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Broadcasting for public warning, disaster mitigation and relief

Foreword

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***Note**: This ITU-R Report was approved in English by the Study Group under the procedure detailed in Resolution ITU-R 1.*

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REPORT ITU-R BT.2299-4

Broadcasting for public warning, disaster mitigation and relief

(2014-2015-2017-2022-2025)

Introduction

For many decades, radio and television broadcasters have been the primary source of critical information to the public in the event of disasters such as tornadoes, hurricanes, tropical storms, floods, snowstorms, earthquakes, tsunamis, solar storms, terrorist violence, mass transportation accidents, and industrial or technological catastrophes. This important role can be both before an impending event and also after an event. On these occasions, radio and television broadcasting provides reliable point-to-everywhere delivery of essential information and safety advice to the public, to first responders and others via widely available consumer receivers, both mobile and fixed. In many cases the major broadcasting facilities have their own independent power supply facilities to maintain communications even if utility supplies are lost.

This Report provides a compilation of supporting evidence that terrestrial broadcasting plays a critically important role in disseminating information to the public in times of emergencies. The Report is organized as follows:

– Section 1 – A brief background on the role of broadcasters and advantages of terrestrial broadcasting during emergencies for providing information to the public.

– Section 2 – Provides explanations of broadcasters' experience in gathering and reporting of public safety information.

– Section 3 – Describes operational methods used to assure continued broadcast service.

– Section 4 – Shows how the existing broadcast infrastructure is used to support emergency communications.

– Section 5 – Describes new broadcasting techniques and systems for distributing emergency information.

– Section 6 – Provides examples of how individual broadcast organizations collaborate with each other and other relevant organizations during emergencies.

– Section 7 – Covers the public service efforts broadcasters have undertaken associated with emergency and disaster situations.

– Section 8 – Describes the role of international broadcasting for disaster relief.

– Section 9 – A list of previous ITU-R documents related to the subject of emergency broadcasting.

– Section 10 – Includes a set of case studies of how broadcasting has been used in emergency and disaster situations, including a set of links to video documentaries.

– Section 11 – Provides conclusions about the importance of terrestrial broadcasting in providing emergency information to the public.

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1 Background

By their nature, natural and man-made disasters, whether impending or immediate, quickly capture the attention of a very large majority of the entire population in an affected area. In disaster situations, members of the public seek at first not to communicate, but to be informed, so that they may understand what is happening (or about to happen), and to assess whether and how they and their family and friends may be affected.

An earthquake is perhaps the purest example of instantaneous mass awareness. Everyone within the quake zone feels the motion more or less simultaneously. The normal individual reflex is to tune to radio and/or television broadcast stations that are known to have a strong record of serving viewers by reporting and interpreting emergency situations. These can include a mix of national network information and local information as well. The broadcast listening and viewing public is aware that in such circumstances, scheduled radio and television programming is quickly interrupted by broadcast station news personnel who report information they have collected from many sources throughout the emergency. As coverage continues, broadcasters include information from reporters at various scenes, police and fire departments, relevant federal, state and local government agencies, weather and geological bureaus, and the like.

Following the initial need for information, personal communication is then attempted as citizens seek rapid contact with family members and friends. At this point communication networks can suffer connectivity failures due to blocking or traffic congestion, and often loss of power at key network centres, cellular transmission towers, fibre links or other intermediate processing points. Failed elements can include wired and wireless telephone and mobile data networks, cable television

networks, and in cases of severe weather, even direct-to-home satellite services. While these non-broadcast media often suffer infrastructure failure within a disaster area, broadcasting's architecture is uniquely simple and powerful. If the main transmitter and the radio or television studios that feed it remain on the air, reception is available wherever there are working receivers. Moreover, there has been rapid growth and availability of small handheld and car equipped television receivers, plus large screen devices operating in most emergency shelters such as police stations, hospitals, sports arenas, public buildings, etc. The overall robustness of broadcast services is enhanced by the geographical diversity of multiple radio and television services within a given country. If one or a few radio and television broadcasters are not able to remain in service, or suffer an outage, other broadcast signals are usually available.

Another aspect that makes terrestrial broadcasting a most reliable means to help people in emergency situations is its robustness to cyber-attacks or terrorist activity. DTT is a most suitable means to ensure reliability of the signal against possible disruptions and sabotage in respect to the security of the proper transmission of the signal to the user. It would be very difficult to disrupt several or all sites of the DTT broadcasting network. Indeed, DTT emissions can be blocked only by interfering directly with all distribution sites, in easily identifiable locations. This makes it difficult to interrupt a DTT service since the interferences can only block single emission points and can thus more easily be neutralised. In addition, an attack on a DTT site can be brought only on the territory where the transmitter is located. Thus, a hostile action against DTT transmissions is less likely, because the source is more easily identifiable. A DTT platform should be considered to be a particularly safe way to assist people in emergency situations.

Radio receivers, of course, can be AC-powered, battery, or hand crank-operated, and are present in virtually all motor vehicles. These are nearly always reliable, regardless of almost any disorder or disruption taking place in the affected disaster area. Portable television receivers are much less common, but even this is destined to change, as mobile DTV reception capability is beginning to be rolled out to portable devices such as cellular phones.

A particular attribute of information provided by many broadcasters is the professional quality of the compilation and analysis of local facts and guidance by experienced broadcast station news personnel who often report around the clock. Broadcasters gather and convey information and video from reporters deployed at various locations including, police and fire departments, relevant national and local government agencies, weather, geological, scientific and medical bureaus, etc.

Radio and television broadcasters have an expert ability to interpret information and impact for their viewers in the local broadcast coverage area. Viewers are offered comfort by hearing or seeing well-known, trusted local news reporters and anchors interpret the situation and provide advice and guidance for viewers' safety.

All but the smallest radio and television stations have an important ability to gather and summarize information for the public by bringing to bear their electronic news, traffic and meteorological personnel with special knowledge of the local area, their field audio and video reporting capabilities, as well as sophisticated graphics, mapping and weather radar systems, not to mention well-honed utilization of Internet sources for collecting vital emergency information.

Television broadcasting is particularly powerful when it displays maps of emergency areas annotated with critical information prepared by the broadcasters' news and meteorological personnel, and first responders and emergency agencies. Hundreds of thousands (or millions) of television broadcast viewers, whether fixed or mobile, can each examine the same maps and determine their own location relative to the areas in crisis. In this way they are able to draw valuable conclusions about actions they may need to take to protect their safety (e.g. decide evacuation routes, whether to shelter in their present location, or measures for property protection), and the safety of family members and others.

Most broadcasters have disaster plans that include the presence of backup generator power at key studio and transmitter locations, associated long-term fuel storage, as well as backup facilities in secondary locations where information gathering and studio work can be moved if the primary location is disabled due to catastrophic conditions.

It is also common for radio and television receivers to be available in critical locations such as police and fire stations, hospitals, government buildings, auditoriums, indoor stadiums and public shelters, often with backup generator power. Thus, both citizens and emergency responders will often benefit from the distribution of key information by local broadcasters.

It is important to note that in regions with diverse and thriving terrestrial broadcasting systems, many emergency broadcast services are provided free of charge to the public, and do not involve government expenditure. In the U.S. for example, emergency broadcasts are planned, executed and fully paid for by commercial broadcasters as part of their business mission, which includes the responsibility to serve their communities in times of special need. The preservation of free, over-the-air broadcast services for television and radio is thus a vital supporting component of maintaining this system.

2 Terrestrial radio and television broadcaster experience in gathering/reporting of public safety information

Many broadcasters strive to provide comprehensive emergency broadcast content on air, online and on all other useful platforms. They work with emergency authorities to provide reliable, accurate and timely information and warnings to keep the community safe, and they endeavour to be their companion in difficult times, and to assist them with recovery efforts. Emergency broadcasting consists of all content relating to an unfolding natural or man-made disaster which affects lives or poses threats of significant property damage, and for which repetitious content assists the community to respond. Emergency broadcasting will be undertaken "as local as possible", having regard for staff work levels, safety and budgets. The urgency and repetition of emergency broadcasting is based on the time to the possible threat, the number of lives threatened and the cost of likely damage.

Providing timely, relevant and practical information to people who are confused and demoralised by the impact of a crisis on their lives, is in itself a useful form of aid. Broadcast information is particularly useful in situations where physical access is difficult and aid responders may take several days or weeks to reach affected communities. Appropriate information and advice, delivered in a user-friendly way, can help people to cope with the crisis and mitigate the threats that it poses to their wellbeing until physical help arrives. Direct communication via radio or television also helps to reduce the sense of isolation and helplessness that crisis-affected communities experience.

Once aid has begun to arrive, broadcast programming can tell the affected community how and where to access the help that is available. It can explain how to register to receive aid and where and when distributions will take place. Broadcast programming can also publicise other important services for the affected community. It explains how families which have been split up can contact tracing services to find their loved ones. It can alert women to services that help them deal with sexual harassment and other protection issues. It can explain how people can keep themselves safe from diseases and where they can access medical services.

Radio and television can help aid responders to manage the expectations of the people they are seeking to assist. For example, if a food distribution in certain towns and villages has been delayed by landslides blocking a road or by difficulties in the supply chain, broadcast programming can explain to the intended recipients why the distribution has been delayed. It can also advise when the delayed distribution is now expected to take place. Without such explanation and reassurance, the affected communities might feel abandoned and frustrated and believe themselves to be the target of deliberate discrimination or neglect.

The following Annexes provide examples of broadcaster experience in gathering/reporting of public safety information:

– Annex 2A: Australian Broadcasting Corporation. A brief history of emergency broadcasting by the Australian Broadcasting Corporation, and the establishment of guidelines for emergency broadcasting, including bushfire alerts.

– Annex 2B: First Response Radio. An introduction to the Media Development Agency First Response Radio, which is a global specialist in setting up emergency radio services serving disaster-affected communities. It describes the equipment used by the Rapid Response Units, including the "Radio in a Suitcase".

– Annex 2C: BBC Media Action. This Annex describes the role of so-called "Lifeline" broadcasting in providing timely, relevant and practical information to the crisis-affected community via radio. Formerly BBC World Service Trust, BBC Media Action has been producing and broadcasting Lifeline radio programmes since 2003.

– Annex 2D: British Broadcasting Corporation. A summary of how the British Broadcasting Corporation (BBC) uses its UK television and radio network to inform the public in times of crisis. News is a single division across the whole BBC and as such can feed into all BBC media outlets, including television, radio and the internet.

– Annex 2E: Louisiana Public Broadcasting. This Annex gives a description of back-up power and emergency communications capabilities developed by the Louisiana Public Broadcasting system.

– Annex 2F: Internews' Humanitarian Communications Programs. This Annex gives examples of how the Media Development Organization Internews has established critical links between affected populations, local media and humanitarian agencies to provide life-saving information and set up effective two-way communication platforms.

Annex 2A Annex 2B Annex 2C Annex 2D Annex 2E Annex 2F

3 Operational methods used to assure continued broadcast service

The broadcast imperative is to be on the air and available at all times, especially during emergency situations. Most facilities possess redundant capabilities and signal paths in order to maintain their over-the-air and cable feeds. In larger markets, more robust measures are employed. These are usually "case-hardened" facilities that include multiple power feeds from diverse power generation stations, full backup power generators at the studio and transmitter sites, multiple signal paths from studio to transmitter sites, redundant transmitters/antennas and direct feeds to cable and satellite operators. All of these minimise the number of single points of failure that could keep vital information from being broadcast.

Some humanitarian agencies have "radio in a suitcase" kits on standby, which are used to re-establish FM radio services when these are destroyed or damaged. Used in conjunction with a small petrol-driven generator, the equipment can enable an FM radio station to be on-air within hours of a disaster occurring. The idea is usually not to set up a completely new radio station, but to operate a special radio service on the FM frequency and broadcasting licence of a local partner station that is no longer able to broadcast from its own studios and transmitters.

In Japan, the public broadcaster, NHK, installed "Emergency Transmission Vehicles" after the experience of the Great East Japan Earthquake in 2011. This special vehicle has the capability to drive up to the transmitting site and back up the transmitter and antenna. See Annex 3B for more details.

In the United States of America, the FCC's Communications Security, Reliability and Interoperability Council (CSRIC) was formed to provide recommendations to the FCC to ensure, among other things, optimal security and reliability of communications systems, including broadcasting, during terrorist attacks, natural disasters and all other threats or attacks nationwide. The FCC's Media, Security and Reliability Council (MSRC) for radio and television broadcasting developed Best Practices, which were updated by the CSRIC. The Best Practices include recommendations for detecting, preparing for, preventing, protecting against, responding to and recovering from terrorist threats, natural disasters or other attacks upon national infrastructure and people.

The 2011 CSRIC Report on Best Practices can be accessed at:
http://transition.fcc.gov/pshs/docs/csric/WG2B-MSRC-Best-Practice-Update-Final-Report.pdf.

The following Annexes provide examples of operational methods used to assure continued broadcast service:

– Annex 3A: BBC Media Action – Use of emergency equipment. This Annex describes BBC Media Action's use of satellite telephones and Broadband Global Area Network (BGAN) satellite modems to support emergency broadcasting in locations where the local telecommunications infrastructure has collapsed. It also describes BBC Media Action's use of other emergency equipment, including suitcase radios and solar/wind-up radios.

– Annex 3B: Emergency Transmission Vehicle. This Annex describes one of NHK's approaches for ensuring that continuous broadcasting is maintained in disaster situations, namely the 'Emergency Transmission Vehicle' designed to provide swift back up for a damaged transmitting site. Actual examples of use are described together with its technical features.


Annex 3A


ANNEX 3B.docx

4 Use of existing terrestrial broadcasting infrastructure to support emergency communications in disaster situations

Television broadcasting's commitment to providing local news and information for many hours a day has created established in-house procedures to deal with the dissemination of all types of news. These same procedures are easily and quickly adaptable to provide life and safety information to the public. Stations are linked via Emergency Alert Systems to state and national emergency information channels and can repeat messages from civil and governmental authorities very quickly. Electronic News Gathering and satellite outside broadcast vehicles are quickly deployed to be on-the-scene with live pictures and sound. These facilities are also deployed at civil and governmental press conferences and instantaneously relay information to the public. Closed Captioning systems along with full screen graphical displays, news "tickers" and lower-third screen text information make sure that those who are hearing impaired are also provided with emergency information. Even the simplest form of communication, for example, telephone calls can serve as a source to the broadcast signal and can be placed on-air from public officials or civilians in the disaster area and their messages relayed to viewers and listeners.

As society becomes more mobile, there is increased appreciation by broadcasters for including broadcast reception capability in mobile devices. In Japan, for instance, the "One-Seg" mobile digital TV service is available in a large majority of mobile phones. In some parts of the world, such as Europe, FM radio reception capability in mobile phones is commonplace, while in the U.S. and some other countries, this feature is less prevalent. Active programs are underway in the U.S. to encourage mobile network providers and phone manufacturers to include broadcast signal reception in more products.

Terrestrial broadcasters have adapted many different technologies to aid in news gathering and the dissemination of emergency information:

– live and recorded mobile phone videos can be placed on the air, making it possible to use non-traditional broadcasting equipment to share important information;
– broadcasters are adapting small aperture satellite dish technology that allows for a more easily deployed satellite news gathering tool in a local market;
– diversity microwave receive sites that make it possible to use small vehicles equipped with microwave transmitters to drive and report on road and other conditions;
– helicopters to give overall views of an area-wide emergency;
– computer mapping software to quickly document and display details of an emergency to the public.

The following Annexes provide examples where existing terrestrial broadcasting infrastructure has been used to support emergency communications in disaster situations:

– Annex 4A: BBC Media Action – Use of existing broadcast infrastructure. This Annex describes BBC Media Action's collaboration with BBC World Service and other radio partners to broadcast Lifeline programming. For example, it details BBC Media Action's response to Cyclone Mahasen, where it produced a series of cyclone warning announcements for radio and television in Bangladesh.
– Annex 4B: ATSC Data Broadcast (Datacast) Emergency Alert System Resiliency. This Annex describes examples of how ATSC digital television data broadcasting has been utilized to improve the resiliency, redundancy and survivability of emergency alert transmission networks. For example, it details pilot programs conducted by the U.S. Federal Emergency Management Agency (FEMA) to utilize ATSC television datacasting to relay CAP alert messaging as part of its Integrated Public Alert and Warning System (IPAWS).


Annex 4A


Annex 4B.docx

5 Broadcasting techniques and systems for use in emergency communications

Broadcasters have two functions in disaster management. One is gathering or receiving information from disaster radiocommunication networks connected to administrative organisations. An exclusive line connected to administrative organisations is preferably to be used for urgent alerts and such information as earthquake and tsunami data. The other function is delivering information to the public. Some municipalities in some countries may have a multicasting system to outdoor receivers with loudspeakers in their own disaster radiocommunication network. However, it may be difficult to hear the sound indoors, especially in bad weather such as storms or heavy rain. Therefore, disaster alerts and information via broadcasting is particularly useful in such situations.

A number of emergency warning systems (EWS) exist which allow broadcast networks to alert people of impending disasters and enable them to prepare for emergencies. The emergency warning systems can use special warning or alert signals embedded in digital radio transmissions to automatically switch on the receiver equipment (if so equipped) and issue an emergency bulletin, alerting people to an impending disaster such as a tsunami or an earthquake. See Annexes 5A and 5B for examples of these systems.

For analogue broadcasting the EWS should use relatively simple equipment to ensure stable operations. In an emergency, the EWS control signal, which is an analogue signal, automatically activates receivers equipped with the EWS function even when they are in standby mode.

Depending on its characteristics, the EWS control signal might also be used as an alarm sound to draw the attention of listeners/viewers to the emergency broadcast programme. Broadcasters operating analogue platforms can transmit the EWS control signal. The EWS control signal could include an area code as well as a time code, keeping the receiver protected from intentionally fake control signals.

For a specific EWS for analogue sound broadcasting, an EWS control signal as described in Annex 5L is recommended, for automatic activation of receivers compliant with the systems described in Annexes 5J and 5K for public warning, disaster mitigation and relief.

In digital broadcasting, the EWS control signal is transmitted by multiplexing with the broadcast signal. It automatically activates receivers equipped with the EWS function when they are in standby mode. The EWS control signal should be robust against the abuse of this feature. It is foreseen that digital broadcast receivers will be installed in mobile terminals such as cellular phones, being an effective way to send emergency information to such terminals. Therefore, it would be advantageous for such terminals to be equipped with the EWS function.

The U.S. emergency alert system (EAS) is a public alert and warning system that uses the communications assets of EAS participants, including terrestrial broadcasters, cable television systems, wireless cable systems, satellite digital audio radio service (SDARS) providers, direct broadcast satellite (DBS) services and wireline video service providers to allow the President of the United States of America the capability to address the American public during a national emergency. This system is designed to be available under all conditions. The system is also used by State and local authorities to deliver important emergency information, such as AMBER alerts. The national weather service (NWS) regularly uses the system to disseminate emergency weather alerts and advisories. A brief history and description of the U.S. EAS is given in Annex 5C.

The U.S. Advanced Television Systems Committee (ATSC) mobile emergency alert system (M-EAS) built upon established first-generation ATSC mobile digital television and Non-Real-Time standards to provide a robust and reliable alerting service for the public. It leveraged the excellent reliability of the broadcast digital television service to serve emergency needs that could not be satisfied by other communications means that had become damaged or overloaded during natural disasters.

Advanced Emergency Information is a key element of the next-generation ATSC 3.0 broadcast standard, which promises to create new significant value for viewers, consumer electronics manufacturers, broadcasters and various emergency message origination authorities. This enhanced advanced emergency messaging capability, with its accompanying rich-media emergency information, represents a compelling application for ATSC 3.0 broadcasting.

A more detailed description of the M-EAS system is given in Annex 5D, and that of the ATSC 3.0 Advanced Emergency Information System is given in Annex 5N.

In many disasters people have lost their belongings and do not have a radio, or they are not radio listeners so do not own a radio. Ideally, radios and portable/mobile television receivers must be commonly available, so that the information being broadcast can be received and passed on across the disaster area. In addition, many mobile phones incorporate FM radio capability and offer citizens access to important radio programming information during times of emergencies when they otherwise do not have a nearby radio available. More information on the subject of FM radios in mobile phones is found in Annex 5M.

The minimum requirement for an emergency radio should be that it does not require AC power and has both AM and FM bands. It should also have access to the shortwave band in regions where shortwave listening is prevalent, which will be used if the disaster is over a wide area. A wind-up radio would be a suitable choice for use in rural areas, where people would find it difficult to purchase replacement batteries. Some wind-up radios also include a torch or flashlight.

Efforts to deliver real-time emergency alert messages to people who are deaf or hard of hearing, or visually impaired are also underway in several regions. For example, in the U.S., National Public Radio's technology research and development group, NPR Labs, has partnered with the Department of Homeland Security's Federal Management Agency (FEMA) on a pilot project to deliver "captioned radio" to the deaf and hard of hearing. Stations in the pilot will broadcast emergency alerts from FEMA to specially designed FM RDS radio receivers that alert the participants with a flashing indicator or connect to a bed-shaker alerting device, and then display the alert message through the receiver's display.

Details of systems for use in emergency communications are given in the following Annexes:

– Annex 5A: Digital Radio Mondiale (DRM) Emergency Warning Functionality (EWF). This Annex contains an overview of the EWF early warning functionality, part of the DRM system specification. The DRM system is capable of switching the receiver to the emergency programme (turning on the receiver if necessary) and can provide listeners with detailed information by audio and multilingual text (Journaline).

– Annex 5B: HD Radio Emergency Alert System. This Annex describes the HD Radio "Active Alert" system enhancement, providing text or rich media alert messages, as well as a wake-up function to turn on the radio when alerts are received.

– Annex 5C: U.S. Emergency Alert System (EAS). This Annex includes a top level description of the U.S. Federal Communications Commission's Emergency Alert System (EAS) in which radio and television stations participate to distribute alert and warning messages to the public.

– Annex 5D: U.S. Mobile EAS for ATSC Mobile DTV. This Annex describes an enhancement to the ATSC Mobile DTV standard, which can deliver text and rich media to mobile receivers associated with emergency situations, based on information originating from the FCC Emergency Alert System.

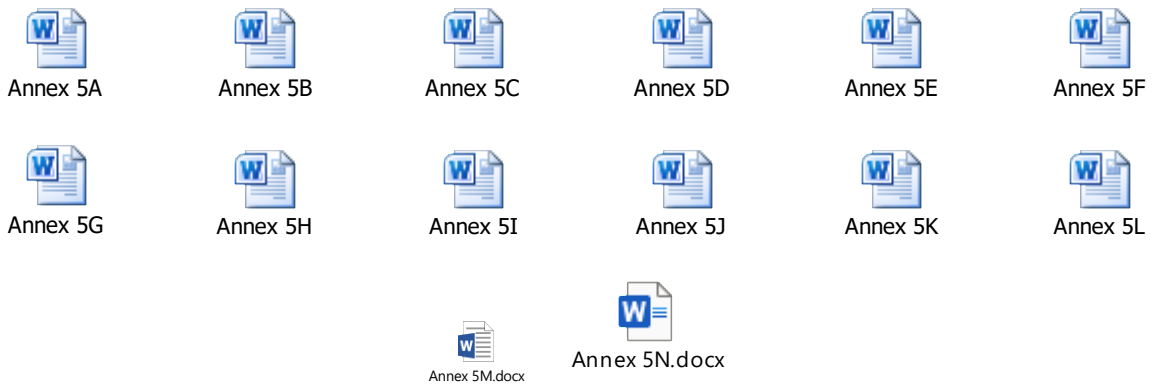
– Annex 5E: BBC Media Action – Use of new broadcasting technologies. This Annex details the ways that BBC Media Action has extended the reach of Lifeline programming beyond the normal broadcast coverage area. One such technique is to play recorded radio programmes over a loudspeaker to groups of people in a public place.

– Annex 5F: Emergency Warning Systems Limited. This Annex describes an early warning system which over-broadcasts an alert message on existing radio stations operating in the target area.

– Annex 5G: ALERT FM/RDS Emergency Alert System. This Annex describes an emergency alert system that uses the FM Radio Data System (RDS) to send text-based alert messages to FM/RDS ALERT FM receivers.

– Annex 5H: T-DMB Emergency Broadcasting System (EBS) in tunnels. This Annex describes how the T-DMB EBS broadcasts emergency alerts to drivers inside and near tunnels.

– Annex 5I: Indoor Alert System. This Annex describes the interface between the gateways of various communications links, such as LTE, cable and T-DMB, and the indoor alert receiver. It also describes the transmission of alert messages uniformly via a reliable channel, with reduced operational burdens.
– Annex 5J: Emergency Warning System (EWS). This Annex presents a system overview of public warning systems used for broadcasting in Japan. Example uses of these systems are described in section 10, Annex 10F.
– Annex 5K: Public Warning Systems for Analogue and Digital Broadcasting. This Annex presents an overview and the current status of public warning systems for broadcasting in the Republic of Korea.
– Annex 5L: Common Emergency Warning System Control Signal for Analogue Sound Broadcasting. This Annex describes an emergency warning system which enables a public warning to be broadcast via analogue radio sound channels.
– Annex 5M: FM Radio in Mobile Phones. This Annex describes the advantages of FM radio functionality in mobile phones for expanded citizen access to emergency information.
– Annex 5N: ATSC 3.0 Advanced Emergency Information System. This Annex describes the advanced emergency messaging capability of ATSC 3.0, and an application of accompanying rich-media emergency information.



6 Collaboration between broadcasting organizations in emergency situations

Broadcasters in most cities have developed coordination networks that allow stations to share limited microwave channels for news gathering. These same networks are used during emergencies to pool feed coverage to all stations and obtain the most efficiency from the microwave band for news gathering. Additionally, stations in overlapping markets routinely share video coverage and many TV stations partner with radio stations and allow them to rebroadcast their TV audio over radio, in order to reach citizens who are listening on battery-powered radios. These are usually people who have lost power and must rely on car or portable radios for news and information.

The Communicating with Disaster Affected Communities (CDAC) Network (www.cdacnetwork.org) is a London-based network of UN agencies, international Non-Governmental Organizations (NGOs) and media development organizations that is committed to the development of communication with disaster affected communities.

BBC Media Action is a founder member of this organization, which was created in 2009. CDAC works closely with the UN Office for the Coordination of Humanitarian Affairs (OCHA), and the Red Cross/Red Crescent movement to promote the systematic use of two-way communication with disaster affected communities in all humanitarian emergencies.

Broadcasting plays a fundamental role in such communications, alongside mobile telecommunications and traditional face-to-face communication activities.

Four media development agencies which specialise in using information transmitted by radio as a form of aid in humanitarian emergencies are currently members of CDAC. These are:

– BBC Media Action (http://www.bbc.co.uk/mediaaction/).
– Internews (http://internews.org/), a US-based media development organization.
– First Response Radio (http://firstresponseradio.org/), a global specialist in setting up emergency radio services serving disaster-affected communities.
– International Media Support (IMS) (http://www.i-m-s.dk/), a Danish media development organization. It runs Radio Ergo (www.radioergo.org), a Nairobi-based humanitarian radio station serving Somalia.

The Thomson Reuters Foundation (http://www.trust.org/), the charitable arm of the Reuters news agency, which operates the humanitarian information service Alternet (http://www.trust.org/?show=alertnethumanitarian), is also a full member of CDAC.

The UK Department for International Development (DFID) now looks to CDAC's member agencies to coordinate the communications response to a breaking emergency, before they apply for funding to execute such activities through the UK DFID's Rapid Response Facility.

In August 2013, CDAC was in advanced negotiations to secure core funding from the UK DFID which would allow the organization to play a more direct role in coordinating the communications response to major humanitarian emergencies in the coming years.

In some countries, ad-hoc bodies have already been formed at the country level to coordinate government and aid agency communications with affected communities during a humanitarian emergency. These initiatives are often off-shoots of humanitarian coordination bodies that have been formed to coordinate all development and emergency response activity in the country.

Typically, such a forum brings together the main government departments involved in emergency response activities, UN agencies, international and local NGOs, the Red Cross/Red Crescent movement and leading players in the local media. They may also include international donors and the country's main telecommunications operators.

In Nepal, BBC Media Action leads the Communications Sub-Group of one such body called the Nepal Risk Reduction Consortium (NRRC) (http://un.org.np/coordinationmechanism/nrrc/communicationgroup). The NRRC focuses mainly on disaster preparedness, but its communications activities extend into disaster response.

In Bangladesh, BBC Media Action is helping to form a permanent working group to coordinate two-way communication with the affected population in humanitarian emergencies. This body, called Communicating with Communities in Emergencies, includes representatives of the Ministry of Disaster Management, UN agencies, international and local NGOs, the Bangladesh Red Crescent Society and BBC Media Action. In August 2013 it was still negotiating the participation of leading Bangladeshi media organizations and mobile telecoms operators.

Bilateral cooperation between different media development organizations in humanitarian emergencies is also becoming more common. Between 2010 and 2012, BBC Media Action and Internews worked together as partners in the infoasaid project. Infoasaid (www.infoasaid.org) promoted the adoption of two-way communication between aid agencies and disaster-affected populations. It set up several pilot projects in East Africa with partners that included ActionAid, World Vision, Save the Children and the International Rescue Committee (IRC). Most of these pilot projects involved partnerships with local radio stations in Kenya and Somalia, for the production and broadcast of special disaster relief programming.

In August 2013, BBC Media Action and Internews were discussing a new partnership for humanitarian broadcasting in South Sudan. Both countries already have offices in the capital Juba and a portfolio of media development activities in the country focussed on radio.

The following Annexes provide further examples of collaboration between broadcasting organizations in emergency situations:

– Annex 6A: Louisiana Public Broadcasting – Collaboration between broadcasting organizations. This Annex describes partnerships that Louisiana Public Broadcasting has formed with other broadcast organizations for providing video and audio information to the public during emergencies.

– Annex 6B: International Association of Broadcasting – Cooperation between broadcasters and government entities. This Annex describes educational efforts by broadcasters, and principles of cooperation between broadcasters and government entities during times of emergency.


Annex 6A


Annex 6B

7 Public service efforts by broadcasters associated with emergency and disaster situations

Over the past decade, there have been numerous examples of international, state, private and NGO-sponsored broadcasters running special programming for people affected by humanitarian emergencies. In many cases, such initiatives have taken the form of a spontaneous reaction to a rapid-onset emergency. Relatively few broadcasting organizations actively plan for such contingencies.

Internews has been active in setting up local radio stations to serve people affected by humanitarian disasters. It has worked particularly with communities affected by conflict in countries such as Afghanistan, South Sudan, Sudan, Central African Republic, Somalia and Chad.

First Response Radio specialises in the rapid deployment of suitcase radios to communities suffering the impact of natural disasters. It set up its first emergency radio station in Banda Aceh in Indonesia after the 2004 Indian Ocean tsunami.

The emergency response role of Danish-based IMS mainly consists of supporting local media in countries affected by conflict. IMS runs a humanitarian radio service for Somalia, called Radio Ergo (http://www.radioergo.org/). This broadcasts on short wave from studios in Nairobi and also distributes its programmes to Somali FM partner stations for re-broadcast.

Many other international media development NGOs, such as Free Press Unlimited, IREX, Equal Access, Search for Common Ground and the Institute of War and Peace Reporting, also provide humanitarian programming to disaster-affected communities, particularly those affected by conflict. However, they mostly operate long-term projects. They have not so far developed a niche role as rapid responders to a breaking crisis.

The radio networks set up by the UN Department of Peacekeeping Operations, in countries where UN peacekeeping forces have been deployed, generally carry humanitarian programming for disaster-affected communities as a core part of their output. Radio Okapi (http://radiookapi.net/) in the Democratic Republic of Congo (DRC) and Radio Miraya (http://www.radiomiraya.org/) in South Sudan, both of which were established in partnership with the Swiss-based Foundation Hirondelle (https://www.hirondelle.org/), are prominent examples of well-established UN radio stations that carry a large amount of humanitarian content in their broadcasts.

The following Annexes provide further examples of public service efforts by broadcasters associated with emergency and disaster situations:

– Annex 7A: BBC Media Action – Public service efforts by broadcasters. This Annex highlights the work that BBC Media Action has carried out with governments and state broadcasting networks, to produce key messages for broadcast during the early warning and response phases of humanitarian emergencies.

– Annex 7B: "Empresa Brasil de Comunicação" (EBC) – HF broadcasting as a functional communication element in the event of defence, national security and social emergency. This Annex reports on the experience of "Empresa Brasil de Comunicação" (EBC – Brazil Communication Company, a Brazilian public broadcaster) using HF broadcasting in a social emergency situation caused by severe floods in southern Brazil in 2024.


Annex 7A.docx


Annex 7B.docx

8 The role of international broadcasting for disaster relief

The most effective dissemination of information to the disaster stricken population is multi-platform, but radio is the most dominant technology, especially in early post-disaster situations. The specific technology of international broadcasting on shortwave is disaster-resilient, because the transmission facilities are well removed from the affected region.

The following Annexes provide examples of the role of international broadcasting for disaster relief:

– Annex 8A: HFCC – The importance of terrestrial radio in international broadcasting. This Annex provides an overview of international broadcasting and in particular the unique long-distance propagation property of shortwave radio. It also shows international broadcasting is important as a channel for the flow of information to disaster affected communities, especially when other platforms, such as satellite, FM radio or internet are unavailable.

– Annex 8B: HFCC – The International Radio for Disaster Relief project. This Annex gives further details about the International Radio for Disaster Relief (IRDR) project, conceived by the HFCC – International Broadcasting Delivery (HFCC). The project's ultimate aim is to identify frequency channels in each shortwave band, which the global coordination community will reserve for disaster mitigation broadcasting.


Annex 8A


Annex 8B

9 Relevant ITU Publications

The following ITU publications provide further guidance:

– Recommendation ITU-R BT.1774 – Use of satellite and terrestrial broadcast infrastructures for public warning, disaster mitigation and relief.

– Resolution **647 (WRC-07)** – Spectrum management guidelines for emergency and disaster relief radiocommunication.

– Resolution ITU-R 53-1 (RA-12) – The use of radiocommunications in disaster response and relief.
– Resolution ITU-R 55-1 (RA-12) – ITU studies of disaster prediction, detection, mitigation and relief.
– ITU-D Study Group 2 Question 5/2 – *Utilizing telecommunications/ICTs for disaster risk reduction and management*.

10 Case Studies

The following Annexes provide examples highlighting the advantages of radio and television broadcasting in public disasters and emergencies:

– Annex 10A: Impact of Hurricane Sandy on a U.S. Cable Television Operator. A report on how power outages caused extended disruption to cable television services during Hurricane Sandy, on the U.S. Eastern Seaboard in October 2012. Radio and television broadcasts continued to provide information services throughout the emergency.
– Annex 10B: Information on Disaster Coverage and Public Service by U.S. Broadcasters. This Annex includes links to newsletters that chronicle broadcaster coverage of a number of natural disasters and terrorist events, including an essay on the broadcasters' role as society's "first informer" during emergencies.
– Annex 10C: First Response Radio India deploys to Uttarakhand floods. An account of how First Response Radio India began emergency broadcasts within 72 hours of the onset of flash floods and landslides in the Indian state of Uttarakhand in June 2013.
– Annex 10D: First Response Indonesia in Aceh earthquake area. A short report on First Response Radio network member, First Response Indonesia's deployment to Aceh province, Indonesia after 2 July 2013 earthquake.
– Annex 10E: First Response India – 2008 Bihar flood response. On 18th August 2008, the River Kosi breached the Eastern embankment in Nepal near the Indian border, causing mass destruction and chaos. This case study describes the situation faced by the newly trained team from First Response India and highlights the lessons learned from their experience.
– Annex 10F: Emergency broadcasting to protect the public in Japan. An account of the Great East Japan earthquake, which occurred on 11 March 2011 and the response of the broadcasters to alert and help protect the public. It describes the Earthquake Early Warning systems that were used, the damage to broadcast facilities and the reporting of the disaster by NHK and the other broadcasters in Japan. It also describes the ways that news of the disaster was gathered, the results of a survey on types of media used after the earthquake and the lessons learned by broadcasters in Japan.
– Annex 10G: Radio Ishinomaki – Ishinomaki City, Miyagi, Japan. This case study describes the experience of Radio Ishinomaki, a local commercial radio station in Ishinomaki City, Miyagi prefecture, after the Great East Japan earthquake.
– Annex 10H: First Response Radio in Tacloban City – Typhoon Haiyan (Yolanda). This Annex provides an account of how First Response Radio set up an emergency broadcast transmitter in Tacloban City, after Typhoon Haiyan struck the Philippines in November 2013.
– Annex 10I: Video links. This Annex provides links to a number of videos produced by broadcasters and outside organizations, on services provided by broadcasters during several natural disasters and in crisis areas in need of humanitarian aid.


Annex 10A


Annex 10B


Annex 10C


Annex 10D


Annex 10E


Annex 10F


Annex 10G


Annex 10H


Annex 10I

11 Conclusions

As evidenced in this Report, terrestrial radio and television broadcasting is a critically important medium for information dissemination to the public in times of emergencies. The intrinsic one-to-many broadcast architecture, the geographic diversity of terrestrial broadcast transmission facilities and the robustness to cyber-attacks or terrorist activity provide high service reliability during crises of all types. The professional compilation and analysis of information that is emblematic of broadcast journalism provides high quality information available when and where it is most needed. Fixed, mobile and portable terrestrial broadcast receivers are readily available, inexpensive and virtually ubiquitous in most societies.

In many regions, radio and television broadcasters and government authorities collaborate in ensuring highly reliable services during emergencies, via the availability of back-up equipment and supplies, as well as standardized procedures and checklists intended to ensure a high degree of emergency preparedness and continued information flow to the public. In times of crisis and disaster, or wherever mass dissemination of information is required instantaneously, radio and television broadcasting is unparalleled in its ability to effectively reach affected populations with relevant information-rich media content.

The case studies in this Report represent only a few of countless examples that attest to the global importance of terrestrial broadcasting, helping to protect and save lives during local, national and international emergencies.