



ITU-APT Foundation of India (IAFI)

PROPOSED MODIFICATIONS TO THE DRAFT PACP ON WTDC RESOLUTION 34

The role of telecommunications/information and communication technology in disaster preparedness, early warning, rescue, mitigation, relief and response

Area of Proposal (Please mark "X" in front of the appropriate item)

- Programmes
- Study Groups and Associated Questions
- TDAG/ITU-D Working Methods
- Declaration
- Action Plan
- Regional Initiatives (Priorities)
- General ICT Development Issues
- Resolutions/Recommendations/Decisions
- Others

Summary:

It is proposed to amend the text of Resolution 34 of WTDC (Rev. Kigali, 2022), the role of telecommunications/information and communication technology in disaster preparedness, early warning, rescue, mitigation, relief and response

Expected Results:

APT Member administrations invite WTDC to examine the proposal and approve the changes to Resolution 34.

References:

WTDC Resolution 34 (Rev. Kigali, 2022)

1. Introduction and Discussion:

Mobile communications are vital in managing disasters by enabling rapid, reliable, and accessible information exchange between affected populations, first responders, and agencies, even when traditional infrastructure is compromised. Mobile networks disseminate alerts and early warnings to potentially affected populations, helping evacuate and prepare communities before a disaster strikes. Real-time mobile connectivity links various emergency services, enabling coordinated response and quick decision-making among medical, fire, law

enforcement, and relief teams. Mobile technologies provide location tracking, multimedia updates (photos, videos), and mission-critical file sharing, giving responders live updates to optimize rescue efforts and ensure public safety. Temporary mobile networks (restore connectivity when permanent infrastructure is down.

Mobile Adhoc Networks and other self-organizing technologies play a critical role in disaster relief and disaster management by enabling rapid, resilient, and infrastructure-independent communication and coordination when conventional systems fail. Mobile Adhoc networks are collections of wireless nodes that create dynamic, infrastructure-less networks, allowing communication even when regular channels are destroyed by disasters. Their robustness, flexibility, and mobility make them suitable for unpredictable, damaged, or remote environments, especially for search and rescue teams, emergency workers, and affected communities. Such networks become operational upon activation and require no fixed infrastructure, letting teams establish communication wherever needed, including mountains, villages, or underground areas. These networks automatically reroute around failed nodes, providing reliability and avoiding single points of failure.

Self-organizing networks include sensor and embedded systems that autonomously monitor, communicate, and coordinate with other nodes. Self-organizing information systems help analyze accumulated data, automate responses, and manage communication networks, even with heterogeneous node types and without central control

By enabling infrastructure-free, resilient, and adaptive communication and Adhoc networks and self-organizing technologies form the backbone of modern disaster management solutions. Their ability to dynamically form networks, integrate sensor and information systems, and rapidly coordinate relief operations provides a transformative advantage in saving lives and minimizing losses during unpredictable emergencies.

2. Proposal

IAFI proposes to add two new recognizing and two new *resolves* covering the use of infrastructure-less mobile ad-hoc communications in responding to disasters and emergencies, emphasizing the role of artificial intelligence solutions and use of GIS, and calling for more capacity building, training and volunteering to prepare and respond to such emergencies and disasters

RESOLUTION 34 (Rev. Kigali, 2022)

The role of telecommunications/information and communication technology in disaster preparedness, early warning, rescue, mitigation, relief and response

The World Telecommunication Development Conference (Kigali, 2022),

recognizing

a) that there is a growing general awareness at the global level of the potentially serious negative consequences of climate change, especially if global emissions are not cut in accordance with relevant agreements;

b) that the number of natural and man-made disasters, as well as the tragic consequences associated with them, are steadily increasing;

c) that telecommunications/information and communication technologies (ICTs) play a crucial role in disaster preparedness, early warning, rescue, mitigation, relief and response, and also constitute a decision tool for rescue services and entities involved as well as for communication with and among citizens;

d) that such disasters can damage not only telecommunication/ICT infrastructures but also electricity supplies that power telecommunication/ICT systems and devices, thereby making services inoperable, such that considerations of redundancy and resilience of both infrastructure and power supply become important when planning for disasters;

e) that frequent tragic events in the world and the experience of the Telecommunication Development Bureau (BDT) and the ITU Member States in this area clearly demonstrate the need for enhanced disaster preparedness, and for plans that incorporate consideration of resilient communications equipment and services, as well as reliable telecommunication infrastructure, in order to ensure public safety, to assist disaster-relief agencies in mitigating risk to human life, to provide the necessary general public information, including in local languages and for the benefit of indigenous peoples, and to meet communication needs in such situations;

f) that the concept of SMART (scientific monitoring and reliable telecommunication) cable includes scientific sensors mounted in the repeaters of submarine cables to measure ocean-bottom temperature, pressure and seismic acceleration,*recalling*

a) Resolution 136 (Rev. Dubai, 2018) of the Plenipotentiary Conference, on the use of telecommunications/ICTs for humanitarian assistance, and for monitoring and management in emergency and disaster situations, including health-related emergencies, for early warning, prevention, mitigation and relief;

b) Resolution 182 (Rev. Busan, 2014) of the Plenipotentiary Conference, on the role of telecommunications/ICTs in regard to climate change and the protection of the environment;

c) Resolution 646 (Rev.WRC-19) of the World Radiocommunication Conference (WRC), on public protection and disaster relief (PPDR);

- d) Resolution 647 (Rev.WRC-19) of WRC, on radiocommunication aspects, including spectrum-management guidelines, for early warning, disaster prediction, detection, mitigation and relief operations relating to emergencies and disasters;
- e) Resolution ITU-R 55-3 (Rev. Sharm el-Sheikh, 2019) of the Radiocommunication Assembly (RA), on ITU Radiocommunication Sector (ITU-R) studies of disaster prediction, detection, mitigation and relief;
- f) Article 5 of the International Telecommunication Regulations, on safety of life and priority of telecommunications;
- g) Article 40 of the ITU Constitution, on priority of telecommunications concerning safety of life;
- h) Article 46 of the Constitution, on distress calls and messages;
- i) that §5.1 of the International Telecommunication Regulations stipulates that safety-of-life telecommunications, such as distress telecommunications, have absolute priority, where technically practicable, and in accordance with the relevant articles of the Constitution and the ITU Convention and taking due account of the relevant Recommendations of the ITU Telecommunication Standardization Sector (ITU-T), in particular Recommendation ITU-T E.161.1, on guidelines to select emergency number for public telecommunication networks;
- j) emergency telecommunication/ICT coordination mechanisms established by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA);
- k) Recommendation ITU-T X.1303 on the common alerting protocol (CAP 1.1),
considering
 - a) that the Intergovernmental Conference on Emergency Telecommunications (Tampere, 1998) (ICET-98) adopted the Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations (Tampere Convention) and that this convention came into force in January 2005;
 - b) that the Common Alerting Protocol (CAP) Workshop held during the third Global Forum on Emergency Telecommunications (Mauritius, 2019) (GET-19) highlighted the benefits of CAP, and shared best practices and lessons learned on how to create an enabling environment for leveraging CAP;
 - c) that the disaster connectivity map launched at GET-19 is a mapping platform to help first responders determine the status of telecommunication network infrastructure, coverage and performance before and after a disaster;
 - d) that the second Tampere Conference on Disaster Communications (Tampere, 2001) (CDC-01) invited ITU to study the use of public mobile networks for early warning and the dissemination of emergency information and the operational aspects of emergency telecommunications such as call prioritization;
 - e) that Resolution 646 (Rev. WRC-19) addresses the broader category of PPDR, as well as the harmonization of frequency bands/ranges for PPDR solutions, and resolves to encourage administrations to satisfy temporary needs for frequencies in emergency and disaster-relief situations, in addition to those normally made available by agreement with the administrations concerned, and to facilitate cross-border circulation of radiocommunication

equipment intended for use in emergency and disaster-relief situations through mutual cooperation and consultation without hindering national legislation;

f) that Resolution 646 (Rev.WRC-19) likewise resolves to encourage administrations to consider Recommendation ITU-R M.2015, and to use agreed frequency bands for PPDR to the maximum extent possible when undertaking their national planning for their PPDR applications, particularly broadband, in order to achieve harmonization;

g) that Resolution 646 (Rev. WRC-19) further encourages administrations to consider also parts of the regionally harmonized frequency ranges for their PPDR applications;

h) that Resolution 647 (Rev.WRC-19) resolves that the Radiocommunication Bureau (BR), through the study groups, study those aspects of radiocommunications/ICTs that are relevant to early warning, disaster prediction, detection, mitigation and relief operations, taking into account Resolution ITU-R 55-3 (Rev. Sharm el-Sheikh, 2019);

i) that Resolution 647 (Rev.WRC-19) instructs the Director of BR to continue assisting Member States with their emergency communication preparedness activities by maintaining a database of information from administrations for use in emergency situations, which includes contact information and optionally includes available frequencies for use in emergency situations, reiterating the importance of having spectrum available in the very early stages of humanitarian assistance intervention for disaster relief;

j) that Resolution 647 (Rev.WRC-19) likewise invites the Director of the Telecommunication Standardization Bureau and the Director of BDT to collaborate closely with the Director of BR to ensure that a consistent and coherent approach is adopted in the development of strategies in response to emergency and disaster situations;

k) the work of the ITU-R and ITU-T study groups in adopting Recommendations that have helped to provide technical information on satellite and terrestrial radiocommunication systems and wired networks and their role in disaster management, including important Recommendations pertaining to the use of satellite networks in times of disasters;

l) the work of the ITU-T study groups in developing and adopting Recommendations for priority/preferential emergency telecommunications and emergency telecommunication services (ETS), including consideration of use of both terrestrial and wireless telecommunication systems during emergencies;

m) that RA updated Resolution ITU-R 55-3 (Rev. Sharm el-Sheikh, 2019), on ITU-R studies of disaster prediction, detection, mitigation and relief;

n) that modern telecommunications/ICTs are basic tools for disaster preparedness, mitigation and relief;

o) that mobile and personal communication systems are beneficial for responding to disasters, and should therefore also be used before a disaster to ensure information can be shared with those who need it most;

p) outcomes and activities of the ITU Global Forum on Emergency Telecommunications;

q) the importance of utilizing both existing and new technologies and solutions (satellite and terrestrial) to satisfy a range of interoperability requirements and for furthering the goals of PPDR, including through innovative SMART submarine cables;

- r) the terrible disasters from which many countries suffer, and the disproportionate impact of disasters and of climate change on developing countries¹;
- s) the particular vulnerability of least developed countries (LDCs), landlocked developing countries (LLDCs) and small island developing states (SIDS) to the impact that disasters can have on their economies and infrastructures, and that these countries lack the capacity to respond to disasters;
- t) the need to take into account the requirements of persons with disabilities and persons with specific needs with respect to disaster warning, response planning and recovery efforts;
- u) that the capability and flexibility of all telecommunication/ICT facilities depend upon appropriate planning for the continuity of each phase of network development and implementation;
- v) the opportunity to significantly facilitate all phases of disaster operations offered by national emergency communication plans that enable the pre-positioning, rapid deployment and effective utilization of telecommunication/ICT equipment;
- w) the potential of including the use of telecommunication/ICT tools in infrastructure development planning to avert the risk of disasters and mitigate their effects;
- x) the need for international and regional cooperation among States, as well as between organizations, on preparedness, early warning, rescue, mitigation, relief and response, including through the establishment of a network of experts in disaster management;
- y) that frontier technologies, as new, innovative and disruptive technologies, including oceanographic sensors on undersea telecommunications cables, have vast potential to help assess, mitigate and adapt to climate change;
- z) the role of the private sector, governments and international and non-governmental organizations in providing telecommunication/ICT equipment and services, expertise and capacity-building assistance to support disaster-relief and recovery activities, particularly through the ITU Framework for International Cooperation in Emergencies (IFCE);
- aa) that a disaster, when it occurs, may extend beyond the borders of a State, and its management may involve the deployment of efforts by more than one country in order to prevent loss of human life and regional economic crisis;
- ab) that coordination between international, regional and national organizations specializing in disaster management and administrations increases the probability of saving human life when rescue operations are conducted, and thereby mitigates the consequences of a disaster, such that collaborative work and networking among disaster-management experts is thus essential;
- ac) that the use of telecommunications/ICTs for sharing of information in the event of a disaster is a powerful decision-making tool for rescue services and operating entities, and for communication with and between citizens;

¹ These include the least developed countries, small island developing states, landlocked developing countries and countries with economies in transition.

ad) the role of the ITU/World Meteorological Organization (WMO)/United Nations Educational, Scientific and Cultural Organization Intergovernmental Oceanographic Commission (IOC-UNESCO) Joint Task Force on SMART cable systems (JTF SMART Cable Systems) in developing a strategy and roadmap that could lead to enabling the availability of submarine repeaters equipped with scientific sensors for ocean and climate monitoring and disaster risk reduction (tsunamis), so that a global network could be established providing real-time data for ocean and climate monitoring and disaster mitigation;

ae) the need to investigate the use of submarine telecommunication cables for ocean and climate monitoring and disaster warning;

af) that oceanographic sensors on undersea telecommunication cables constitute a promising solution for obtaining the extensive, longitudinal, real-time data that are critical for understanding and managing urgent environmental issues such as climate change and tsunami hazard mitigation;

ag) the United Nations Secretary-General's Roadmap for digital cooperation, which highlights the importance of accelerating discussions on connectivity as part of emergency preparedness, response and aid,

noting

a) the continued pursuit by ITU and other relevant organizations of joint activities being undertaken at the international, regional and national levels to establish internationally agreed means to operate systems for PPDR on a harmonized and coordinated basis, and the successful role of BDT through its programme activities in this area;

b) the successful role of BDT, in partnership with the ITU membership, and in coordination with the Emergency Telecommunications Cluster (ETC), with respect to rapid intervention in enabling and facilitating telecommunications/ICTs for countries which have suffered disasters;

c) that all phases of disaster operations can be greatly facilitated by national emergency telecommunication plans that enable the pre-positioning, rapid deployment and effective utilization of ICT equipment;

d) that including the use of telecommunication/ICT tools in infrastructure development planning can avert the risk of disasters and mitigate their effects,

noting further

a) the latest version of the ITU Telecommunication Development Sector (ITU-D) Handbook on emergency telecommunications (2014), the Compendium of the ITU's work on emergency telecommunications (2007), the ITU Handbook on best practice on emergency telecommunications (2008), and the adoption of Recommendation ITU-D 13 (Rev. 2005), on effective utilization of the amateur radio services in disaster-mitigation and relief operations, as well as the reports on disruptive technologies and their use in disaster risk reduction and management and to protect the environment and tackle climate change;

b) that further guidance for ITU members on disaster-communication management is provided by the successful conclusions and outputs of ITU-D Study Group 2, notably under Question 5/2, including the Guidelines for conducting national-level ICT drills and exercises, the Handbook on outside plant for areas frequently exposed to natural disasters, and an online toolkit which will be updated on a regular basis;

- c) the results of work done by ITU-R Study Groups 4, 5, 6 and 7 on the use of different radiocommunication systems in emergency situations, and in particular Recommendations ITU-R S.1001, ITU-R M.1637, ITU-R BS.2107 and ITU-R RS-1859;
- d) that the online toolkit maintained by ITU-D Question 5/2 and BDT serves as a publicly available resource with references and links to all relevant ITU resolutions, Recommendations, reports and handbooks;
- e) that the ITU regional offices can be particularly helpful prior to and following emergencies, owing to their proximity to affected countries,

resolves to instruct the Director of the Telecommunication Development Bureau

- 1 to continue to ensure that priority consideration is given to emergency communications as an element of telecommunication/ICT development, including continued close coordination and collaboration with ITU-R and ITU-T and relevant international organizations, and that coordination with BR must take into consideration the outcomes of studies, especially those which provide for harmonized models for PPDR networks, as well as those aspects of telecommunications/ICTs that are relevant to early warning, disaster prediction, detection, mitigation and relief operations, as resolved by Resolution ITU-R 55-3 (Rev. Sharm el-Sheikh, 2019) and Resolutions 646 and 647 (Rev. WRC-19);
- 2 to organize a forum on emergency communications, periodically, and within budgetary resources, to provide administrations with best practices in terms of mechanisms, procedures and coordination for the use of telecommunications/ICTs in emergency situations;
- 3 to establish contact points at the level of BDT and the ITU regional offices, enabling affected Member States to request capacity building and direct assistance in terms of emergency communications, whereby the contact numbers of these points are to be circulated to ITU members and contact points are to be responsible for coordinating ITU assistance to disaster-struck countries and with relevant United Nations and international organizations that coordinate and/or provide emergency communications;
- 4 to facilitate and encourage the use by members of telecommunications/ICTs that are appropriate and commonly available for early warning, disaster response, mitigation and relief operations, including those provided by amateur radio services, satellite and terrestrial network services/facilities as well as undersea sensing technologies;
- 5 to promote, in close collaboration with ITU-R and ITU-T, the implementation of early-warning systems, and emergency information broadcasting, for example audio and TV broadcasting, mobile messages, etc., and the use of the CAP, taking into account persons with disabilities and persons with specific needs;
- 6 to support administrations in their work towards the implementation of this resolution as well as ratification and implementation of the Tampere Convention;
- 7 to report to the next world telecommunication development conference on the status of ratification and implementation of the Tampere Convention;
- 8 to support administrations and regulators in the areas identified in this resolution by taking appropriate measures during the implementation of the ITU-D action plan;
- 9 to continue to support administrations in preparing their national disaster response and relief plans, including consideration of the necessary enabling national

regulatory and policy environments to support the development and effective use of telecommunications/ICTs for disaster mitigation, relief and response;

10 to strengthen the role of the ITU regional offices, in coordination with the above-mentioned points of contact, in assisting Member States and Sector Members in developing emergency preparedness plans, national emergency telecommunication plans and early-warning systems, in organizing training workshops on emergency relief and response, in providing equipment training, in fostering collaboration with all parties involved and in helping deploy communication equipment during emergencies;

11 as part of the ITU IFCE, to continue providing assistance to administrations, in coordination with the above-mentioned points of contact, within available resources, and in collaboration with the ITU membership and other partners, through the temporary supply of emergency communication/ICT equipment and services, especially during the initial phases of disasters;

12 to assist administrations in the use of telecommunication networks, including mobile networks, for the timely dissemination of alert messages and warnings in situations of risk or emergency, for those in potentially affected areas;

13 to assist Member States in enhancing and strengthening the use of all available services, including satellite, amateur radio and broadcasting services, in emergency situations, when conventional sources of electricity supply or telecommunications are often interrupted;

14 to expedite the study of aspects of telecommunications/ICTs related to flexibility and continuity in the event of disasters, as part of national disaster plans, including promoting the use of broadband networks for emergency communications through the work of the ITU-D study groups, in collaboration with expert organizations, taking account of the activities of the other ITU Sectors and relevant United Nations and other international organizations;

15 for 2022-2025, to work collaboratively with the ITU-D study Questions, as well as with the other two Sectors, ITU regional offices, the ITU membership and other relevant expert organizations, in implementing this resolution, and to report regularly on programme activities and relevant regional initiatives to the study groups;

16 to include, in the ITU Academy's training plans, programmes on the use of telecommunications/ICTs for disaster management and mitigation;

17 to promote the implementation of decisions of the ITU Global Forum on Emergency Telecommunications, within existing budgetary resources;

18 to strengthen the ability of Member States to make digital infrastructure more resilient to disasters, including those caused by climate change, and to promote more effective communication and response efforts;

19 to continue to give high priority to studies/investigations related to frontier technologies and disruptive technologies, including oceanographic sensors on undersea telecommunication cables, in order to help Member States assess, mitigate and adapt to climate change, as well as their use in disaster risk reduction and management;

20 to support the ITU study groups in examining the benefits of undersea sensing technologies and in studying the technical, financial, legal and regulatory issues, including the standardization and specification of sensors and cables undertaken in ITU-T that could foster their adoption, in particular in relation to near-to-far field tsunami and earthquake early warning and seismic monitoring;

21 to continue collaboration with relevant stakeholders in order to increase ITU members' awareness and knowledge of undersea sensing technologies,

requests the Secretary-General

to continue to work closely with the office of the United Nations Emergency Relief Coordinator, the ETC and other relevant external organizations with a view to further increasing the Union's involvement in, and support of, emergency communications and early-warning systems, and to report on outcomes of related international conferences, relief activities and meetings so that the Plenipotentiary Conference (Bucharest, 2022) may take any action that it deems necessary,

invites Member States

1 to continue to deploy all necessary efforts to integrate disaster risk reduction, disaster mitigation, disaster relief and resilience into telecommunication/ICT development plans, as well as to incorporate ICTs into national regulations, national or regional disaster-management plans and frameworks, so that they provide the necessary telecommunication/ICT services, considering the specific needs of persons with disabilities, children, older persons, displaced persons and the illiterate, and the importance of collaborating with all stakeholders in all disaster phases;

2 to develop preparedness and disaster recovery and to assist businesses in creating plans that provide a resilient environment for essential government information systems;

3 to consider the appropriate and effective mechanisms to facilitate disaster communications preparedness and response efforts;

4 to facilitate, to the extent practicable, cross-border circulation of radiocommunication equipment intended for use in emergency situations, rescue and relief operations and disaster-relief situations, through mutual cooperation and consultation, without prejudice to national legislation, in accordance with Resolution 646 (Rev.WRC-19);

5 to encourage authorized operating companies to inform all users, including roaming users, in good time and free of charge, of the number to be used for calls to the emergency services;

6 to consider introducing, in addition to their existing national emergency numbers, a harmonized national/regional number for access to emergency services, taking into account the relevant ITU-T Recommendations;

7 to foster the training and updating of knowledge of the actors involved in the implementation, maintenance and updating of the telecommunication/ICT systems intended to be used in situations of emergency;

8 to coordinate on a regional basis, with the help of ITU bodies and regional and international specialized organizations, in order to draw up regional response plans in the event of a disaster;

9 to develop partnerships, in order to reduce barriers to access to relevant data obtained through the use of telecommunications/ICTs required for the purpose of assisting rescue operations,

invites also

- 1 Member States and Sector Members to work together on the study of emerging technologies, standards and related technical issues for improving radio broadcasting systems for sending and receiving information concerning public warning, rescue, disaster mitigation and relief;
- 2 Sector Members to make the necessary efforts to enable the operation of telecommunication services in emergency or disaster situations, giving priority, in all cases, to telecommunications/ICTs concerning safety of life in the affected areas, and providing contingency plans for such purpose;
- 3 BDT to consider how space-based technologies, submarine telecommunication cable networks and associated sensor technologies can be used to help ITU Member States collect and disseminate data on the effects of climate change and support early warning, having regard to the link between climate change and natural disasters;
- 4 ITU-D to take account of the particular telecommunication requirements of LDCs, LLDCs, SIDS and low-lying coastal countries in terms of disaster preparedness, rescue, relief and recovery;
- 5 ITU-D, within its studies on the role of telecommunications/ICTs in disaster preparedness, early warning, rescue, mitigation, relief and response, to take account of the work of other ITU Sectors and dedicated working groups, considering the increased use of mobile and portable communication devices which can be used by first responders to transmit and receive critical information;
- 6 the United Nations Emergency Relief Coordinator, the Working Group on Emergency Telecommunications and other relevant external organizations or bodies to ensure follow-up and continue collaborating with ITU, specifically BDT, in working towards implementing this resolution and the Tampere Convention, and supporting administrations and international and regional telecommunication/ICT organizations in the implementation of that Convention.