any incoming SMS messages or CBMs. CBM-based warning messages will be broadcast on a predetermined dedicated logical broadcast channel. Upon the reception of a CBM or an SMS, a notification will be sent by the GSM module to the microcontroller. The microcontroller in turn will read and process the message. If the message is from an authorized source (in case of SMS) and conforms to a given format, the Alarm Device will be triggered.

The alarm device is designed to power up from the main supply. The device is equipped with a back up battery as a secondary power source. This battery is capable of powering the device for approximately seven hours. A battery was selected for this purpose after considering the size, cost, durability and maintenance.

The power supply unit is designed to provide regulated DC voltages required by the circuit components, to support the GSM transmit bursts and to satisfy the requirements of the battery charger.

The functions of the five push button switches, Call, Ack, LCD, Test and Radio are given in Table 1.

Table 1. Functions of push buttons on the DEWN Alarm Device

Button Name	Function
Radio	To turn ON/OFF Radio
Test	To start the test sequence
LCD	To turn ON LCD backlight
Ack	To send acknowledgement (This turns off Alarm and Light)
Call	To call for more information in the event of an emergency (This turns off Alarm and Light)

The built-in radio can be used to get more information in an emergency situation. The device can be tuned to a radio channel that will constantly be broadcasting information and evacuation instructions during an emergency. In the event that there is a pre-allocated channel for emergency communications, all the alarm devices can be pre-tuned to this channel. The in-built radio allows the users to use alarm in non-disaster times, thus enabling them to keep the device in working order. The radio in this alarm can be turned on/off locally, as well as via the *Radio* button.

As the name suggests, the *TEST* button is used to start a test sequence. This sequence tests the display, the radio and the flashlight. It is recommended to carry out this test monthly, to ensure that it is operational in the event of an emergency.

The *LCD* button can be used to turn the LCD back light ON, to read text on the LCD screen when the ambient light level is low. This light automatically goes off after a

few seconds, and automatically turns on when a message arrives.

The optional *Ack* button is to be used to send an acknowledgement to the DEWN Server that the particular message has been received. Once this button is pressed the Alarm and the light turn off if they were triggered by the message.

The optional *Call* button can be used to make a call to a hotline number which can be sent as a part of the warning message. If the recipient wants to get more information/ instructions he/she can press the *Call* button and make a call. The *Ack* and *Call* functions might lead to network congestion if used indiscriminately.

The LCD is used to display text messages. These are displayed in English, as the available character displays do not support local languages.

The radio can be tuned to any FM channel in the commercial FM band, but it is possible to pre-tune it to a specific emergency channel, if such channel exists.

An audio amplifier is used to amplify the signal generated by the microcontroller and match the speaker for maximum power transfer. The microcontroller is programmed to generate two different types of audio signals. Either continuous tone or the siren tone can be selected by changing the corresponding field in the warning message. The siren tone is intended to awaken and attract the attention of people in an extremly urgent situation.

The light is also useful to get the attention of people in a less severe situation. So the recipient can become aware that there is a message on the LCD screen.

There is serial interface to connect the device to a PC. This interface is originally designed for the purpose of debugging. But this same interface can be used to generate a log of received messages, which can then be written to a log file through a PC.

Ongoing Challenges

The pilot phase of the country's first ever National Disaster Warning Network was launched on [4] 14th of November 2005 at the Ministry of Public Security, Law and Order.

Also this device was successfully tested at the Last-Mile Hazard Warning System (LM-HWS) workshop at Thalpitya [2]. Wider testing the DEWN technology including the device, is currently underway.

Several aspects for the DEWN alarm require further study and improvement. Principal among these is encryption.

To improve its compatibility with the Common Alerting Protocol, further improvements to the DEWN is in progress. Also, the feasibility to implement voice mail as an alternative to the call back facility is being studied. A digital tuner for automatically tuning of the built-in radio to a particular channel is being studied.

The use of GSM for emergency communications is gaining momentum internationally. It is hoped that the concept of GSM for warning, the DEWN concept and the alarm will be thoroughly tested, improved and optimized, leading to its deployment nationally.

Figure 2. The Alarm Device

The December 2004 Tsunami claimed the life of 1 in 500 Sri Lankans, and over 350,000 across South Asia. It is now known in hindsight, that though a tsunami warning was generated, there was no mechanism in place for this to be relayed to vulnerable communities. Of particular significance is the fact that there was ample time for the people along the Southern and South-western coast of Sri Lanka to be warned and evacuated after the Tsunami strike on the Eastern coast, had there been a mechanism for early warning. The DEWN, being the first early warning network demonstrated through practical implementation, has enormous impact on the evolution of an effective technology for this purpose. Therefore, the benefit is tremendous, both from social and economic standpoints.

The GSM Network covers a significant part of the country, while all operators are expanding their coverage at this time. Very soon, the country will have almost 100% coverage.

Thus, the DEWN and the alarm device would not require any special infrastructure, and thus would be easy to implement, and more economical for early warnings than a dedicated system which may be rarely used. The use of CAP for message generation and the use of the ubiquitous GSM technology ensures this.

Various parts of Sri Lanka are seriously affected from time to time by natural hazard such as floods and landslides. The potential of using DEWN alarm as a last mile early warning device in the South and Southeast Asian region is significant.

References:

[1] *Handbook on Emergency Telecommunications*, ITU, 2005 edition.

[2] *Evaluating Last-Mile Hazard Information Dissemination (HazInfo)* http://www.lirneasia.net/projects/current-projects/evaluating-last-mile-hazard-information-dissemination-hazinfo/, LIRNEasia

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[7] ETSI, http://www.etsi.org/, AT command set for GSM Mobile Equipment (ME) (GSM 07.05 & 07.07)

[8] OASIS Open, Common Alerting Protocol, V 1.1,. http://www.oasis-open.org, October 2005

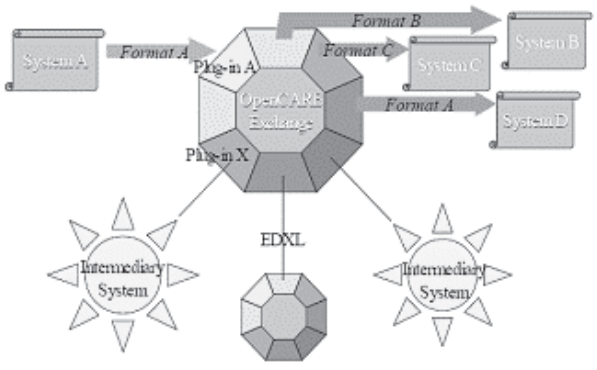
OpenCARE: Making order out of chaos

Phat Kulphaichitra
hs1wfk@gmail.com
Radio Amateur Society of Thailand
(Under the Royal Patronage of His Majesty the King)

An efficient early warning system is most important and essential to the public to respond to an emergency. This is the lessons learnt from the Indian Ocean Tsunami when no proper early warning to public resulted in insurmountable damage. The question we ask ourselves is that, are we better prepared today to respond to natural disasters?

When public safety is a concern, most organizations focus on the planning and implementation of prevention and mitigation plans and sadly, millions of dollars worth of equipment and human resources are wasted due to duplication of work. This is more true in procedures and work flow among government, NGOs, or the private sector. The need of the hour is an effective, trustworthy, compatible early warning system that can disseminate to areas at risk in the shortest possible time.

Figure 1. Basic Alert Handling



OpenCARE stands for Open (exchange) for Collaborative Activities in Response to Emergencies, is an electronic network of Alert and Information interchange. It links all means of electronic medium such, internet, leased line, wires, radio frequency including satellite, GSM-GPRS and amateur radio. It works as a decentralized messaging bus by which emergency response agencies can send alert and share information (be it on supplies or names of survivors or deceased), more accurately with little outside intervention. An OpenCARE node connects to information sources by means of plug-ins (a computer program that works in coordination with existing systems to minimize new work load or investment). Each information source has a plug-in which communicates with the source in its native format. OpenCARE can talk to any kind of information source, without the need to change the source as long as there is a plug-in for it. Once the information is fetched by the working plug-in, the information translates into a general EDXL format before transmitting in XML into the network. Other information such as picture or binary data will first translate into Base 64 Encoding Schemes. Once the native information source is translated into an XML based general format, this info packet is then sent to other OpenCARE nodes to translate back into a native format that end-systems understand, this is also done by plug-ins in each end. Information received by end-systems through OpenCARE can be structurally different from the originating information. This approach makes different systems talk together through OpenCARE in a straight-through processing.

In emergencies, OpenCARE links multiple agencies with a common goal and common belief that working together brings more benefit then working alone. The key to make this system work is the collaborative effort of local to global organization.

OpenCARE includes:

- Emergency Medical Service: EMS provides initial treatment during emergencies and disasters. Their goal is safety of the victims.
- Forensic Service: Identify casualties with high accuracy.
- Disaster Management: Post-disaster recovery focusing on logistics of relief operations.
- Social Welfare: Restoration of the way of life.
- Law Enforcement: Social order and justice.
- Interpol: Interpol facilitates cross-border police co-operation, and supports and assists all organizations, authorities and services whose mission is to prevent or combat international crime. The Disaster Victim Identification process (DVI) ensures that no

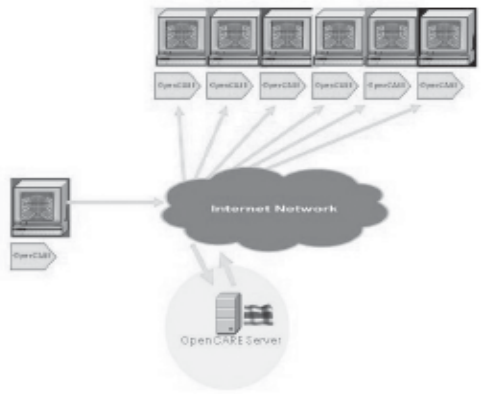
international criminal can get away with the law by proclaiming death in a disaster.

- International Committee of the Red Cross: Humanitarian mission to protect the lives and dignity of victims of war and internal violence and to provide them with assistance.
- Non-governmental Organizations: The NGOs can be a great asset to relief operations if coordinated properly. They are not bound by government bureaucracy. They can work in the field at a lower cost.
- Individual Volunteers: Selfless volunteers fill gaps. These crucial resources have been under-recognized in virtually the entire history of disaster relief. These people are the ones who give everything and get nothing in return apart from feeling how valuable they can be. But since they are precious resources, why don't we equip them with accurate and timely information so that they can make informed decisions where it is needed most of the time?
- The public at large and the individual stakeholder: In most disasters, the public at large needs reliable information about missing persons, found persons (with or without identities), and the deceased. A single-window lost found exchange using holistic integration is most needed.
- Relatives of missing persons: A missing person is defined as a person whose close relatives, or associates at the place where the person was last known to reside if the person doesn't have close relatives, have been unable to ascertain the person's whereabouts for an extended period of time. A person may have disappeared by elopement, abduction, human trafficking, loss of memory, or other acts against the person's will. This might not include the case of a runaway if the person is above the age of consent.

The OpenCARE project was initiated by Mr. Trin Tantsetthi, the CEO of Internet Thailand PCL – INET soon after the Indian Ocean Tsunami struck Thailand in late 2004. He worked as a volunteer to help disaster rescue and recovery agencies through the exchange of data and providing feedback and communications. OpenCARE was introduced to the public for the first time in a workshop on Tsunami Alert Rapid Notification Systems (TARNS) - hosted by the National Disaster Warning Center (NDWC) Thailand, USAID, USFS and NOAA, held in Hua Hin, Thailand in May 2006. As of March 2007, OpenCARE has been introduced to many Thai-government organizations including the international workshops such USAID-TARNS, UNDP, ISO/TC223 Societal Security, ITU/ESCAP regional workshop on Disaster Communication.

OpenCARE is under the sponsorship of Internet Thailand PCL- INET and the National Electronics and Computer Technology of Thailand-NECTEC. OpenCARE is a Public Service project with no support from direct business. Currently, there are three volunteers working for the project namely Mr. Trin Tantsetthi, Mr. Isriya Paireepairit and Mr. Phat Kulphaichitra. This project requires a lot of support to extend the services to an international level with the believe that OpenCARE will be a key facility in saving lives.

Figure 2. Networking system



Visit www.rast.or.th, http://opencare.inet.co.th/forums/ for more information.

IN THE NEWS

ADPC and IBM Thailand establishes Weather Research Forecasting (WRF) systems

"Hydro-meteorological hazards have enormous impacts on people, their communities and the socio-economic systems on which they depend. ADPC's Climate Risk Management (CRM) team, empowered by this innovation from IBM, will now be able to provide the necessary support to participating countries to enable them to provide disaster risk information at specific hot spots with longer lead times to allow focused institutional response. This regional facility marks yet another milestone in ADPC's twenty-one year history and will provide training for personnel from our neighbouring and partner countries in order to enhance their national capacities in hydro-meteorological disaster warning to save lives and minimize losses from future events."

Dr. Bhichit Rattakul
Executive Director a.i., ADPC

ADPC with funding support from the Danish International Development Agency (DANIDA) is establishing an IBM high-performance computing system that will support the provision of localized disaster risk information in the ADPC-facilitated regional end-to-end multi-hazard early warning system in Southeast Asia and Indian Ocean.

The new high-performance computing system will enable the production of high-resolution (3km2 grid) forecasts utilizing the 'Weather Research and Forecasting' model - the latest numerical program used worldwide by industry, academia and governments, including the U.S. National Weather Service-to improve lead times in the provision of disaster risk information products; enhance data sharing and support hydro-meteorological disaster risk research in the region.

The high-performance computing system and numerical modelling application form part of the regional facility for End-to-End Multi-Hazard Early-Warning being established by Bangladesh, Cambodia, China, Lao PDR, Maldives, Mauritius, Myanmar, Philippines, Sri Lanka, Thailand and Vietnam through ADPC. The system will complement and support national systems for providing hydro-meteorological disaster warnings, build through training the technical capacities of hydro-meteorological professionals and will enhance disaster preparedness and response capabilities at both the national and local levels.

Visit www.adpc.net for the complete press reporting.

ADPC Activities

Emergency Preparedness in Caribbean countries, 22–25 Jan, Jamaica
Under the Memorandum of Understanding with Food and Agriculture Organization of the United Nations (FAO), ADPC along with participants from Jamaica, Grenada, Haiti and Cuba participated in a regional workshop on "Assistance to Improve Local Agricultural Emergency Preparedness in Caribbean Countries Highly Prone to Hurricane-related Disasters" held in Kingston, Jamaica. The workshop was jointly organized by FAO and the Caribbean Disaster Emergency Response Agency (CDERA). ADPC made presentations on cross-regional perspective on good practices in agriculture disaster risk management and long-lead forecast applications in Caribbean countries.

Partnership with Save the Children, 22 Jan-9 Feb, Lao PDR
ADPC in partnership with Save the Children Australia based in Lao PDR undertook a mission to Sayaboury province, Lao to gather base line information to design two one-year projects on "Disaster Risk Education for Children Pilot Activity" and "Tools for Disaster Risk Assessment Pilot activity". Both the projects will be implemented in Sayaboury District of Sayaboury province from Feb 2007 to Jan 2008. They will serve as start up activities for the longer term (5-year) project on Sayaboury Integrated Hazard Mitigation Project. All the projects are to be funded by AusAID under the Lao-Australia NGOs Cooperation Agreement.

Study visit of Iranian Government officials, 30 Jan- 4 Feb, Nepal
ADPC with the Nepal National Society for Earthquake Technology organized a study visit to Kathmandu for senior Iranian Government officials. The visit was under a joint five year programme "Strengthening Capacities for Disaster Risk Management in Iran", between the Government of Iran and UNDP-Iran. ADPC is providing specific consulting services, included in the study visit.

Consultative meeting for program development of RCC Program on Mainstreaming Disaster Risk Reduction into Development Planning, Policy and Implementation in Asia, 1-2 Feb, Bangkok
ADPC held a consultative meeting on program development for the Regional Consultative Committee (RCC) Program on Mainstreaming Disaster Risk Reduction into Development Planning, Policy and Implementation in Asia. The meeting provided inputs to the development of the detailed program document for the Phase II of the RCC MDRD Program for implementation in 2008-2010.

Coastal Community Resilience Project, 4-15 Feb, India
ADPC was on mission to Tamil Nadu, India to discuss with the State Relief Commissioner's office on proposed Coastal Community Resilience (CCR) project activities and its implementation; to develop a local level implementation strategy with local level authorities.

ADPC-MRC-ECHO project (Phase III), Jan 2007-Apr 2008
ADPC in partnership with the Mekong River Commission started the third phase of the ADPC-MRC-ECHO project on support to Implementation of Flood Preparedness Programs at Provincial, District and Commune Levels in the Lower Mekong Basin. The project under the DIPECHO 5th Action Plan for Southeast Asia will be implemented over 15 months in three provinces, namely Kratie in Cambodia, Tien Giang in Vietnam and Khammouane province in Lao PDR and seven districts within.

Priority Implementation Project under the RCC MDRD, Cambodia, Lao PDR and Philippines, Jan 2007-Apr 2008
ADPC in partnership with UNDP and ECHO will implement the Priority Implementation Project under the RCC MDRD Program on Mainstreaming Disaster Risk Reduction into Education Sector. The project is funded by ECHO under the DIPECHO 5th Action Plan for South East Asia and would be implemented over a period of 15 months in Cambodia, Lao PDR and Philippines. The activities under the project include preparation of a module on Disaster Risk Reduction for secondary school curriculum and field testing it in selected schools in three project countries; advocacy workshop on Mainstreaming Disaster Risk Reduction into the Education Sector in the three project countries.

ProVention Consortium Forum, 13-15 Feb, Tanzania
ADPC participated at the ProVention Consortium Forum in Dar es Salaam, Tanzania which focused on 'Making Disaster Risk Reduction Work' and highlighted the practical experiences and challenges faced by ProVention partners in reducing vulnerability and enhancing resilience of the communities they work with. The forum examined key issues from the global perspective with a special focus on Africa.

Partnership for Disaster Reduction Southeast Asia (PDRSEA) Feb 2007-Apr 2008
ADPC in partnership with the UNESCAP has started the implementation of the 4th Phase of the project on Partnership for Disaster Reduction Southeast Asia (PDRSEA). The project is being implemented in Cambodia, Indonesia, Philippines and Vietnam. PDRSEA aims to promote, implement, and institutionalize the adoption of community based disaster risk management (CBDRM) approaches into local and national development strategies and policies.

Flood Forecast Technology for Disaster Preparedness Project, 14-27 Feb, Bangladesh
Under the Flood Forecast Technology for Disaster Preparedness Project in Bangladesh (also known as CFAB-II), ADPC was at the Flood Forecasting and Warning Centre and Bangladesh Meteorological Department (BMD) to discuss follow-up activities after the December 2006 project-wide workshop and Institute of Water Modeling (IWM) training program. They initiated discussion on potential participants for the Flood Forecast Technology Development for Disaster Preparedness training program, which was held in Bangkok from 30 Apr-5 May 2007. The project is supported by USAID Bangladesh through CARE Bangladesh.

DIPECHO SEA visits ADPC Office, 19 Feb
The DIPECHO South East Asia officials visited ADPC to acquaint the newly joined team members of DIPECHO SEA on ADPC, its activities and its ongoing and future collaborations with ECHO. ADPC in collaboration with MRC, UNESCAP, has been an active partner of ECHO led programs in this region. Under the 5th Action Plan of the DIPECHO Southeast Asia, ADPC in partnership with MRC, UNDP, UNESCAP and UN/ISDR is implementing the following projects:

- Support to Implementation of Flood Preparedness Programs at Provincial, District and Commune Levels in the Lower Mekong Basin (Phase III), in partnership with MRC
- Mainstreaming Disaster Risk Reduction into Education Sector in partnership with UNDP
- Partnership for Disaster Reduction South east Asia (PDRSEA) (Phase IV), in partnership with UNESCAP
- Strategic National Action Plan (SNAP) for Cambodia, in partnership with UN/ISDR

Urban Earthquake Risk Management Workshops, 25 Feb-1 Mar & 4-8 Mar, Iran
ADPC in collaboration with UNDP Iran organized two back-to-back workshops on Urban Earthquake Risk Management. The first workshop was from 25 Feb-1 March in Kerman, and the second was from 4-8 Mar in Gourgan. The workshops provided training and guidance on several earthquake risk management concepts including urban earthquake risk management assessment and mitigation, risk analysis and developing earthquake scenarios. The activity was organized under a joint five year program between the Government of Iran and UNDP-Iran. ADPC provided specific consulting services for this workshop.

Fourth Session of the ICG/IOTWS, 28 Feb-2 Mar, Mombasa
ADPC together with Mr. Tun Lwin, Director-General of Myanmar's Department of Meteorology and Hydrology and Chairperson of the Regional Steering Committee of the ADPC-facilitated Regional Multi-hazard Early Warning System (EWS) participated in the fourth session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS-IV), which was held in Mombasa, Kenya. ADPC presented the status of establishing the EWS, partnerships forged, as well as future plans for completing the EWS Center. ADPC has been included as a member of a task team within IOC Working Group 5 to evolve a coordination arrangement among regional tsunami watch providers.

Disaster Management Policy and Institutional Assessment, 6 Mar, Sri Lanka
ADPC conducted a consultation meeting in Colombo to share the findings of the disaster risk management policy and institutional assessment reports with national stakeholders. The meeting addressed the gaps in the assessment. The assessment of disaster risk management policy and institutional frameworks was conducted in Indonesia, Sri Lanka, and Thailand from Jul to Oct 2006. National consultation meetings will be also held in Indonesia and Thailand.

ADPC conducts community assessments, 9-15 Mar, Cambodia
Under the Enhancing Community Resilience to Natural Disasters in Southeast Asia project, ADPC visited Sihanoukville, Cambodia to assess the climate information requirements of the Polder User Community, conducted user needs assessments for early warning information, and to assess training and capacity-building needs for Community-Based Disaster Risk Management and Coastal Community Resilience. These activities were carried out with the Groupe De Recherche et D'Echanges Technologiques (GRET) and the Cambodian Red Cross. The project is supported by the Danish Agency for International Development (DANIDA).

ACDM Meeting, 12-14 Mar, Lao PDR
ADPC participated at the 9th meeting of the ASEAN Committee on Disaster Management (ACDM) and the 2nd regional workshop on the establishment of ASEAN Coordinating Centre for Humanitarian Assistance on disaster management (AHA Centre) in Vientiane.

Cambodia Disaster Risk Reduction Forum (CDRR) Meeting, 27 March, Cambodia
ADPC in partnership with National Committee of Disaster Management (NCDM) organized the 6th meeting of the CDRR forum on 27 Mar in Phnom Penh. The CDRR forum is a network of national and international NGOs, Red Cross societies working in Cambodia to facilitate exchange of disaster risk reduction experiences. The primary objective of this meeting was to discuss the draft strategy on community based disaster risk reduction for Kingdom of Cambodia, developed by the Ministry of Water Resources and Meteorology and NCDM, in partnership with ADPC and ADB.

National Workshop, Community Self-Reliance and Flood Risk Reduction, (ADB TA), 5-6 Apr, Cambodia
The ADB-funded Technical Assistance (TA) on Community Self Reliance and Flood Risk Reduction is being implemented by ADPC along with the Department of Hydrology and River Work, Ministry of Water Resources and Meteorology (MOWRAM), Cambodia. The TA is intended to provide MOWRAM and its Provincial DWRAMs (Departments of Water Resources and Meteorology) opportunities to adopt participatory risk reduction strategy as standard approach when undertaking flood mitigation programs. The TA was implemented in two phases over a total duration of 14 months.

19th PHEMAP Steering Committee Meeting, 9 Mar, Bangkok
ADPC hosted the 19th Public Health and Emergency Management in Asia & the Pacific (PHEMAP) Steering Committee Meeting. The meeting co-hosted and supported by WHO and the Norwegian Government reviewed outcomes of the 18th Steering Committee Meeting, reviewed the PHEMAP curriculum and provided updates on National PHEMAP developments to prepare a three year PHEMAP proposal.

Expert meeting on tsunami watch provision, 23-24 Apr, Thailand
Members of the Regional Technical Committee of the ADPC-facilitated regional early warning system convened in Bangkok to review the work plan and provide expert guidance for establishing the regional facility for tsunami watch provision at ADPC. Meeting participants included technical experts from the Pacific Tsunami Warning Center; Bureau of Meteorology, Australia; Philippine Institute of Volcanology and Seismology; Seismological Bureau of the Meteorological Department, Thailan0d; and the Asian Institute of Technology (AIT), Bangkok.

Flood Modeling in Phuket, 23-29 Apr, Thailand
ADPC in collaboration with the Norwegian Geo-technical Institute (NGI) with the support of Kasetsart University and the Department of Mineral Resources, Royal Thai Government carried out a water drainage capacity assessment for the major watersheds in Phuket (Flood Modeling in Phuket). The activity was part of the Landslide Mitigation Demonstration Project under the Asian Program for Regional Capacity Enhancement for Landslide Impact Mitigation (RECLAIM) and funded by the Royal Norwegian Embassy.

First Monsoon Forum, 26-27 Apr, Myanmar
ADPC co-facilitated the first Monsoon Forum in Myanmar in Nay Pyi Taw, Myanmar. Led by the Department of Meteorology and Hydrology (DMH) of the Ministry of Transport, the Monsoon Forum was intended as a mechanism for fostering a closer dialogue between forecast producers and users to enhance the uptake of weather and climate forecasts for disaster mitigation. ADPC's support to the Monsoon Forum is with its broader goal of building the capacity of countries to mitigate disaster risks by linking national hydro-meteorological agencies to sectors that are vulnerable to climate risks, notably agriculture, water resources, health, and disaster management. The Monsoon Forum was preceded by two preparatory meetings among focal points on 21 March and 25 April 2007 in Nay Pyi Taw.

Vulnerability assessment, Apr, Bangladesh
ADPC with CARE Bangladesh conducted a vulnerability assessment of Chittagong. The assessment was carried out with assistance from Dhaka University. This was under the Strengthening Household Abilities to Responding to Development Opportunities (SHOUHARDO) project of CARE Bangladesh, wherein ADPC is providing technical assistance.

Trainings & Workshops

International Conference on Tsunami Preparedness of Persons with Disabilities, 11-12 Jan, Thailand
ADPC participated in the International Conference on Tsunami Preparedness of Persons with Disabilities. The conference was organized by the DAISY consortium in collaboration with governmental and non-governmental organizations in Thailand. The expected outcome was to improve Tsunami Evacuation Plans around the world to meet the special needs of people including persons with disabilities, aged, patients, children, refugees, cultural/ linguistic minorities, foreign travelers, etc. ADPC made a presentation on its activities under the US Indian Ocean Tsunami Warning System (IOTWS) program, with focus on the Tsunami Alert Rapid Notification System (TARNS) in Thailand. ADPC serves as the Program Integrator of the US IOTWS program.

Session on Health Emergency Management, 15 Jan, Bangkok
ADPC facilitated a session on Health Emergency Management for the Health Systems Development course at the College of Public Health, Chulalongkorn University, Bangkok. The session was delivered to the master's and doctoral students from College of Public Health.

Workshop on Enhancing Community Response to Hazard Warnings, 22-23 Jan, Vietnam
ADPC convened a workshop with the theme "Enhancing Community Response to Hazard Warnings" in Hanoi, Vietnam to create awareness on current status of communicating risks for enhancing disaster prevention, mitigation, and preparedness; to identify the institutions involved and their roles, responsibilities, programs and activities; to identify constraints in risk communications, needs, and recommend a set of actions, including a risk communication strategy; and to plan priority pilot activities. Around 50 participants representing national and local stakeholders attended. This workshop was a part of the "Enhancing Community Resilience to Natural Disasters in Southeast Asia Project" which is funded by the Danish Agency for International Development (DANIDA). It was undertaken in collaboration with the Vietnam National Hydro-meteorological Service. Two newspapers namely Nhan Dan and Tai Nguyen & Moi Truong covered the event.

Training on Coastal Community Resilience, 26 Jan-30 Mar, Sri Lanka, Indonesia
ADPC, together with the US National Oceanic and Atmospheric Administration (NOAA), University of Rhode Island (URI), and other US Indian Ocean Tsunami Warning System (IOTWS) project partners, facilitated a training program on Coastal Community Resilience (CCR) in Sri Lanka and Indonesia from 26 January-02 February and 26-30 March respectively. Another round of training is slated in Thailand from 4-8 June 2007. The training program combined principles and elements of disaster management, coastal management, and community development.

Regional Training Course, 29 Jan-2 Feb, Thailand
ADPC organized the regional Training course on Asian Program for Regional Capacity Enhancement for Landslide Impact Mitigation (RECLAIM), under the Phase II project in Phuket, Thailand. Participants were decision makers and disaster management professionals involved in landslide risk management. The training was conducted in collaboration with the Norwegian Geotechnical Institute (NGI) with funding support from the Royal Norwegian Ministry of Foreign Affairs.

Community Basic Emergency Response Course (C-BERC), 29 Jan-2 Feb, Thailand
ADPC with collaborating partner UNDP provided the

knowledge and skills needed to render first aid on-site to sick or injured persons, to stabilize their condition and prepare them for transportation to a medical facility at the DPM Academy, Phuket.

Specific outcomes of the course were listing the steps for preparing the first responder's equipment; describing method for receiving and documenting a request for assistance, reporting on the situation and requesting resources and describing the procedures for stabilizing, preparing and transporting a patient.

Regional training course on Community Based Disaster Risk Management (CBDRM 15) 22 Jan-2 Feb, Thailand
ADPC conduct it 15th regional training course on Community Based Disaster Risk Management (CBDRM), at Bangkok Thailand. The course comprised of two weeks and 31 participants from 13 countries participated in the course. During the course, the participants visit to the Tsunami affected villages in Ranong, South Thailand where they practice on the PRA tools.

Training program on hydro-meteorological measurements, database management and data processing for hydrological forecasts, 24 Jan-6 Feb, Bangladesh
A training program on hydro-meteorological measurements, database management and data processing for hydrological forecasts was organized at the Institute of Water Modelling (IWM) in Dhaka under the Flood Forecast Technology for Disaster Preparedness Project in Bangladesh (also known as CFAB-II). Eleven participants from Bangladesh Meteorological Department (BMD) and Bangladesh Water Development Board (BWDB) attended the training program. The objective of the training was to introduce the participants to hydro-meteorological measurements and data base management for incorporation of CFAB forecasts into the existing models in Bangladesh.

Community-based Disaster Risk Management Workshop, 5-9 Feb, Bangladesh
ADPC in collaboration with CARE Bangladesh organized a training of trainers (TOT) workshop on Community-based Disaster Risk Management. This is under the Strengthening Household Abilities to Responding to Development Opportunities (SHOUHARDO) project of CARE Bangladesh, wherein ADPC provided technical assistance.

Third Tsunami Alert Rapid Notification System Workshop, 6-8 Feb, Thailand
ADPC participated in the third Workshop on Tsunami Alert Rapid Notification System (TARNS) in Nakorn Nayok, Thailand under the US Indian Ocean Tsunami Warning System (IOTWS) program. Workshop participants conducted table top exercises and discussed the strengths and weaknesses of TARNS. The workshop was conducted under the US Indian Ocean Tsunami Warning System (IOTWS) program in partnership with the National Disaster Warning Center of Thailand.

Workshop on Facilitation, Communication and Networking, 12-14 Feb, Iran
ADPC in collaboration with UNDP Iran developed and implemented a workshop on Facilitation, Communication and Networking Skills. The purpose was to develop advanced facilitation skills with a focus on internal meetings and public meetings. The participants learnt to plan and prepare for meetings to achieve stronger consensus, support, better outcomes and clear agreements for action. The activity was organized under a joint 5-year program between the Government of Iran and UNDP-Iran.

US IOTWS Program Coordination Workshop, 13-16 Feb, Washington, DC
ADPC attended the US Indian Ocean Tsunami Warning System (US IOTWS) Program Coordination Workshop and provided disaster risk management expertise and regional experiences to the IOTWS program. The meeting discussed key program achievements and progress of the international community in developing the overall IOTWS, planned activities for the last eight months of program implementation, and identified opportunities and activities that may be undertaken to sustain initiatives under the Program. The workshop recognized ADPC as the regional institution that will sustain the efforts made under the IOTWS program.

Protecting Staff Capacity: Effective Management of Staff Stress in Humanitarian Organizations, 20 Feb, Thailand
ADPC organized a seminar and workshop on Protecting Staff Capacity: Effective Management of Staff Stress in Humanitarian Organizations, by Ms. Amanda Allan, Operational Director of Antares Foundation (Australia). The specific objectives were
protecting staff capacity, organizational policy & practice, mitigating stress and building resilience, organizational support, psychosocial support services, practical guidelines and a screening tool for organizations to apply to their own systems of psychosocial support for staff. The workshop was organized in close partnerships with Antares Foundation (Australia), UNICEF and Thammasat University Faculty of Public Health, Bangkok.

Basic and Intermediate Incident Command System Training, 20-23 Feb, Sri Lanka
ADPC facilitated a National Basic and Intermediate Incident Command System (ICS) Training in Colombo for 40 district-level government officials with focus on ICS for emergency response management. This training was conducted in partnership with the US Department of Agriculture and US Forest Service under the US Indian Ocean Tsunami Warning System (IOTWS) project in collaboration with national partners.

National workshop on Mainstreaming Disaster Risk Reduction into Infrastructure sector, 27 Feb, Philippines
Under the RCC Program on Mainstreaming Disaster Risk Reduction into Development (RCC MDRD), ADPC has been implementing the Priority Implementation Project (PIP) in Philippines on Mainstreaming Disaster Risk Reduction into Infrastructure in Philippines. This PIP is under implementation since Jun 2006, in partnership with National Disaster Coordinating Council (NDCC) and Department of Public Works and Highways (DPWH), Philippines. The final national workshop of the PIP was conducted in Manila, to present the findings of the PIP to a larger audience comprising of government departments, national technical institutes, development organization and development banks.

Workshop on Earthquake Vulnerability and Multi-hazard Risk Assessment, 5-16 Mar, Nepal
ADPC made technical presentations and facilitated the workshop in Kathmandu, Nepal. The workshop was organized by the International Centre for Integrated Mountain Development (ICIMOD), supported by the European Commission Humanitarian Aid Department in collaboration with International Institute for Geo-Information and Earth Sciences (ITC)-The Netherlands, ADPC, National Society for Earthquake Technology-Nepal

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Management of the Dead and the Missing, 7-8 Mar, Bangkok
ADPC organized a workshop on the Management of the Dead and the Missing (MDM) hosted by WHO and ADPC that defined the strategic directions for developing national and international MDM capabilities for the Asia Pacific region and developed strategies for the implementation and sustainability of priority capacity building activities. The meeting provided a draft regional strategic plan, identified priority capacity building activities for MDM, guideline development and MDM coordination mechanisms for international and national response, established a practical committee/working party structure of stakeholders to develop and implement the strategic plan and associated activities and provided the basis for an agreement to develop a proposal for MDM capacity building in the Asia Pacific region. The meeting was attended by international and national organizations and institutions including UN agencies, IFRC, ICRC, law enforcement representatives, national disaster management officials, technical experts, development agencies and consular officials.

Leadership Training Course, 28 Feb-2 Mar, Thailand
ADPC conducted a Leadership Training Course in Mae Sai, Chiang Rai for Myanmar and Thai Community Based Organizations (CBOs). The course was organized by the IRC with funding by USAID.

Training curriculum reviewed, April, Thailand
ADPC undertook a comprehensive review of all training course curricula as one of the leading organizations in disaster management and in light of recent disaster events and the subsequent lessons learnt by NGOs, Government organizations, public and private institutions; to update all materials, case studies, course content, disaster management techniques, applications and invite new course facilitators where appropriate.

The phased implementation of ADPC's long-term in-house review process of all curricula undertook a comprehensive and critical analysis of the facilitator's guidelines and all instruction publications. The review process ensured that ADPC's course participants will receive the very latest and cutting edge information direct from the field, in addition to ADPC's twenty years experience.

Workshop on the Safety of Medical Infrastructure, 11-13 Mar, Iran
ADPC collaborated with UNDP Iran in developing and implementing a workshop on Safety of Medical Infrastructure to raise the awareness of medical professionals on the preparedness and safety of medical infrastructure in times of emergencies and disasters. The activity was organized under a joint five year program between the Government of Iran and UNDP-Iran.

PROMISE Regional Course on Hydro-Meteorological Risk Assessment and Community Preparedness, 26 Mar - 6 Apr, Thailand
The Program for Hydro-Meteorological Disaster Mitigation in Secondary Cities in Asia (PROMISE) hosted a regional course in Bangkok to develop and built the capacity of PROMISE project partners, and of others involved in hydro-meteorological risk assessments. The training course introduced methodologies and tools for risk assessment and assisted in design and implementation of risk reduction programs. The target audience was principally responsible for the design and implementation of hydro-meteorological and multi-hazard risk management activities at the community/city/district/provincial levels. Many of the case studies used data from PROMISE project regions, with an emphasis on the use of geo-spatial tools such as GIS, Remote Sensing and dynamic modelling as well as community -based risk assessment tools. PROMISE is funded and supported by the US Agency for International Development-Office of US Foreign Disaster Assistance (USAID-OFDA).

Orientation workshop on climate forecast applications for managing climate risks in agriculture, 27-28 Mar, Philippines,
ADPC co-facilitated an orientation workshop entitled "Climate forecast applications for managing climate risks in agriculture" in San Jose, Antique Province, Philippines. The workshop brought together 60 participants consisting of provincial and municipal agriculturists, municipal disaster coordinating council coordinators, and representatives from the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA) and ADPC. The workshop familiarized participants with climate forecast applications concepts, experiences, and lessons learned in select locations.

Participants agreed on an action plan for replicating the Climate Forecast Applications (CFA) Program in Antique Province, including the establishment of a weather and climate monitoring and information network in Antique province.

Training workshop on climate forecast applications for disaster preparedness, 30 Mar, Vietnam
Under the Climate Forecast Applications for Disaster Preparedness in Vietnam project, a training workshop on climate forecast applications for disaster preparedness was organized for provincial level technical working group members in Quang Tri, Vietnam. The training workshop was held in Dong Ha township and was attended by 36 participants from National Hydro-meteorological Services (NHMS) in Hanoi, Quang Tri, Hue and Danang. The participants set-up a climate forecast application network and learning centers in two districts in Quang Tri. The project is funded by US National Oceanic and Atmospheric Administration.

Governance and Disaster Risk Management Course, April, Bangladesh
ADPC collaborated with CARE Bangladesh to organize a course on governance and disaster risk reduction. The target participants were municipal (pourashava) officials of Chittagong, Bangladesh. The course was under the Strengthening Household Abilities to Responding to Development Opportunities (SHOUHARDO) project of CARE Bangladesh, wherein ADPC provided technical assistance.

Activity with CECI, 6-15 Mar, Vietnam
ADPC's mission to Da Nang, Vietnam was to provide technical assistance to the Centre for International Studies and Cooperation in Viet Nam (CECI-Vietnam). The technical assistance was on safe housing construction by Da Nang city government. CECI is ADPC's partner in the Program for Hydro-meteorological Disaster Mitigation in Secondary Cities in Asia (PROMISE), funded and supported by the US Agency for International Development-Office of US Foreign Disaster Assistance (USAID-OFDA).

Advance Incident Command System Training, 6-22 Apr, USA
ADPC and Sri Lankan officials participated in an advance Incident Command System (ICS) training in California, USA. The training built the capacity of a core group who will serve as trainers and champions of ICS implementation in Sri Lanka. A series of basic and intermediate ICS training activities were also conducted in Sri Lanka in 2006.

Regional workshop on multi-hazard end-to-end early warning, 17-20 Apr, Mauritius
In collaboration with Mauritius Meteorological Services, ADPC organized a regional workshop on multi-hazard end-to-end early warning in Vacoas, Mauritius. The workshop brought together national focal points for early warning and disaster risk management of Comoros, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, and Tanzania. The countries agreed to collaborate through Memorandums of Understanding with the ADPC-facilitated Multi-hazard Early Warning System for Indian Ocean and Southeast Asia in the areas of tsunami warning, generating localized hydro-meteorological disaster risk information and capacity building for national and local institutions in end-to-end early warning. Country action plans were also prepared to guide programming in each country.

Landslide impact mitigation workshop, 28-29 Apr, Thailand
ADPC in collaboration with Kasetsart University and the Department of Mineral Resources, Royal Thai Government held a workshop with officials of Patong municipality on landslides and the enhancement of landslide impact mitigation in Patong. The workshop was under the Asian Program for Regional Capacity Enhancement for Landslide Impact Mitigation (RECLAIM), funded by the Royal Norwegian Embassy.

Coastal Risk Analysis of Tsunamis and Environmental Remediation (CRATER) final workshop, 30 Apr & 2-3 May
Under the Project on Coastal Risk Analysis of Tsunamis and Environmental Remediation (CRATER), the Italian Ministry for the Environment, Land and Sea implemented the project in collaboration with ADPC in Kamala Beach, Phuket and Pakarang Cape, Phangnga. The CRATER project approach involved analysis of risks arising from the tsunami impacts in coastal areas.

Phuket Tourism Risk Management Strategy launch, 30 Apr, Phuket
ADPC, under the APEC International Center for Sustainable Tourism (AICST) project, funded by AusAID and in partnership with AICST and the Office of Tourism Development, Ministry of Tourism and Sports, developed the Phuket Tourism Management Strategy. The final workshop on 30 April 2007 launched the initiative.

Training workshop on Flood and Climate Forecast Technology Development for Disaster Preparedness, 30 Apr-5 May, Thailand
A training workshop on "Flood and Climate Forecast Technology Development for Disaster Preparedness" was organized in ADPC. The training workshop was jointly organized by Climate Forecast Application Network (CFAN), Atlanta, USA and ADPC. The workshop introduced three-tier forecast models and technology to the operational forecasters from Bangladesh Water Development Board (BWDB) and Bangladesh Meteorological Department (BMD). The workshop was organized under the technology transfer component of the project Flood Forecast Technology for Disaster Preparedness in Bangladesh.

APEC Exercise Management Workshop, 30 Apr-4 May, Bangkok
The workshop enhanced APEC members ability to design, conduct and evaluate emergency management simulation exercises. The workshop provided participants with the skills and knowledge required to conduct simulation exercises; the opportunity to practice the skills; and to provide a range of resources that the participants can use to conduct simulation exercise in their own economies.
Collaborating partners were the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF) with the funding support from the Asia-Pacific Economic Cooperation (APEC).

bridging the gap...

Roopa Rakshit
roopa@adpc.net
Asian Disaster Preparedness Center

There is an ongoing debate between disaster practitioners and the media on the lack of understanding of their roles, capacities, needs and priorities. It is necessary that these gaps of misunderstandings are minimized to effectively use the powerful forms of mainstream mass media and new media in the context of communicating disasters.

The role of media in communicating disasters is perceived differently by disaster practitioners. How does one enhance the media's role in communicating disasters? What as disaster practitioners can we do to proactively involve the media in our awareness building, preparedness initiatives and during the unfolding of a disaster? What meaningful role can the mass media play at the community or national level? What is our responsibility in empowering the media to communicate disaster information accurately and timely? How can the media cover different types of disasters - some evolving slowly (e.g. drought) and others more rapidly or without prior warning? How best can the mass media amplify credible hazard warnings, broadcast them to the largest numbers in the shortest possible time? What role do the new media play in disseminating early warnings? How can we improve the nexus between disaster managers, early warning systems and the media? How can we help in them communicating before a disaster strikes?

Undoubtedly, timely and accurate communication is the evident need in an emergency, which could be a cost-effective way of saving lives and reducing property damage. While several initiatives are in place for effective early warning at local, national and regional levels, media can play a key role in disseminating these early warnings to the public in a fast, efficient and reliable manner. Media besides disseminating disaster warnings, can proactively coordinate relief and rehabilitation; prepare communities for disaster risks; and raise public awareness about actions taken or should be taken by different organizations and individuals to minimize future risks before and after disasters strike.

However, engaging the media in any non sensational disaster coverage is a difficult task, because of the lack of trust in receiving the information and the mindset attitude blocking the opportunities to learning, knowledge and information. The media, due to pressing time constraint and pressures in preparing the news at short notice are not inclined towards a more trained approach to the subject.

Every time a disaster practitioner approaches a journalist to cover a disaster information, they are most often requested to provide the "human angle". It is also required that the disaster practitioners help turn a learning experience into a more moving piece of story-telling. This is most regular common interaction between the media and various disaster stakeholders. Many a time the priority of disaster organizations arriving at affected areas is not primarily to communicate, but to also respond to the emergency situation along with rapid assessments on the ground. This situation often frustrates many journalists who are looking for instant information. This requires some accommodation from both disaster practitioners and reporters.

Training of reporting journalists could play a bigger role in taking the knowledge to the grassroots. Journalists can benefit from training on ways to cover hazards and disasters in greater depth and with more sensitivity.

The mainstream mass media vehemently stresses that broadcast media offers wide reach and quick access in a country. For example in Sri Lanka, TV can reach 80% of the population and 90% through radio rapidly. However, dependency on the mainstream mass media cannot be the only channel. Traditional and every other available means of communication, even the traditional village drummer, sirens at religious centers need to be used creatively and integrated into delivering disaster preparedness and disaster warning information to every section of the society. This is where government, civil society and commercialized media all have to join hands.

Mainstream mass media need sensitivity when interviewing those traumatized by disasters, handling privacy issues of disaster affected people, and in breaking bad news to the next-of-kin. Additionally, in a disaster, everyone is a victim in one way or another; no one is spared. Even the media who are not there to merely and dispassionately report are painfully affected. They invariably become a vital link between the scene of the disaster and the rest of the country and the world.

The emerging role of new or alternate media, such as the blogs is another avenue with tremendous scope and potential. The new media are here to stay. One cannot dismiss the new media saying 'they don't have enough accountability, or don't follow the same code of ethics as the more established media do'. There are exciting opportunities that emerge with the new media, such as

user-generated content, social networking and video blogging. It's up to all public spirited people to explore how these can be used to serve the public interest. The new media offer strong ways of binding communities together. We can create user-groups that share the same disaster concerns and encourage them to share best practices.

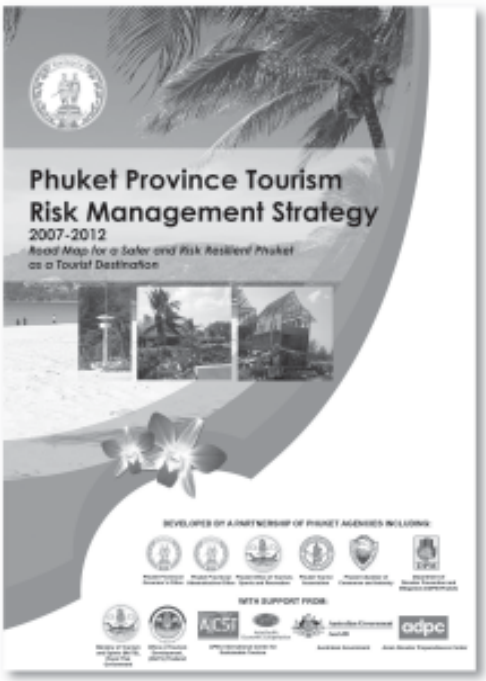
While new innovative and creative media outlets evolve for us disaster practitioners to explore and use, what is pertinent and desired today is to bridge the gap and work towards common goals to serve the community.

Several intriguing questions were raised and addressed during a regional brainstorming meeting in Bangkok, Thailand, held on the eve of the Indian Ocean Tsunami's second anniversary, 21-22 December 2006. Organised by TVE Asia Pacific and UNDP, the meeting brought together leading media professionals, disaster managers and communication specialists from South and Southeast Asia. The documented highlights of the meeting is available at www.adpc.net.

Visit www.adpc.net to download the publications and other ADPC information resources

ADPC Publications

Phuket Tourism Risk Management Strategy, 2007-2012



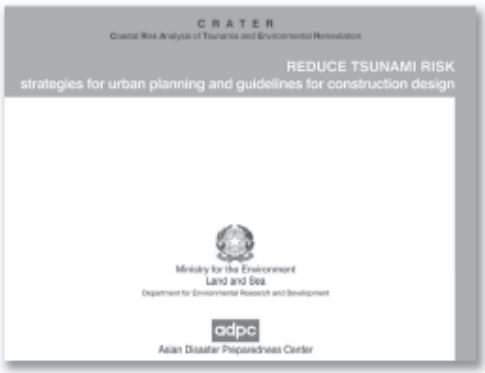
Publications from Coastal Risk Analysis of Tsunamis and Environmental Remediation (CRATER)

The CRATER project is being implemented from year 2005 to 2007 by the Italian Ministry for the Environment, Land and Sea in collaboration with ADPC in Kamala beach, Phuket, and Khao Lak area, Phangnga, Thailand. The CRATER project approach involves analysis of risks arising from the tsunami impacts in coastal areas.

Risk Assessment and Evaluation ArcGIS® toolbox: User's Manual

Evacuation Routes Tools ArcGIS® toolbox User's Manual

Reduce Tsunami Risk: Strategies for urban planning and guidelines for construction design



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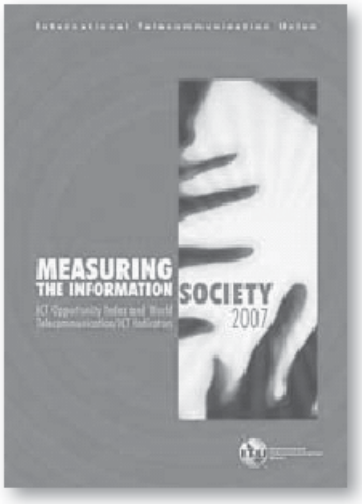
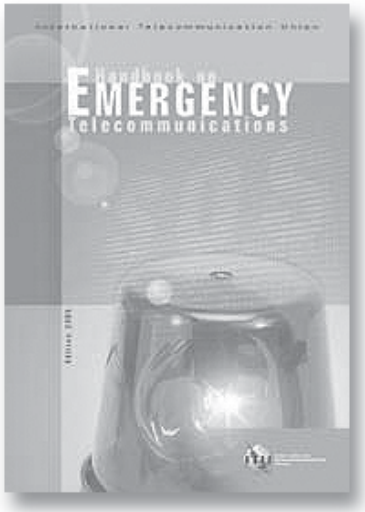


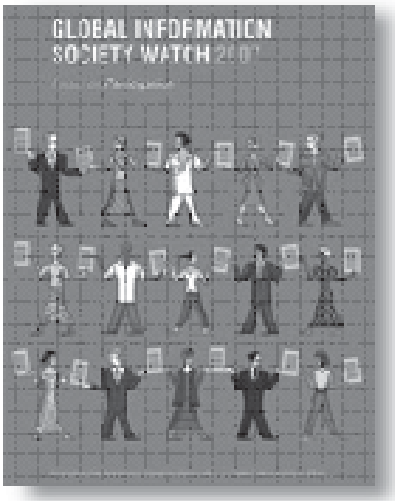
Measuring the Information Society ICT Opportunity Index and World Telecommunica tion/ICT Indicators-2007

The publication contains both the 2007 ICT Opportunity Index and the World Telecommunication/ICT Indicators (WTI). The index highlights that while countries have made significant progress since the turn of the century, digital opportunities remain unequally distributed. The ITU◎s authoritative World Telecommunication/ICT Indicators (WTI) tables present statistics for year-end 2005. These statistics monitor the main indicators of telephone network growth, mobile communications, internet subscribers and internet users, tariffs, revenues and investment for around 200 economies worldwide.

Handbook on Emergency Telecommunications 2005



This Handbook on Emergency Telecommunications serve to those involved in providing as well as using telecommunications for disaster mitigation and relief. It simplifies and demystifies the complex technical issues that characterize the fast evolving field of telecommunications, especially in this era of convergence and emergence of next-generation networks. While designed to be simple, the handbook is comprehensive, compact and contains useful factual information that is concise and organized for easy access, in particular by practitioners.

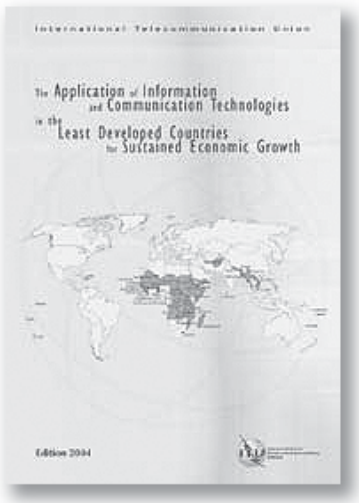


The Global Information Society Watch 2007 Report

The report overlooks at the state of the Information and Communication Technology (ICT) policy both at global and national levels, with particular emphasis on impacts on the lives of people living in developing countries.

Describes at state of the field of information and communication technology (ICT) policy at local and global levels and particularly how policy impacts on the lives of people living in developing countries.

The Application of Information and Communication Technologies in the Least Developed Countries for Sustained Economic Growth 2004



Websites

International Telecommunication Union
http://www.itu.int/
ARRL: The National Association for Amateur Radio
www.arrl.org
CodeRED - Rapid Emergency Communication Service
www.coderedweb.com
Emergency Communication
http://www.winlink.org/
The Communication Initiative
http://www.comminit.com

MYANMAR CONVENES FIRST MONSOON FORUM

The Department of Meteorology and Hydrology (DMH) of Myanmar's Ministry of Transport, in partnership with the Asian Disaster Preparedness Center (ADPC), convened the first Monsoon Forum in Nay Pyi Taw from 26-27 April 2007. Sixty seven participants representing DMH, forecast user agencies at the national level, select local communities, non-governmental organizations, and ADPC attended the Forum. The program was opened by His Excellency Major General Thein Swe, Minister for Transport. The Forum was an important step towards building synergies between forecast producers and users for disaster preparedness and mitigation.

The highlight of the Forum was the presentation of the seasonal outlook and long-range hydrological forecasts for the southwest monsoon season (May to October). The presentation of forecasts was preceded by lectures on key climate concepts and trends. Participants gained a fuller understanding of terminologies used in weather and hydrological forecasting, as well as the process of developing forecasts. DMH also presented its existing products and services, primarily in the area of agro-meteorology and flood forecasting.

The second day of the Monsoon Forum was devoted to discussions among user agencies focusing on how they can incorporate forecasts in their planning activities and operations. Representatives from ministries of Agriculture, Relief and Resettlement, Health, Transport, Forestry, Information, Myanmar Red Cross Society, and select local communities (Monywa, Sagaing Division and Hinthada, Irrawaddy Division) presented their plans and response options for addressing the projected hydro-meteorological impacts on their respective sectors during the southwest monsoon season. The presenters also pointed out constraints in carrying out their plans.

The first Monsoon Forum has gone a long way towards achieving its twin objective namely 1) ensuring that forecast products, including their uncertainties and limitations, are understood by and communicated to users in a timely manner; and 2) enabling DMH to continuously improve its forecast products by allowing forecast users to give feedback on the substance, timing, language, and format of the forecast products. One of the problems that the Forum has started to solve is the mismatch between the temporal and spatial scale of the available forecast with the scales required for decision making. During the Forum, the ministries communicated their forecast information requirements to DMH, the lead time needed, and the timing of delivery of the information. Director-General Tun Lwin of DMH assured participants that DMH will continue to do its best to provide forecasts that are tailored to user requirements but he reminded users that even with the best intentions, some requirements may not be met in the medium term due to limited observation data and current limitations of climate science, such as the reality that some months of the year have very low predictability. The synergy created at the Forum has spilled over in different endeavors as well. For example, the Ministry of Forestry offered DMH its GIS expertise and database in order to allow more comprehensive flood simulations.

The next Monsoon Forum will be held in November 2007. ADPC's support to the institutionalization of the Monsoon Forum in Myanmar dovetails with its broader goal of building the capacity of meteorological agencies/users to generate/apply risk-based and locally specific warning information.

Director General Tun Lwin of the Department of Meteorology and Hydrology chairs the Monsoon Forum

Director General Tun Lwin of the Department of Meteorology interacts with participants from Sagaing Division and Ayeyarwady Division during a pre-Monsoon Forum meeting.

U Maung Maung Khin, Deputy Director of the Department of Relief and Resettlement, presents his department's response to the Monsoon forecast presented by the Department of Meteorology and Hydrology

Photo credit: Myanmar Department of Meteorology and Hydrology

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For further information please contact:

Communication and
Information Manager
Asian Disaster Preparedness Center
P.O.Box 4 Klong Luang Pathumthani
12120 Thailand Tel: (66 2) 516 5900-10
Fax: (66 2) 5354-5360, 4353 5350, 5382
Email: roopa@adpc.net

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Theme for next issue of the Asian Disaster Management News, May-August 2007:

Emerging risk and approaches for reducing vulnerability of urban built environment