

RESOLUTION ITU-R 55-1

ITU studies of disaster prediction, detection, mitigation and relief

(2007-2012)

The ITU Radiocommunication Assembly,

considering

- a) the importance of radiocommunication systems in assisting disaster management through techniques for early warning, prevention, mitigation and relief;
- b) that ITU-R Study Groups play an important role in disaster management, particularly in the prediction, detection, mitigation and relief activities necessary to survive the event and to minimize the loss of life and property;
- c) that each ITU-R Study Group brings expertise to the complex mechanisms required to provide relief for the affected area;
- d) that it is vital for the various necessary radio systems to have access to the radio spectrum, in order to effectively predict, detect, mitigate and relieve disaster event situations,

noting

- a) Resolution 34 (Rev. Hyderabad, 2010) of the World Telecommunication Development Conference, on the role of telecommunications/information and communication technology in disaster preparedness, early warning, rescue, mitigation, relief and response;
- b) § 91c) of the Tunis Agenda of the World Summit on the Information Society (WSIS), which states: “Working expeditiously towards the establishment of standards-based monitoring and worldwide early-warning systems linked to national and regional networks and facilitating emergency disaster response all over the world, particularly in high-risk regions”,

taking into account

- Resolution ITU-R 53, on the use of radiocommunications in disaster response and relief;
- Resolution ITU-R 60;
- other relevant Resolutions adopted by WRC-07, including Resolution 647,

recognizing

- a) Resolution 136 (Rev. Guadalajara, 2010) of the Plenipotentiary Conference, on the use of telecommunications/information and communication technologies for monitoring and management in emergency and disaster situations for early warning, prevention, mitigation and relief resolved to instruct the Directors of the Bureaux:
 - 1) to continue their technical studies and to develop recommendations, through the ITU Study Groups, concerning technical and operational implementation, as necessary, of advanced solutions to meet the needs of public protection and disaster relief telecommunications/ICTs, taking into account the capabilities, evolution and any resulting transition requirements of existing systems, particularly those of many developing countries, for national and international operations;

- 2) to support the development of robust, comprehensive, all-hazards emergency and disaster early-warning, mitigation and relief systems, at national, regional and international levels, including monitoring and management systems involving the use of telecommunications/ICTs (e.g. remote sensing), in collaboration with other international agencies, in order to support coordination at the global and regional level;
 - 3) to promote implementation by appropriately alerting authorities of the international content standard for all-media public warning, in concert with ongoing development of guidelines by all ITU Sectors for application to all disaster and emergency situations;
 - 4) to continue to collaborate with organizations that are working in the area of standards for emergency telecommunications/ICTs and for communication of alert and warning information, in order to study the appropriate inclusion of such standards in ITU's work and their dissemination, in particular in developing countries;
- b) that disaster management in the field of radiocommunications comprises the following, equally important, aspects:
- 1) early warning and prevention, through:
 - disaster prediction, including the acquisition and processing of data concerning the probability of future disaster occurrence, location and duration;
 - disaster detection, including the detailed analysis of the topical likelihood and severity of a disaster event;
 - 2) disaster mitigation including the rapid promulgation of imminent disaster information and corresponding alerts to disaster relief agencies;
 - 3) post-disaster relief radiocommunications, including the provision of *in situ* terrestrial and satellite communication systems to aid in securing and stabilizing life and property in the affected area,

recognizing further

that, generally, the mitigation of a disaster event on the territory of a developed country may have less of an impact on the local economy than that of a similar disaster event on the territory of a developing country,

resolves to invite the Study Groups

to take into consideration the scope of ongoing studies/activities outlined in Annex 1 and information provided by the Bureau on related activities of the other two Sectors and the General Secretariat, in the development of their work programmes in order to avoid duplication of effort.

ANNEX 1

The scope of ongoing studies/activities within each Study Group in support of disaster prediction, detection, mitigation or relief radiocommunication systems

- SG 1 Studies on spectrum management aspects and requirements in support of disaster radiocommunications fall within the scope of Study Group 1. Considering that administrations may have different operational needs and spectrum requirements, depending on circumstances, there is a need to define the appropriate mechanism(s) for

the identification and registry of spectrum resources. Exploration of monitoring techniques is another key responsibility of SG 1 and such work could be especially beneficial when applied to all phases of disaster radiocommunications (prediction, detection, mitigation, and relief).

SG 3 Study Group 3 will undertake the necessary studies to assess the propagation conditions for the frequency bands and services used for disaster warning and disaster relief, especially those identified as regionally harmonized bands (Res. 646 (WRC-03)). It will further study possible changes in the local propagation conditions associated with the disaster itself.

SG 4 In the event of natural disasters, epidemics and famines, etc., there is an urgent need for a reliable communication link for use in relief operations. Satellite appears as the most appropriate means to quickly set up a communication link with remote facilities. Assuming the system is to operate in the fixed-satellite service (FSS), it is desirable that a small earth station, such as a fixed VSAT, a vehicle-mounted earth station or a transportable earth station, with access to an existing satellite system, should be available for transportation to, and installation at, the disaster area. It is also desirable that the system relies on widespread standards so that equipment is readily available and interoperability and reliability are ensured. Mobile-satellite service (MSS) systems are ideally suited to support disaster response and relief efforts. The wide coverage area of MSS systems is particularly helpful as disaster events are unpredictable and can happen at any time or location. Importantly, MSS system operation is typically independent of local communications infrastructure, which may be interrupted by a disaster event, enabling MSS to ensure open lines of communication when they are most needed. Furthermore, most mobile earth stations (MESs) are battery powered, often with solar chargers, and so can operate for some period of time even if the local electricity supply is disabled.

Study Group 4 is working on these issues and has completed work on:

Recommendation ITU-R S.1001-2 “Use of systems in the fixed-satellite service in the event of natural disasters and similar emergencies for warning and relief operations”.

Recommendation ITU-R M.1854-1 “Use of mobile-satellite service in disaster response and relief”

Report ITU-R M.2149-1 “Use and examples of mobile-satellite service systems for relief operation in the event of natural disasters and similar emergencies”

Report ITU-R S.2151 “Use and examples of systems in the fixed-satellite service in the event of natural disasters and similar emergencies for warning and relief operations”

Question ITU-R 290/4 “Broadcasting-satellite means for public warning, disaster mitigation and relief”.

SG 5 The mobile, fixed, amateur and amateur-satellite services have proven to be of huge importance in the fields of disaster prediction, detection, mitigation and relief.

Like broadcasting, mobile service cellular applications may be used in an early warning system, as they enable authorities to establish direct contact with the citizens having a mobile receiver.

The maritime mobile service is familiar with the Global Maritime Distress and Safety System (GMDSS).

Disasters may demolish radiocommunication infrastructures; in such cases, the amateur and amateur-satellite services enable communication links in areas affected by natural disasters to be maintained.

Study Group 5 is working on these issues via Questions ITU-R:

209-3/5 – Contributions of the mobile and amateur services and associated satellite services to the improvement of disaster communications;

248/5 – Technical and operational characteristics for systems in the fixed service used for disaster mitigation and relief.

Under Question 248/5, Study Group 5 has developed Recommendation ITU-R F.1105 (fixed wireless systems for disaster mitigation and relief operations) with an appendix on a Regional Digital Simultaneous Communication System (RDCSS). This RDCSS can be used to collect data or information relating to a disaster by a central system for subsequent transmission (of alerts) to residents. It also provides simultaneous individual or group communications between the central station and residents.

Under Question 209/5, Study Group 5 has revised Report ITU-R M.2085 (“Role of the amateur and amateur-satellite services in support of disaster mitigation and relief”).

There are also Reports ITU-R F.2061 and ITU-R F.2087 which discuss the role of HF radiocommunication systems in disaster relief operations.

SG 6

The Study Group initially focused on the means by which the broadcasting-satellite service (BSS) can assist in warning the public of impending disasters and in disseminating information relating to relief operations, followed by the approval of Question ITU-R 118/6, entitled “Broadcasting means for public warning and disaster relief”. In response, the Study Group has developed Recommendation ITU-R BO.1774/BT.1774 on the use of satellite and terrestrial broadcast infrastructures for public warning, disaster mitigation and relief, the aim of which is to help permit the rapid deployment of equipment and networks currently available in the terrestrial and satellite-broadcasting services. These services can provide means for alerting the public, for informing them of preventive measures and for disseminating information on the coordination of rescue procedures. The Recommendation gives technical guidance on the improved usage of terrestrial and satellite broadcast services in cases of natural disasters.

Study Group 6 continues to work on these issues. Within the study period 2003-2007, SG 6 completed work on revised Question ITU-R 118-1/6, entitled “Broadcasting means for public warning, disaster mitigation and relief” and revised Recommendation ITU-R BO.1774-1/BT.1774-1, the latter containing additional information regarding an emergency warning system (EWS). In the study period 2012-2015, SG 6 will verify the need for revision of Question ITU-R 118/6 and of Recommendation ITU-R BT.1774-1 in cooperation with Study Group 4, which may develop a new Recommendation in this matter with respect to the broadcasting satellite service, that may replace Recommendation ITU-R BO.1774-1.

SG 7

Disaster prediction and detection are major fields of study supported by Study Group 7. Remote sensing systems (both passive and active) operate in frequency bands pre-determined by the laws of physics. These remote sensing systems provide observations of the Earth’s atmosphere and surface that enable the prediction and detection of meteorological, climatic and other environmental conditions that are the basis for major natural disasters.

Study Group 7 endeavours to identify the necessary radio-frequency bands and to provide supporting Recommendations governing operational characteristics and protection requirements of remote sensing systems, and similarly to enable the return of the resulting data to Earth. The acquisition, processing, analysis and distribution of data

from remote sensing satellites is accomplished by various national and international agencies, and the data are made available to interested organizations.

Disaster mitigation is aided by the provision of high-technology satellite communication systems developed by other Study Group participants including technologies such as tracking and data relay satellites.

The Study Group works closely with ITU-D and is currently responding vigorously to ITU-D Question 22/2.