

ICT Capacity Assessment (ICA) [Country]

Assessing ICT capacity for disaster
management

Author: Name of staff, title

Assessment participants: Name (s), title

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Guidance – delete before distribution

This template provides the framework for the gathering of information relevant to the conduct of the ICT Capacity Assessment (ICA). The country should ensure that a government or national response entity is empowered and made responsible for the conduct of the ICA, noting that the ETC can provide technical assistance in conducting the ICA.

The recommended approach for conducting the ICA would be as follows:

- Government through relevant Ministry/Agency agrees to the need for an ICA;
- Assignment of responsibility/authority to government Ministry/Department/Agency to lead the process;
- Allocation of resources for conduct of assessment;
- Delegation of tasks to specific government personnel or consultant;
- Conduct of survey/interviews for collection of data based on template;
- Preparation of draft report on findings;
- Verification of report;
- Analysis of findings and preparation of draft ICA;
- Review or consultation on draft ICA;
- Finalization of ICA

Note: The finalizing of the ICA Report must not be the end of the process! The report must include a series of initiatives designed to address identified gaps.

Contents

The recommended structure of the ICA is to first provide the context for understanding the country's situation and then to capture relevant information in respect of the personnel, processes, and technologies. This is shown in the contents table above and the description below provides a short explanation on what could be included for each section and sub section.

This template goes beyond simply providing a framework for the capture of information but also includes a proposed methodology for identifying gaps, prioritizing possible initiatives, and formulating a way forward

The general format is to divide the Report into six sections not including the appendices and abbreviations. The recommended sections are:

- General information;
- ICT Capacities;
- Relevant non-ICT Resources;
- Assessment;
- Challenges;
- Roadmap on way forward.

Each section is outlined in detail below and countries will decide on the level of detail they wish to provide.

Executive Summary

The need for fail-safe communications, provision of adequate early warning systems, coordination of available resources, and ensuring the availability of well trained personnel should be addressed in the ICA and reflected in the Executive Summary. Initiatives proposed to address any identified gaps should be reflected in this summary.

Suggested text:

The ICT Capacity Assessment (ICA) for disaster management in [country name] includes an evaluation of policies, strategies and capacities, providing an overview of the ICT landscape, and insights into how communications technologies are leveraged in response to any potential disaster as well as mitigating the impact of disasters.

The evaluation is designed to assess ICT systems in [country name] to prepare for the reduction of disaster risks, before a disaster strikes, country capacity for effective and efficient communications during an emergency event, and the status and operability of systems for assisting in the coordination of any response effort.

The ICA considers the processes, infrastructure and institutions, and identifies the major challenges faced by [country name] in respect of its ICT capacities for disaster management and risk reduction.

The roadmap on the way forward will be finalized after consideration of the priorities as identified by [country name] authorities.

The assessment of the ICT capacities in [country name] provides the basis for drafting proposals for the way forward. The proposal should be to identify a set of Minimum Preparedness Actions (MPA) to be implemented in order to establish a level of emergency preparedness within the country.

1. Country Overview

This section provides a general overview of the country and has three subsections: i) country context, ii) relevant Sustainable Development Goals and, iii) ICT sector overview.

1.1 Country Context

This sub-section should provide:

- A brief description of the country;
- Population, population distribution, demographics, and geographical location;
- Gross national income;
- Country's vulnerability to disasters;
- Reference to any plans for disaster management;
- General role of ICT in country's development and disaster management.

1.2 Relevant Sustainable Development Goals

The 2030 Agenda for Sustainable Development¹, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. There are several of the sustainable development goals that are especially relevant to disaster preparedness and emergency communications.

¹ <https://una-gp.org/the-sustainable-development-goals-2015-2030/>

This sub-section could include those relevant and considered by the country as priority for disaster risk reduction and management. It is noted that the establishment of an effective communication plan for emergencies would be critical for the achievement of the identified goals.

1.3 ICT Sector Overview

The ICT sector is to provide the general overview of the condition of the infrastructure and quality of ICT services on the country.

The description of the sector should provide an understanding of the ownership structure of the various ICT providers with focus on the main infrastructure networks. The description could include coverage, international and national access capacity, affordability, and quality of service issues.

Possible community service obligation (CSO) arrangement, universal access financing, would be of interest from a disaster management perspective.

The mode of regulation of the sector should be explained.

2. ICT Capacity

The purpose of this section is to document the ICT resources available in the country. This section describes the ICT capacity in three key areas: i) Processes and Framework, ii) Infrastructure, and iii) Institution.

It is recommended to further sub-divide the sections as described below – this should aid in the overall understanding of the related parts of the ICA.

2.1 Processes and Framework

The section on processes and framework of ICT for disaster management should include the areas described below.

2.1.1 Legal Framework

The legal framework for emergency communications in the country would describe the governing acts and regulations for the sector. Reference to the National Disaster Management Act (with relevant revisions), Acts relating to disaster management, the ICT related Acts and Regulation should be cited showing how they relate to disaster management.

A brief description of what actions are required under the referenced Acts and Regulations including their scope would help in the assessment of the country's ICT capacity for disaster management.

2.1.2 Emergency Planning

This sub-section could reference all national disaster management plans and if appropriate, indicate the extent to which consideration has been given to the incorporation of the recommendations from the Tampere Convention, the introduction of redundancy, and equipment repositioning.

If available, the sub-section should look at special emergency plans for sectors like aviation (Aerodrome Emergency Plans), search and rescue plans (SARP), and/or plans for first responders.

2.1.3 Maintenance Procedures

Any ICT capacity assessment should include the extent of maintenance and repair programs. This sub-section would detail if there is regularly scheduled maintenance, test calling, and procedures for repair of faulty equipment.

2.1.4 Disaster Needs Assessment

A description of the country system on how damage assessment is conducted. Templates of forms used should be provided in an Annex.

2.1.5 Special Needs Assessment

A description of the measures taken to ensure the needs of persons with a disability are considered in any disaster management plan and the extent to which electronic databases for persons with disabilities have been compiled. Mention to be made on whether the ICT providers have enabled any assistive technologies in their network.

2.1.6 Engagement of ICT Operators

The ICA should indicate if plans exist for how and when the various entities in country would be engaged with the national disaster management authorities in the event that a disaster is declared.

2.1.7 Spectrum Management

The spectrum management practices should be described, the national frequency allocation plan referenced, and information provided on any specific bands or frequencies that may have been allocated/assigned for use in an emergency.

2.1.8 Training

A description of training provided that is specific to the use, operation, maintenance, and/or repair of emergency equipment/systems or networks should be detailed. The explanation should also include if the training is repeated and, if so, the frequency.

Indicate if there are simulation exercises scheduled.

2.2 Infrastructure

The report on infrastructure should describe the ICT networks and included the coverage, capacity, and quality of the network. The sub-sections below are recommended for inclusion and there are brief notes to guide completion of the sections.

2.2.1 Fixed and Mobile Cellular

The description of the network should cover both the fixed and mobile networks and include information on the capacity of the network, number of subscribers, level of national coverage, quality of service, and international connectivity.

The level of competition in provision of services and the regulation of the sector is important.

2.2.2 Radio Communications Systems

In the conduct of the ICT capacity assessment, there is a need to complete an inventory of the radio communications systems and equipment.

The inventory should capture not only the systems and equipment, but also include their use, maintenance, and state of repair. The list of systems and equipment should include:

1. Satellite phones
2. BGAN Systems
3. Chatty Beetles
4. VHF radio
5. HF Radio Networks
6. Amateur Radio
7. Advance warning networks
8. FM and AM broadcast radio
9. Television

10. Newspaper and
11. Social Media

2.2.3 Power Supply

The country electrical power supply capacity is critical for the operation of most ICT networks and systems.

The sub-section should indicate if there is competition in the energy sector, what is the combined power capacity, the dependence on non-renewable energy sources, and the stability of the grid.

The availability and levels of the fuel resources must be included to allow for evaluation of capacity to perform in the event of a disaster and how long the reserves would reliably be expected to last. The communications capacity of the energy provider(s) should also be detailed.

It is highly recommended that the inventory of backup power supplies/generators capacities be compiled and the back-up power capacity of the critical institutions for disaster management be detailed.

Any agreement on protocols and prioritization for power restoration in case of power failures would be important to record.

2.2.4 Early Warning Systems

This section will include details of any Early Warning Systems set up in country. E.g. In June of 2017, Tuvalu deployed an Early Warning System (EWS) under the Government of Tuvalu's National Adaptation Programme of Action (NAPA 2) project with the support of UNDP. The EWS serves as a communications backup in the disaster-prone region. For more information read the following articles from [UNISDR](#) and [WMO](#).

The ["Linking the Islands" documentary video](#) (24 minutes) provides further information on how the EWS was deployed across the islands of Tuvalu.

2.2.5 Use of Unmanned Aerial Vehicles

Unmanned Aerial Vehicles (UAV) or Unmanned Aerial Systems (UAS)—often referred to as drones—can improve emergency response and recovery operations. It would be important to record if they are used in the country and if there are rules governing their operation.

In the event that there are rules on ownership and use of drones in country, it is important to highlight this in the report to ensure that they are not used in e.g. restricted air spaces. It would also help if policy is established to allow for them to be commandeered for disaster relief support.

2.3 Institutions

The ICA should include the various institutions/stakeholders involved in disaster management and in possession of ICT networks and services. These institutions could include:

1. National Disaster Management Offices;
2. Red Cross;
3. First responders;
4. Telecommunications providers;
5. Schools;
6. Health institutions;
7. Private sector;
8. NGOs;
9. Regional/international organizations;
10. Retail equipment providers and;
11. Maintenance and repair outlets.

The review of the capacity of the various institutions must relate to their roles as defined in the governing legal framework, the specific relevant rules, and the equipment under their control.

The review of the institutions involved in disaster management will focus on their ICT capabilities and include their relevant processes, equipment, and networks.

3. Relevant non-ICT Resources

The ICA should capture details on non-ICT resources that are critical for the effective and efficient operation of ICT services. Although each country would decide what is relevant, suggested non-ICT resources include:

- **Transport** – vehicles used for transporting equipment or personnel for disasters including vessels, aircraft, small boats, or motor vehicles;
- **Shelters** – designated evacuation centres noting their communications capacity;
- **Clinics** – noting their communications capacity;
- **Earth-moving equipment** – with note on their availability to be used to facilitate operations of communication networks.

4. Assessment

The preceding section on ICT capacity observes and records the relevant ICT resources in the country. This section will now carry out the assessment of the identified resources.

4.1 General

It is suggested that the general assessment of the ICT capacity for disaster management and risk reduction in country should look to determine what are the structural and systemic failures that may exist. The review should identify whether there are single points of failure that could lead to a total communications blackout. Examples of this would be infrastructure destruction or loss of power without back-up power.

This sub-section should also comment on how the various processes work and whether there is awareness of the disaster management plans and if the various actors are aware of their assigned roles.

The general assessment of the ICT capacity in country should also evaluate how effectively and efficiently the disaster management functions are being carried out. The negative and positive issues should be highlighted.

The general assessment could address issues including:

- What is the existing human resource pool to equip and operationalize all the national systems and processes, including those specific to disaster risk reduction and management?
- How effective is the legal framework for disaster management and risk reduction?
- Is there a strategic National Emergency Telecommunication Plan (NETP) to facilitate the achievement of the stated Sustainable Development Goals (SDGs) relevant to emergency communications?
- Are there operational plans that derive from the broad strategy?
- Have resources been allocated in a systemic and integrated manner, rather than on the perceived need of individual organizations?
- Is there data on disasters to assist in management and risk reduction?
- Are there processes in place and functioning that would allow for effective utilization of ICT resources?

- What is the total connectivity of the country and how stable are the communication networks and systems?

4.2 Legal Framework

In assessing the legal framework, the following questions should be answered:

- Is the current framework up to date and adequate for effective and efficient disaster management?
- Is there an NETP?
- Is there a functioning Working Group for emergency telecommunications?
- Is there an easily accessible repository for information on resources, their availability and the processes governing importation of equipment for emergency purposes?
- Are the processes to be followed for exemptions, customs waivers, and governing technical requirements clearly laid out?
- Does the existing legal framework address the following issues?
 - Do powers of enforcement to address implementation of disaster management activities exist;
 - Consideration exceptions for emergency operations of radio communications apparatus;
 - Consideration for immediate suspension of a radio frequency spectrum licence to the extent required in the case of any emergency involving harmful interference in safety, life or property;
 - Provide legal basis for co-opting resources in times of disaster and for specific powers being available to the Minister to ensure efficient use of ICT infrastructure;
 - Allowing for the development of regulations specific to disaster management.

4.3 Processes

The evaluation of the existing processes should look at the following:

- Do existing processes allow for coordination of all the key players?
- Do processes follow from an NETP and if so, are they effective?
- Is there a plan on how and when the various entities in the country would be engaged in the process of emergency communications in the event of a disaster being declared?
- Are the issues of redundancy, equipment repositioning, and integration of the plans of related institutions properly covered in the existing processes?
- Are the roles and responsibilities of key players clear?
- Has special consideration been given for dealing with persons with a disability?
- Has a disability database been compiled to indicate the location of individuals in the event of a disaster?
- Have the telecommunications providers enabled any assistive technologies in the network?
- Are the first responders well trained?
- Do the spectrum management practices address the disaster management needs with e.g. a publicly available national frequency allocation plan and an up-to-date Frequency Register?
- Is there an emergency telecommunications cluster with processes for effective coordination of emergency telecommunications?
- Is there an incident response system?
- Is there a Search and Rescue Plan (SARP) or International Civil Aviation Organization (ICAO) requirement that involves other emergency services, i.e. Hospital, Fire, Ambulance, Police, and the Red Cross Society?

4.4 Infrastructure

The evaluation of the ICT infrastructure for emergency communications in country needs to determine if the resources are being used in an efficient and effective manner.

The questions to be answered are:

- In the event of an emergency, do the networks and systems operate in a coordinated manner with processes that provide for the use of these networks in a coherent manner?
- What is the physical state of the national ICT infrastructure and what is the geographical coverage for the various services and quality of service?
- What is the general level of maintenance of the ICT networks and equipment?
- Are the operations of the HF networks, if any exist, coordinated?
- What is the status of the electrical power grid and are there adequate back-up power reserves?

A table showing the Country's Emergency ICT Infrastructure would be helpful, and a suggested format is shown below.

Example of country emergency ICT infrastructure

RESPONSIBLE AGENCY/PROJECT	INFRASTRUCTURE/EQUIPMENT	DESCRIPTION
Telecommunications Provider	Cellular radio	The 2G/3G/4G network nationwide
		Fixed voice services – XX subscribers
	Wi-Fi hotspots with repeaters	
	Fixed broadband (ADSL & VDSL) - XX subscribers, on copper network	
	HF radio network	Limited high-frequency radio voice services for the outer islands
SATELLITE PHONES (XX)		
NDMO	XX phones	Distributed nationwide
Country X Red Cross	XX phones	Distributed nationwide
UN-Joint Project Office	XX phones	Only in capital city
ADB/WB Office	XX phones	Only in capital city
VHF RADIOS		
Police	XX VHF hand-held Radios	Police use sometimes
Red Cross	XX VHF handhelds	Part of a portable kit
Marine/Ports, Police and Fire	Maritime mobile radios- number unknown	Known that agencies use VHF Channel 16 VHF (156.8 MHz) for establishing communications.
HF RADIO NETWORKS		
Agency XX	HF radio network on all islands	Independent HF networks that cover all the islands
Agency YY	HF radio Network on all islands	
SPECTRUM MONITORING		
Ministry/Regulator	Spectrum monitoring station with VHF and HF equipment	Mobile monitoring unit
EARLY WARNING SYSTEM		
AM/FM RADIO BROADCAST		
Broadcast Media	FM Network	

	AM/FM radio to each household on the outer islands	
TELEVISION		
Country XX TV		
SOCIAL MEDIA		
	Internet	XX % of population use
	Facebook	XX % of population usage

4.5 Institutions

The ICT capabilities of the country institutions are to be assessed to determine their robustness. The questions to be addressed are:

- Do all the institutions that make up the national disaster management committee have ICT networks or equipment?
- Is the national Emergency Operations Centre (EOC) itself well-equipped with communications networks and equipment?
- Are the roles and responsibilities related to emergency communications and the inter-relationships for the committee members clear?
- Are critical members such as the meteorology service and the first responders well equipped?

5. Challenges

5.1 General

Typically, the key challenge for countries in emergency communications is how best to establish Minimum Preparedness Actions (MPAs). The MPAs are activities that must be implemented to establish a minimum level of emergency preparedness within the country. The focus should be on coordination, information management, training, and capacity enhancement.

The objective for emergency communications in the event of an emergency is to ensure the delivery of effective relief and protection to affected persons by strengthening leadership, streamlining coordination, and enhancing accountability. The bright spot is that there are always multiple options for emergency telecommunications, despite any structural and information gaps. The lack of cohesion between the various plans of key stakeholders further hinders the achievement of the objectives.

The challenges to evaluate are: i) Available human resources, ii) Coordination of the use of resources, iii) Awareness of roles, responsibilities, and functions, and iv) Capacity enhancement.

5.2 Human Resources

A key issue facing countries in disaster management and risk reduction is generally limited human resources which impacts on all aspects of its ICT capabilities.

There is a systemic management problem due to the extremely limited human resources base. One expression of this problem is often seen with limited numbers of people forced to carry out multiple key functions.

5.3 Coordination

This section will look at how the available resources can be integrated into an Incident Command System (ICS) in the country. How assets are used and how they are integrated as a 'people, processes and technology' methodology, is a major challenge. An ICS should be designed to enable effective and efficient domestic incident management by integrating its facilities, equipment, personnel, procedures, and communications operating within a common organizational structure. The

challenge is to have a coordinated system with the major functional areas of (i) command, (ii) operations, (iii) planning & logistics, (iv) intelligence & investigations, and (v) finance and administration.

The key challenges for coordination are:

- Coordinating all aspects of emergency communications;
- Establishing a detailed registry of the ICT resources available for emergency communications and integrating it into a cohesive plan;
- Developing spectrum management capacity to facilitate the work of the emergency communications Working Group;
- How to ensure that systems are interoperable.

5.4 Awareness

The awareness challenge involves how to ensure the relevant officials are aware of their respective roles, responsibilities, and functions. The public also needs to be aware of the available sources of reliable information in preparation for an emergency.

5.5 Capacity Enhancement

Capacity enhancement is generally a critical challenge for most countries. There are three aspects to be enhanced/improved. These are: i) abilities of key personnel, ii) the legal framework and the ii) the infrastructure.

5.5.1 Key Personnel

The challenge in addressing enhancement of the abilities of the key personnel is usually a limited pool of persons. It is important to ensure that all personnel involved in emergency communications are well equipped for their task and able to achieve their objectives effectively and efficiently – for this, their skills and knowledge should be improved.

Key challenges in training are:

- Ensuring emphasis on deliberately arranged preparedness activities, as opposed to training or drills being tied to specific funding;
- Conduct of simulation exercises that involve all key agencies and which are designed to test established procedures based on national plans and conducted involving mobile incident command exercises;
- Ensuring that training is hands-on for the installation and maintenance of systems and include persons from all over the country.

5.5.2 Legal Framework

The challenge of legal frameworks is to ensure they properly address newly emerging emergencies. Immediate challenges are: i) how to develop an appropriate emergency telecommunications plan, ii) establishing a Working Group for emergency telecommunications and/or iii) setting up an emergency telecommunications cluster.

A long-term challenge is the work involved in revising the Act and associated regulations, rules and guidelines. Developing an Act that would provide for powers of enforcement to address implementation of disaster management activities and consideration for exceptions for emergency operation of radio communications apparatus. Spectrum management regulations may require updating, and it may be a challenge to ensure enforcement with the requisite legal framework and implementation/enforcement agencies.

5.5.3 Infrastructure

The major challenge to enhance the infrastructure framework is be to implement effective infrastructure sharing and develop protocols for coordinating use for emergencies.

The long-term challenges are upgrading the physical infrastructure and improving radio communications coverage. The immediate challenge is how to ensure the available ICT resources are utilized in an effective and efficient manner.

There is the challenge of ensuring that the networks/systems and equipment are maintained and repaired where necessary.

One of the critical challenges that should be addressed almost immediately is the need for back-up electrical power to critical ICT infrastructure.

6. Roadmap on Way Forward

6.1 Roadmap Process

The development of the roadmap for enhancing the ICT capacities for emergencies in country should identify a set of Minimum Preparedness Actions (MPA). These MPAs would be the set of activities the country must implement in order to establish a minimum level of emergency preparedness within the country. The MPAs are not risk or scenario-specific and usually do not require significant additional resources to accomplish.

The steps to be followed in developing the roadmap are:

1. Prepare a summary of challenges faced to provide context for the proposed strategic goals in the roadmap and the setting objectives;
2. Establish the objectives for the plan which are needed to achieve to address identified challenges;
3. Assess the existing capabilities (people, processes, and physical aspects) and link them to the objectives;
4. Determine the best course of action by assessing the most important capability gaps and the priorities;
5. Propose initiatives as solutions and group them in order of priority for implementation.

6.2 Summary of Challenges

The challenges are grouped in five main areas; i) Preparedness framework; ii) Coordination arrangements; iii) Training and capacity development; iv) Partnerships; and v) Infrastructure.

6.2.1 Preparedness Framework

Preparedness is hampered by relatively weak legal frameworks, lack of planning, and absence of an integrated framework for disaster management and risk reduction.

The main challenges for preparedness are outdated legal frameworks and the absence of a national plan for the use of ICT for communication in a disaster. There is a general lack of awareness of roles, function, and responsibility for disaster management and risk reduction. Meteorology is not properly equipped to effectively issue local warnings with appropriate lead times.

6.2.2 Coordinating Arrangements

The main challenges for coordination are establishing a Working Group that would address the issue of emergency communications and coordination of related activities.

A key challenge is how to develop a common understanding of roles and responsibilities, response procedures, and the incident command system.

6.2.2 Training and Capacity Development

The priority challenges are the provision of training that targets the right persons and ensures there is wide national representation. Training should be provided on network and equipment operation, maintenance, and repair.

6.2.2 Partnerships

The challenge in establishing partnerships is ensuring that agreed objectives are defined and relate to the mission of all parties.

6.2.2 Infrastructure

The key infrastructural challenges are the elimination of single points of failure in the system, ensuring that all critical infrastructure systems have back-up power, and ensuring the networks/systems and equipment are maintained and repaired when necessary. Additional challenges are the task of improving the regulatory framework and ensuring the systems are interoperable.

There are also challenges that should be addressed as part of a long-term plan. These involve the upgrading of physical infrastructure and improving radio communications coverage. The immediate challenge is how to ensure the available ICT resources are utilized in an effective and efficient manner.

6.3 Objectives

The objectives for disaster management and risk reduction in country would be to: i) Reduce or avoid human, physical, and economic losses suffered by individuals, by the society, and by the country at large, ii) Reduce personal suffering, and iii) Speed recovery.

The objectives in developing a roadmap for country disaster communications are:

- Fail-safe communications in the preparedness phase to impart knowledge and information (mass education and public awareness);
- Providing warning of impending threat of disaster;
- Coordination of the use of available resources;
- Well trained personnel for operation, maintenance, and repair of communications equipment;
- Well forged partnerships for disaster communications systems;
- Facilitating disaster management in general.

6.4 Priorities

There is little that a country can do about its geography, population, and the existence of multiple natural hazards. The recommended approach for disaster mitigation is to focus on preparation. The ICT networks and equipment have to be utilized in a coordinated manner to maximize efficiency.

There is need for a phased approach to remedy the various shortcomings and the acknowledgment that the solution is not necessarily the provision of additional physical resources. The design of new systems and amendments to the governing legislation will have little or no effect if the limited human resources factor is not considered in planning. Further, the existing structural and systemic failures need to be addressed before placing new equipment in the old environment.

Based on the assessment of existing ICT capacities, the next step is to prepare a list of priority activities. The initiatives to be developed will relate to the challenges identified in the assessment.

6.5 Initiatives

The roadmap would be designed based on the established priorities, where each initiative will address a specific challenge and meet the stated objective. The Roadmap Framework is provided below in Table #4 showing the links between the suggested initiatives, the identified challenges, and

established objectives. This is generic and the challenges should be substituted with those of the particular country.

Although a number of suggestions to be considered are provided below, it is emphasized that any initiative should relate directly to the challenges.

Suggested initiatives are:

- Establishing a Working Group for emergency communications or an Emergency Telecommunications Cluster;
- Developing Standard Operating Protocols (SOPs) for emergency communications;
- Develop a plan with an electricity supply company for the provision of back-up power to identified critical ICT infrastructure (this is in the context of ICT capacities, but back-up power should be provided for all critical infrastructure);
- Institute a general maintenance and repair of ICT systems for disaster management;
- Disseminate and update the existing persons with a disability database;
- Work with telecommunications providers to enable assistive technologies in the network;
- Develop/publish the national Frequency Allocation Table (FAT) with an updated Frequency Register;
- Create a register of all ICT communications networks and equipment that could be used for disaster management and risk prevention;
- Document the procedures, frequencies used, and physical location of transmission sites of the HF networks in the country.

In the medium to long term, activities for consideration would be:

- Develop a roadmap for the way forward;
- Revise the legal framework;
- Develop a National Emergency Telecommunication Plan (NETP);
- Develop emergency communications-specific regulations, rules, and guidelines;
- Review the operations of existing networks and make recommendations on interoperability and procedures to ensure maximum coverage;
- Provide acknowledgement of the importance of traditional knowledge for disaster management and create a process for capturing and disseminating the knowledge resident in different families;
- Provide awareness training on disaster management and risk reduction for relevant personnel, clarifying their roles and responsibilities in the disaster management cycle and the incident commands system and;
- Conduct simulation exercises to integrate all players.

Example of country Roadmap Framework

#	OBJECTIVE	CHALLENGE	INITIATIVE	PRIORITY
1	Fail-safe communication	How to ensure priority ICT networks have uninterrupted power supply	Develop a plan with power company for the provision of back-up power to identified critical ICT infrastructure	High
		Ensuring ICT networks and systems are in a good state of repair	Institute a general maintenance and repair of ICT systems for disaster management	High
2	Early Warning Systems	Creating early warning systems	Design and install an appropriate early warning system(s)	Medium

		Acknowledging the traditional methods for disaster prevention and management	Create a process for capturing and disseminating traditional knowledge for disaster management	Medium
		No special consideration given to persons with a disability	Disseminate and update the existing disability database	High
			Work with telecommunications provider to enable assistive technologies in the network	Medium
3	Coordination	Coordinating all aspects of emergency communications	Establish a Working Group for emergency communications	High
		Cataloguing the available ICT resources available for emergency communications	Establish a detailed registry of the ICT resources available for emergency communications and integrate it into a cohesive plan	Medium
		Spectrum management capacity to facilitate the work of the emergency communications Working Group	Seek help from international/regional entities to upgrade the skills of regulatory personnel	Medium
		Ensuring that systems are interoperable	Seek assistance to catalogue existence and prepare an interoperability report with recommendations for implementation	Medium
4	Trained personnel	Lack of awareness of roles and responsibilities	Provide awareness training on disaster management and risk reduction for relevant personnel, clarifying their roles and responsibilities during the disaster management cycle and the incident commands system	High
			Conduct of appropriate simulation exercises	
		Lack of knowledge on installation, operation, maintenance and repair of HF networks and systems	Hands-on training on installation of HF systems with focus on the outer islands	Medium
5	Partnerships	Limited HR expertise in country	Establish partnerships with external agencies to provide expertise for specific identified activities to improve preparedness	Medium
		Spare parts and specific equipment not available in country	Work out Memorandum of Understanding (MoU) with external agencies to provide access to spare parts and equipment	
6			Develop a Roadmap for the way forward	Medium

Facilitating disaster management	Lack of integrated plan for achieving coordinated approach	Development of a National Emergency Telecommunication Plan (NETP)	Medium
	Poor legal framework	Revision of the legal framework	Medium
	No existing protocols for emergency communications	Developing Standard Operating Protocols (SOPs) for emergency communications	High
	Poor spectrum management	Develop/publish the national Frequency Allocation Table (FAT) with an updated Frequency Register	Medium
		Document the procedures, frequencies used, and physical location of transmission sites of the HF networks	Medium
		Review the operations of existing networks and make recommendations on interoperability and procedures to ensure maximum coverage	Medium
		Develop emergency communications-specific regulations, rules and guidelines	Medium

7. Appendices

The appendices should include all documents relevant to the ICA report. This can include a Frequency Allocation table, or infrastructure and equipment resources showing ownership, type, model, and status (if possible).

8. Acronyms

This section should contain a list of abbreviations and acronyms used in the document. Suggestions include:

ADB	Asian Development Bank
APT	Asia-Pacific Telecommunity
EOC	Emergency Operational Centre
ETC	Emergency Telecommunications Cluster
EWS	Early Warning System
GSM	Global System for Mobile
GSMA	GSM Association
ICA	ICT Capacity Assessment
IT	Information Technology
ICT	Information & Communications Technology
ISP	Internet Service Provider
LTA	Long-Term Agreement
Mbps	Mega bit per second
MNO	Mobile Network Operator
NDC	National Disaster Committee

NDMO	National Disaster Management Office
PITA	Pacific Islands Telecommunications Association
RCS	Red Cross Society
SAR	Search and Rescue
SLA	Service Level Agreement
SOP	Standard Operational Procedures
VSAT	Very small aperture terminal
WFP	World Food Programme
WI-FI	Wireless Fidelity
WSO	Weather Service Office

Emergency Telecommunications Cluster (ETC)

Led globally by the United Nations World Food Programme (WFP)

www.ETCluster.org

Global.ETC@wfp.org