Somalia National Emergency Telecommunications Plan (NETP)

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NATIONAL COMMUNICATIONS AUTHORITY

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Foreword by the Minister of Communications and Technology,

MP. Mohamed Adam Moalim

Strong communication is vital in today's society, particularly during emergencies. The National Emergency Telecommunications Plan (NETP), developed by the National Communications Authority (NCA), is a significant step forward in our nation's efforts to strengthen national resilience and disaster readiness. It presents a strategic outline to guarantee that telecommunications and information and communication technology (ICT) infrastructure remain resilient and operational during emergencies, thereby ensuring the safety and welfare of our people.

Somalia has encountered a variety of natural and human-made crises, including droughts, floods, and health emergencies. These adversities have put our determination to the test. The National Emergency Telecommunications Plan (NETP) exemplifies our commitment to converting these challenges into chances for development and reinforcing our disaster management capabilities. This Plan integrates the telecommunications sector into the broader national disaster risk management strategy, guaranteeing our readiness to react to emergencies, minimize their effects, and facilitate recovery efforts.

I want to extend my sincere gratitude to the National Communications Authority (NCA) for their dedicated efforts in developing and implementing this Plan. Their leadership and unwavering commitment have been instrumental in shaping a comprehensive strategy that addresses our nation's unique challenges. NCA's collaboration with various stakeholders, including international partners such as the International Telecommunication Union (ITU), reflects a shared vision for a safer and more resilient Somalia.

As we move ahead, I urge all stakeholders – governmental entities, telecommunication firms, international partners, and the broader Somali populace – to actively participate in executing the NETP. Through collective effort, we can construct a robust telecommunications infrastructure capable of enduring adversities brought on by emergencies and guaranteeing that no Somali is left isolated or disconnected during times of crisis.

Let's fully embrace this Plan with the gravity it deserves, acknowledging that its effectiveness will be measured by our readiness for the next catastrophe and our united capacity to preserve lives, support connectivity, and facilitate recovery.

Preamble by the Director General of the National Communications Authority,

Mustafa Yasin Sheikh

The National Emergency Telecommunications Plan (NETP) is a key component of Somalia's comprehensive strategy to improve disaster preparedness, response, and recovery. As the Director General of the National Communications Authority (NCA), I fully understand the critical importance of having a solid and reliable communications infrastructure to protect our nation during crises. This plan demonstrates our united commitment to developing a telecommunications network that is resilient, adaptable, and fully capable of enduring and managing any emergency that may occur.

The National Emergency Telecommunications Plan (NETP) development has been a highly collaborative process, drawing on the expertise and dedication of a wide range of stakeholders. Our partnership with the International Telecommunication Union (ITU) has played a crucial role in providing technical guidance and international best practices that have shaped this Plan. The NETP is not just a set of guidelines; it is a strategic blueprint that integrates the telecommunications and ICT sectors into Somalia's broader disaster risk management framework, aligned with the goals of the NCA's Strategic Plan.

In developing this plan, we have focused on tackling the specific challenges faced by Somalia, which are often made worse by our unique geographical, social, and economic realities. The NETP provides a clear and practical roadmap for strengthening the resilience of our communication networks, ensuring that they can continue to operate even under the most challenging conditions. Understanding that effective communication is essential for any disaster response, the plan promotes coordination among emergency services, government agencies, and affected communities, emphasizing the critical importance of proactive disaster risk management.

We have embraced global best practices and advanced technological solutions to improve our preparedness. This allows our communication systems to stay operational and adaptable during emergencies. Our forward-thinking plan includes integrating innovative technologies to ensure that Somalia's disaster response capabilities are robust and scalable. Ultimately, this will help safeguard infrastructure and save lives during critical times.

I extend my sincere thanks to all who have contributed to developing the NETP. Your dedication has been essential in establishing a plan that will be a crucial tool in protecting our nation and its citizens. As we progress, I encourage all stakeholders—government bodies, telecommunications companies, international allies, and the broader Somali community—to execute this plan. Through collaborative efforts and shared commitment, we can attain the resilience and security our nation urgently requires.

Warbixin Kooban: Qorshaha Qaran ee Isgaarsiinta Xaaladaha Degdegga ah

Qorshaha Qaranka ee Isgaarsiinta Xaaladaha Degdegga ah ee Soomaaliya (NETP), oo ay soo diyaarisay Hay'adda Isgaarsiinta Qaranka (HIQ), wuxuu door istiraatiijiyadeed ku leeyahay maaraynta khataraha musiibooyinka isaga oo hubinaya in kaabayaasha isgaarsiinta iyo Tiknoolojiyadda loo isticmaali karo dhammaan afarta marxaladood oo maaraynta musiibooyinka, ee kala ah; ka hortagga, u diyaar garowga, ka jawaabidda, iyo soo kabashada. Ujeeddooyinka ugu waaweyn ee qorshahan waxay ka mid yihiin sameynta kaabayaal isgaarsiineed oo adkeysi leh, ku biirinta tiknoolijiyadda isgaarsiinta siyaasadaha maareeynta musiibooyinka, iyo isku dubaridka iyo isku xirka hay'adaha kala duwan ee dowladda, shirkadaha isgaarsiinta, iyo bulshada rayidka, si loo joogteeyo isgaarsiinta inta lagu jiro xaaladaha degdegga ah.

Qorshahan wuxuu muujinayaa doorka muhiimka ah ee isgaarsiinta ku leedahay maaraynta musiibooyinka, iyada oo isku-xireysa qeybaha isgaarsiinta iyo Tiknoolojiyadda iyo nidaamka guud ee maaraynta khataraha musiibooyinka. Isku xirkani wuxuu suurtagelinayaa in si degdeg ah looga jawaabo xaaladaha degdegga ah iyo in si dhaqso leh looga soo kabto, sidoo kale wuxuu hubinayaa in si fudud digniinaha khataraha la gaarsiiyo dadka loogu talo galay, si ay u noqdaan kuwo waxtar leh oo degdeg ah. Qorshuhu wuxuu la jaan qaadayaa Siyaasadda Qaranka ee Maaraynta Musiibooyinka (National Disaster Management Policy -DMP), si loo xaqiijiyo istiraatiijiyad qaran oo midaysan.

Ujeeddooyinka Muhiimka ah:

1. **In la hubiyo Abuuridda Nidaamyo Isgaarsiineed oo adkeysi leh**: istaraatiijiyadda waxa ay soo gudbineysaa qorsho-howleed dhammeystiran si loo ilaaliyo shabakadaha isgaarsiinta inta lagu jiro maareeynta musiibooyinka, kuwaas oo muhiim u ah isku xirka dowladda, shirkadaha iyo hay'adaha ka shaqeeya gurmadka.

2. **Dhiirigelinta Iskaashiga iyo Wadashaqeynta**: Iyadoo la horumarinayo iskaashiga ka dhexeeya hay'adaha dowladda, shirkadaha isgaarsiinta, iyo bulshada rayidka, qorshahan wuxuu keenayaa hab midaysan oo loo wajaho maaraynta khataraha musiibooyinka.

3. **Xoojinta u diyaar garowga iyo Nidaamyada Digniinaha**: qorshaha wuxuu mudnaanta siinayaa horumarinta nidaamyada digniinaha si loo faafiyo macluumaadka ku saabsan khataraha suurtagalka ah si waxtar leh.

Isticmaalka Isgaarsiinta ee Marxaladaha Maareeynta Musiibooyinka

1. **Ka hortagga**: Isgaarsiinta waxay taageerayaan qiimaynta khataraha, aqoonsiga khataraha, iyo faafinta digniinaha. Muhimadda waa yareynta nuglaanta khataraha ee kaabayaasha isgaarsiinta iyo hubinta nidaamyada isgaarsiinta in ay yihiin kuwo u adkeysan kara khataraha, ka hor inta musiibooyinka dhicin.

2. **U Diyaar Garowga**: Dejinta nidaamyada digniinaha, diyaarinta qorshayaal ka hortagga, iyo fulinta tababaro joogto ah. Isgaarsiinta waxay door muhiim ah ka ciyaartaa hubinta isku-xirka aan kala go'a lahayn ee u dhexeeya gurmadka degdegga ah iyo hay'adaha dowladda.

3. **Ka jawaabidda**: Inta lagu jiro musiibada, isgaarsiinta waxa ay fududeysaa hawlaha gurmadka, waxayna keeneysaa in isgaarsiinta u dhaxeysa hay'adaha gurmadka degdegga ah, hay'adaha dowladda, iyo bulshooyinka waxyeelada soo gaartay aysan go'in.

4. **Soo kabashada**: Ka dib musiibada, dib u soo celinta iyo dib u dhiska kaabayaasha isgaarsiinta ee burburay waa lagama maarmaan, si adeegga isgaarsiinta u wada gaaro dhammaan dadka ku nool meelaha musiibooyinka ay ka dhaceen. qorhahan wuxuu dhiirrigelinayaa mabda'a ah "dhisidda kaabayaal ka wanaagsan kuwii burburay," iyadoo la hubinayo in casharradii laga bartay lagu dabaqo dhismaha kaabayaasha cusub, si loo hagaajiyo jawaabaha musiibooyinka mustaqbalka.

Daneeyayaasha kala Duwan ee Hirgelinta Qorshahan

Daneeyayaasha muhiimka ah ee ku lug leh Qorshan waxaa ka mid ah HIQ, Hay'adda Maareynta Musiibooyinka Qaranka ee Soomaaliya (SoDMA), Wasaaradda Tamarta iyo Biyaha, Shirkadaha isgaarsiinta, iyo Ururka Isgaarsiinta Caalamiga (ITU). Iskaashigoodu waa muhiim si loogu guuleysto hirgelinta qorshahan, loona helo taageero farsamo loogu talagalay maaraynta khatarta musiibooyinka.

Gebogebadii, Qorshahan wuxuu abuurayaa qaab dhismeed dhamaystiran oo lagu hubinayo kaabayaasha isgaarsiinta ee adkaysiga leh inta lagu jiro musiibooyinka, wuxuu dhiirigelineyaa iskaashiga ka dhexeeya hay'adaha dowladda iyo shirkadaha isgaarsiinta. Sidoo kale, wuxuu fududeynayaa isticcmaalka Tiknoolojiyadda ee howlaha kala duwan ee maareynta musiibooyinka, sida ka hortagga, ka jawaabidda iyo soo kabashada

Introduction

This National Emergency Telecommunication Plan (NETP) sets out the strategy to enable and ensure communications availability during the mitigation, preparedness, response, and recovery phases of disaster risk management (DRM). This is achieved by promoting coordination across all levels of government, between public and private organizations, and within communities at risk.

This NETP includes the definition of policies, the organizational structure, and the coordination methods between the different actors during all four phases of DRM in Somalia. It also establishes the principles that guide allocating resources and responsibilities for achieving the proposed objectives, including the expected telecommunication and information and communication technology (telecom/ICT) response times, tasks, and processes.

Given the importance of telecom/ICTs in disaster management, the NETP is transversal. Therefore, it must be carried out under the leadership of the national government, be an integral part of the national disaster risk management plan, and be based on the nationwide organizational structure and governance model established for DRM.

This NETP has been developed with the support of the International Telecommunications Union (ITU). We thank the ITU for its crucial support and guidance in developing the Somalia National Emergency Telecommunications Plan (NETP). The ITU's contributions have been essential in refining our disaster management communication strategies, demonstrating a commitment to improving global telecommunication resilience. This partnership has significantly enhanced Somalia's disaster preparedness and response capabilities.

The following sections address these points and propose a series of action items that should be completed to enhance and update the telecom/ICT plan for DRM in Somalia.

Objective and scope of the NETP

This NETP aims to describe the relevant elements of telecom/ICT use for DRM in Somalia during its four phases: mitigation, preparedness, response, and recovery. Notably, the purpose of this plan is to guide the actions of the telecom/ICT sector in providing support for and improving coordination between the different agents involved in DRM in the country. This NETP also seeks to strengthen telecom/ICTs in the nation so that the relevant actors in this sector can appropriately support efforts to mitigate disaster risk and prepare, respond, and recover in the face of future emergencies.

This NETP is intended for all persons and institutions involved in DRM in Somalia, including authorities at all levels of government, the private sector, and other actors in the telecom/ICT and emergency aid sectors.

Structure of the NETP

This document is divided into eighteen chapters. Chapters 1 through 3 describe Somalia's existing institutional and normative framework for emergency telecom/ICTs. Chapters 4 through 18 refer to the main components that should be considered in each of the four phases of DRM and delineate some recommendations and key action items to be carried out to continue developing and updating an effective NETP. Chapters 4 through 8 correspond to the mitigation phase of DRM and deal with topics such as the country's vulnerability to natural hazards, the current state of the telecom/ICT sector, and establishing a specific DRM telecom/ICT regulatory framework. Chapters 9 through 13 correspond to the preparedness phase and include topics regarding telecom/ICT standard operating procedures, contingency planning, and early warning systems. The response phase is covered in chapters 14 through 16, which describe topics such as communication and coordination during emergency response, collection and analysis of information, and emergency awareness and updates. Finally, the recovery phase for DRM is addressed in chapters 17 and 18, which present topics such as assessing the telecom/ICT infrastructure's damage and the reconstruction and follow-up activities to be carried out after the disaster.

Summary of action items

The Somalia government should undertake the following action items:

Action Item 1

1. Develop a comprehensive legal, policy, and institutional framework for disaster management in the country. This framework should define a single institution that leads and coordinates Somalia's disaster risk management system. This action plan has been completed, and the Somali Disaster Management Agency (SoDMA) has been established as the lead institution.

2. Integrate the telecom/ICT component in the country's established emergency policy and institutional framework. The telecom/ICT component should be integrated into Somalia's National Disaster Management Policy (NDMP), particularly on the key actions to be delivered by the different actors involved in emergency management at all government levels. For instance, establishing a direct link between district and sub-district authorities requires telecom/ICT systems to disseminate alerts and warnings between authorities, for example, through mobile, radio broadcasting, or other technologies. Also, ensuring that a database of all emergency contacts is readily available for disseminating alerts and early warnings should consider telecom/ICT issues, such as defining the frequencies and compatible equipment for these communications, as applicable to the Federal Government Structure. This also applies to key actions such as establishing a control room in the district headquarters and keeping contact with the National Emergency Operations Centre at the Somali Disaster Management Agency and State Control Room. Identifying sites to be used as relief/temporary camps should also guarantee that communications networks and infrastructure are available so that affected people and authorities can communicate during a disaster event or an emergency, for example, through VHF radios or other technologies. For instance, safe warehouses or equipment positioning hubs can help guarantee the availability of communications networks and infrastructure. Finally, key actions defined in the NDMP, such as periodically organizing training workshops and mock drills, should also consider the telecom/ICT component, including specific sector telecom/ICT training and drills, and inviting all stakeholders involved in emergency telecommunications to these trainings.

Action Item 2

Somalia should develop institutional, regulatory, and legal frameworks for using telecom/ICTs for disaster risk management. Although the National Disaster Management Policy currently establishes different mechanisms and institutional arrangements to facilitate the coordination at the federal level between the government institutions that participate in the disaster management process, it is recommended to also establish similar telecom/ICT arrangements at the state level, such as developing a telecommunications network and telecom/ICT infrastructure to facilitate this coordination.

The National Communications Authority and Minister of Communications and Technology should have sat along with the other ministries comprising the National Disaster Management Committee (NDMC) and closely coordinated with the Office of the Prime Minister. Also, the Minister of Communications and Technology and the National Communications Authority should participate in the Somalia Disaster Management Coordination Group (SDMCG).

Action Item 3

The Somali Disaster Management Agency (SoDMA), jointly with relevant agencies involved in assessing and monitoring natural hazards in Somalia, should maintain updated vulnerability maps for the different types of hazards in the NETP, especially for hazards such as droughts, floods, and epidemics. This information must be described at the municipal level and should be available to telecom/ICT operators. Also, it should include data on the most vulnerable communities, specifying the type of hazards they are prone to and the telecom/ICT resources available in each.

Action Item 4

The National Communication Authority shall periodically develop and update the network inventory and coverage of mobile, fixed, terrestrial, and satellite telecom/ICT networks and service providers, as well as radio and television broadcasting service providers. The inventory should also include other types of telecom/ICT networks relevant to disaster relief, such as radio-amateur and first responders' networks.

Somalia should encourage the use of satellite networks to increase the coverage of communication services,

especially in rural communities and regions without terrestrial coverage of mobile and fixed telecom/ICT services.

Action Item 5

All telecom/ICT service operators, mobile, fixed, and radio and television broadcasting operators, as well as government networks, jointly with the National Communications Authority, must develop (or update) and present for approval by the Somali Disaster Management Agency a vulnerability analysis of the critical infrastructure of their networks according to the different types of hazards to which Somalia is prone to. This vulnerability analysis should also include the coverage maps of the telecommunications operators' networks.

Action Item 6

The National Communications Authority should be held accountable for establishing specific regulations on disaster risk management for the country's telecom/ICT sector. These regulations should be based on the functions granted by legislation and encourage telecom/ICT networks and service providers to participate actively in each phase of disaster risk management.

Action Item 7

The National Communication Authority should carry out the corresponding analysis and studies to decide which model (i. Public safety exclusive dedicated network, ii. Shared public safety and commercial network, or iii. Commercial network) would fit Somalia's needs for broadband PPDR in the 694-791 MHz frequency range.

Action Item 8

1. Somalia must initiate the process to be bound by the Tampere Convention. To this end, it is recommended that the Ministry of Communications and Technology (MOCT), the National Communications Authority (NCA), the Ministry of Foreign Affairs, and the Customs Authority initiate the necessary steps to ratify the Convention. Subsequently, the relevant authorities must make the required legislative and regulatory adjustments to implement the Convention effectively.

2. The NCA must establish specific regulations for the implementation of the Tampere Convention.

3. Coordination and collaboration with different international agencies, such as the ETC (Emergency Telecommunications Cluster) and the ITU (International Telecommunications Union), on issues of preparedness and response to eventual disasters or emergencies is imperative. This will avoid duplication of efforts and overlapping of work.

Action Item 9

1. Somalia's Federal and state governments should maintain and update the existing standard operating procedures (SOPs) for emergency and disaster response, especially communications within and between agencies.

2. These SOPs should detail the technical means for communication (voice/data), including interoperability between the equipment (wireless) and the communication networks of the government entities.

3. Maintain an updated database with the focal points of every agency involved in disaster management.

4. SOPs must clearly define which radio frequencies should be used for communications between the contact points (key decision makers) compatible with the radiocommunication equipment.

Action Item 10

Public and private networks, including mobile, fixed, and broadcasting operators, must individually develop and periodically update their contingency plans for an emergency. Measures such as network redundancy, mobile base stations, and secondary energy sources, among others, must be considered and included in the network design, especially in those areas/communities at risk according to the hazard maps and risk assessments, and considering the network vulnerability analysis.

Other types of networks, such as satellite networks, should also be considered in the contingency plans, e.g., satellite equipment in safe warehouses ready to be used in response to an emergency or disaster. The contingency plan should also analyze and include new technologies such as drones or high-altitude platform stations (HAPS). Mobile wireless technology is a crucial enabler of several disruptive technologies applicable to disaster situations.

Action Item 11

Somalia must develop surveillance and monitoring

systems for probable threats before disasters and emergencies. With the cooperation of the telecom/ICT service providers, solutions to warn and alert the public could be implemented, i.e., through mobile broadcast technology or broadcasting networks (radio and TV).

Also, the country should continue to work to re-establish the hydro-meteorological monitoring network that collapsed during the country's internal conflict and continue contributing to SWALIM's effort to maintain efficient monitoring and alerting systems.

Somalia must also enhance the Government agencies' capacity to translate and disseminate warnings to trigger effective planning and response measures by local institutions and at-risk communities.

The Common Alerting Protocol (CAP) is one of the most efficient mechanisms for immediately warning people of a possible disaster and communicating key facts about any emergency through different telecom/ICT networks, such as mobile networks, the Internet, sirens, and broadcast radio and television.

Cell broadcasting can also be an efficient mechanism for emergency authorities to send one-touch notifications to cell phones in affected areas by causing the cell phone to sound a ring and display a warning message on the screen.

Action Item 12

Telecommunications training, sensitization workshops, and emergency drills should be regularly carried out to improve emergency responders' capacity with communications equipment and enhance their ability to execute policies, plans, and procedures governing communications networks. The telecom/ICT sector should actively participate in these drills and exercises and develop and carry out their own to implement the NETP effectively.

Action Item 13

Develop mechanisms, working together with network operators and telecom/ICT service providers, to understand the accessibility requirements needed to guarantee that vital communications are accessible to all persons, including people with disabilities, older people, women, and girls, as well as refugees and immigrants. This should be linked to the existing early warning systems in the country, such as the SWALIM systems, so that people receive and understand the alerts for early actions to take

place.

Action Item 14

Somalia should continue to develop the National Emergency Operations Centre (NEOC) to act as the focal point for coordinating response to emergencies and disasters on a 24 /7 basis. The country should also consider planning to establish communication and coordination command posts to provide critical communications to users in each organization involved during the disaster response phase. These positions can be fixed or mobile, local or remote, and located in a vehicle or a shelter, among other possibilities. Maintaining interoperable and continuous communications between command posts and the rest of the stakeholders is vital for effectively responding to the emergency.

Action Item 15

During the response phase, call centers should be established to warn the affected population of new risks, disseminate updates about the emergency, and connect affected populations with their relatives. Generally, these call centers can be located in shelters and should use means of communication that minimize network congestion, for example, text messages. Somalia could use satellite networks to establish these call centers or seek collaboration with telecom/ICT operators or international organizations to develop the required telecom/ICT infrastructure.

Action Item 16

Restoration and reconstruction of the telecom/ICT infrastructure should be based on lessons learned and on the principle of building back better to considerably reduce the risk to the people and communities in the wake of future disasters and shocks. Also, these activities should involve the active participation of the private sector, including fixed, mobile, and satellite networks and service providers.

Action Item 17

Based on the experience acquired during the disaster management, a report should be developed after the response and recovery phases, identifying lessons learned and including necessary modifications and improvements that should be made to the NETP. The NETP should be updated every 2 to 3 years or when required.

1. Description of the four phases of disaster management

Disaster risk management (DRM) has two distinct stages: risk management and crisis management. In the first stage, measures are taken to predict and warn of a disaster in advance and prevent and mitigate its damage. These efforts occur under normal or non-emergency circumstances and correspond to the mitigation and preparedness phases. On the contrary, crisis management occurs during emergencies. It includes actions such as search and rescue, response coordination, damage assessment, the activation of a policy response, or the mitigation of a secondary disaster. This second stage of disaster management corresponds to the response and recovery phases.

1.1. Mitigation

The mitigation phase seeks to carry out actions that aim to prevent an emergency, reduce the probability of its occurrence, and limit the adverse effects of unavoidable threats. This phase includes identifying hazards and risks, conducting vulnerability assessments, constructing or maintaining critical telecommunications infrastructure, and developing written plans and procedures like the NETP.

During this phase, the role of telecom/ICTs is to help analyze the risk of potential disasters, disseminate information about impending hazards and how to mitigate their impacts so that hazards do not lead to catastrophe, identify communities at risk, and help to implement strategies, technologies, and processes that can reduce those adverse effects. Activities carried out during the mitigation phase include establishing legal and regulatory frameworks that support the use of emergency telecom/ICT Infrastructure, conducting a risk analysis of critical telecom/ICT infrastructure, taking steps to reduce the vulnerability of telecommunications networks and improve their capacity of recovery and assess vulnerabilities to develop multi-hazard early warning systems with the appropriate technology for each case. These strategies should be implemented before and after the emergency.[1]

1.2. Preparedness

The preparedness phase includes the planning and preparations necessary to respond to an emergency. These include establishing multi-hazard early warning systems, training, and operational processes and implementing those written plans and procedures developed during the mitigation phase.

Telecom/ICT in this phase is essential to facilitate the dissemination of information and alerts so that the public knows what actions to take during an emergency. Likewise, it must facilitate the coordination and communication of those involved in disaster management.

During this phase, it is essential to develop and implement plans to guarantee that communications will not be interrupted, to carry out telecom/ICT training and drills continuously, and to regularly carry out activities designed to create awareness among those involved, including campaigns in different formats accessible to the entire population regarding potential hazards and the activities that people must carry out during the response phase.

1.3. Response

The response phase is carried out during the emergency itself. It includes humanitarian activities such as search and rescue, the evacuation of people from affected areas, and the opening of shelters, among others.

The role of telecom/ICT during this phase is vital for enabling the uninterruptable telecom/ICT. However, SoDMA connects stakeholders such as first responders, government stakeholders, government agencies, communities at risk, shelters, health centers, and Non-Governmental Organizations (NGOs), among others. This is especially important considering that several entities carry out a variety of activities and procedures at the local, national, and international levels.

1.4. Recovery

The recovery phase runs after a few weeks in the aftermath of disasters. It focuses on providing the necessary aid to return the community to the initial levels of safety and functionality it had before the tragedy. Activities during this phase include infrastructure reconstruction, restoration of public sector operations, and debris removal. This restoration and reconstruction must consist of telecom/ICT infrastructure, mainly due to the sector's fundamental role in the community. The reconstruction should be based on the lessons learned and the principle of building back

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1   Federal Emergency Management Agency (FEMA), The Four Phases of Emergency Management.

better.

Figure 1. Phases of Disaster Risk Management
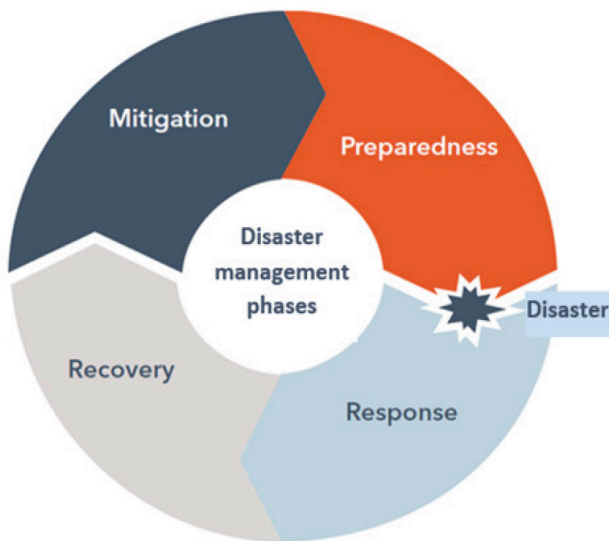
Source: ITU (2020)

2. Legislation related to disaster risk management in Somalia

Legislation and regulations are key for DRM, as they are the foundation that defines the roles and responsibilities of all stakeholders involved in the disaster management process. These are the Policy frameworks upon which coordination mechanisms, communication channels, and standard operating procedures are determined and upon which decision-makers in relevant agencies are identified.[2]

Therefore, assessing the current legislative and regulatory framework for DRM is important. This framework is described in the following subsections.

2.1. Constitution of the Federal Republic of Somalia[3]

The Constitution adopted in 2012 establishes, regarding emergency management in the country, that a State of Emergency may be declared if it is necessary to deal with a serious situation arising from war, invasion, insurrection, disorder, a natural hazard, or some other grave public emergency. This State of Emergency can be declared for the whole or part of the country by the President acting

on the request of the Council of Ministers. Also, it should be debated and approved by both Houses of the Federal Parliament within 21 days after that declaration. The Federal Parliament may approve or extend a state of emergency for up to three months. The State of Emergency, according to the Constitution, may give the executive special powers that are necessary to deal with the situation.

2.2. National Disaster Management Policy (NDMP)[4]

The Somali Disaster Management Agency(SoDMA) developed the Somalia National Disaster Management Policy (NDMP) in 2017 to provide a legislative framework for developing appropriate institutional structures and capacities at Federal, Member State, and District levels for timely and effective disaster preparedness and response.

In particular, the objectives of the NDMP are to guide and identify responsibilities for institutions at all levels of the government for disaster management; facilitate DRM planning and delivering within the government; establish mechanisms that may mitigate the impact of disasters; develop a comprehensive early warning system and an effective system for mapping hazard risks and vulnerability to disasters; assess, monitor, and address the different underlying risk factors in the country; promote a culture of safety and resilience amongst DRM stakeholders, including communities; strengthen the disaster preparedness system for effective response and recovery at all levels; and provide a framework for coordination and management of all-natural or man-made hazards in Somalia.

To achieve these objectives, the NDMP establishes some policy priorities for each of the four phases of disaster management. For disaster mitigation, the policy prioritizes measures such as initiating projects regarding flood control structures, water harvesting, and irrigation structures in highly disaster-prone areas, as well as promoting index-based insurance for livestock and crops. The main activities for disaster preparedness include improvement of vulnerability and risk assessment capacity; establishing functioning communication infrastructure and general capacity related to forecasting early warning and information gathering; designing contingency plans at district, provincial, and central levels of governance;

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2   United Nations Office for Disaster Risk Reduction (2018). Implementation guide for local disaster risk reduction and resilience strategies - A companion for implementing the Sendai Framework target E.

3   Provisional Constitution of the Federal Republic of Somalia. (Adopted on August 1st, 2012). Mogadishu, Somalia.

4   Somali Disaster Management Agency- SoDMA. (2017). National Disaster Management Policy.

promoting public education and awareness and information systems at all levels; development of evacuation, rescue plans, manuals, and simulation exercises; and establishing coordination systems at Federal, State and District levels, among others. Prioritized actions for disaster response focus on short-term assistance such as temporary evacuation, money, food, medicine, shelter, clothes, and or any other public or private assistance provided to communities to overcome the effects of a disaster. For recovery and moving towards resilience after a disaster, the policy emphasizes measures designed to support affected communities in reconstruction and further development (building back better) of their physical infrastructure and restoration of their social, economic, and physical well-being.

The National Disaster Management Policy contains general policy objectives and priorities for DRM that are closely related to telecom/ICTs. For instance, policies such as developing a comprehensive early warning system and an effective system for mapping hazard risks and vulnerability to disasters and establishing functioning communication infrastructure and general capacity related to forecasting, early warning, and information gathering are strongly associated with telecom/ICTs. Also, policies such as designing contingency plans and promoting public education and awareness and information systems at all levels, among others, can be linked with the country's emergency telecommunications plan. Therefore the NETP should be integrated with the guidelines established in the NDMP to have a more comprehensive DRM policy framework.

2.2.1. Institutional Mechanisms

To achieve the previous policy outcomes, the NDMP establishes specific vital actions to be delivered by the different actors involved in emergency management at all government levels, according to each phase of DRM. These actions are summarized below.

Disaster prevention, mitigation, and preparedness

Federal Government: The SoDMA, according to the NDMP, is the nodal agency for facilitating all aspects of disaster management in Somalia and therefore is responsible for the following Federal Government activities.

- Compile a comprehensive hazard zonation, vulnerability, and risk assessment map for the country.

- Encourage all federal and state institutions to consider disaster risk factors and the possibilities of reducing risks and strengthening resilience while preparing and implementing all development projects.

- Promote campaigns and educational programs on risk awareness and disaster response through educational institutions, media campaigns, and research institutions.

- Identify and work alongside specific agencies at the Federal (e.g., ministries of agriculture, water resources) and State levels to monitor specific hazards such as cyclones, droughts, and floods, and identify technological gaps that need upgradation.

- Establish a National Emergency Operations Centre (NEOC) equipped with adequate technology and communication facilities and with the capacity to undertake information gathering, data collation and analysis, and dissemination of information to all Federal Ministries, State governments, district authorities, and international institutions. This NEOC was established to enhance national emergency response capacity through effective operation of national, state, and district emergency operations facilities and data systems. The center should also provide a central coordination point in response to disasters and for coordination of humanitarian assistance.

- Prepare a contingency plan for flood, drought, conflict, and cyclones and update these regularly with State institutions, Somalia Red Crescent Society (SRCS), United Nations (UN) agencies, and NGOs.

- Facilitate building institutional links at the federal, state, and district levels with the SRCS branches and volunteers in all disaster-prone districts in the country.

- Establish coordination structures at the Federal level (see section 3.2) and facilitate the formation of similar structures at the State levels, with representation from appropriate counterparts in the government, UN, SRCS, and NGOs.

- Develop and implement systematic and mandatory training and orientation programmes on various aspects of disaster management for all frontline district administrators/officers.

- Establish a disaster management fund with contributions from the Federal Budget.

Member State governments: these governments may set up separate dedicated State Disaster Management Authority to facilitate disaster management in their respective States. If not, Member State governments must at least set up a disaster management committee integrated by key departments (Regional Ministries, Directors Generals, Heads of Departments), which must perform the following functions.

- Ensure coordination between the State government and the SoDMA.

- Compile a comprehensive hazard zonation, vulnerability, and risk assessment map for the entire State and ensure this is disseminated to all State institutions and district authorities.

- Encourage all State institutions to consider disaster risk factors and their mitigation while developing projects.

- Develop Standard Operating Procedures (SOP) for disaster preparedness and response for action at State, district, and sub-district levels, and ensure training and orientation of all relevant staff and community leaders in the SOP.

- Work with the SoDMA to develop technical capacity and infrastructure in high (and frequent) disaster-prone districts for forecasting, early warning, and information management.

- Establish a State Emergency Operations Centre (SEOC) equipped with adequate technology and communication facilities, and with capacity to undertake information gathering, data collation and analysis, and generate information to all State institutions and district authorities.

- Work with infrastructure providers, telecom/ICT/ mobile network operators (MNOs) to support and provide critical information and communication services in every stage of a crisis.

- Establish coordination structures at State level with representation from appropriate agencies (government institutions, UN, SRCS and NGOs).

- Ensure that the State Government has in place a Disaster Management Plan which integrates measures for preparedness, mitigation, establishment

of early warning systems, capacity building of district authorities for disaster management, and coordination with the Federal SoDMA, SRCS and international/national humanitarian organizations.

District administration: The District Commissioner will take all measures for the purposes of disaster management in the district in accordance with the guidelines given by the State disaster management authority. These officials should be responsible for the following actions:

- Prepare a comprehensive list of vulnerable community and hazard zonation map for the district.

- Prepare comprehensive short, medium and long-term risk reduction action plans at district level and ensure that district development plans consider systematic risk assessments.

- Based on hazard and vulnerability maps, establish a disaster management task force comprising relevant line departments (Agriculture, Livestock, Water resources/irrigation, etc.) in the district.

- Establish direct linkage with sub-district/village authorities/local leaders and ensure that database of all emergency contacts are readily available for dissemination of alerts and early warnings. All heads in flood and cyclone-prone districts need to prioritize 'last mile connectivity' for dissemination of alerts and early warning from district headquarters to communities at village level.

- Keep updated list of non-government agencies involved in disaster management and coordinate their activities.

- Prepare a list of buildings, schools, colleges, establishments etc., by conducting a regular survey annually so that people can use them during emergency as relief/temporary camps.

- Organize training workshop and mock drills once every year involving all relevant line departments at district and village levels, village leaders, SRCS and NGOs.

Emergency response

Specific actions established in the NDMP for the *Federal Government* during the response phase include, primarily, the declaration of a national emergency by the President of the Federal Government of Somalia, based on the recommendations of the NDMC (see section 3.2) and in

consultation with the Heads of Federal Member States. Such declaration should be determined considering four key criteria: scale, complexity, urgency and capacity of the states to respond. The declaration of national emergency will be made initially for a period of three months and could be extended by another three months by the President on the advice of NDMC.

Along with the above, during the disaster response phase the Commissioner of SoDMA must continue to chair the national coordination group meetings (may meet more frequently than during mitigation and preparedness phases) and must ensure that SoDMA coordinate at appropriate levels with the international humanitarian system (Clusters, OCHA, Humanitarian Coordinator).

Finally, according to the NDMP, a federal response to disasters should include launching disaster petitions if necessary; using the disaster management fund with contributions from the Federal budget and the donations from foreign and regional countries or organizations; and developing allocation criteria and rules for utilization of the fund and oversee its administration (responsibility of the SoDMA).

The *Member State governments*' authority, on the other hand, established during the preparedness phase, must act as an in-charge of Incident Command System (ICS) during the emergency response, and must be the main point of contact for the Somalia Disaster Management Coordination Group (SDMCG) and the district administration. This authority, according to the NDMP, must also undertake all activities necessary to coordinate and assist relevant stakeholders involved in the response, and liaise with the Commissioner of SoDMA. The head of the Federal Member States government's authority should as well be responsible for the following activities in times of emergency:

- Coordinate the disaster response and set up a Disaster Management Team (DMT) all government levels made up of personnel from various departments/agencies to assist in the management of the disaster.

- Conduct situation assessment and advise appropriate authorities and agencies with the oversight of SoDMA.

- List local responder and resources availability.

- Develop a disaster management plan and priorities in conjunction with members of the DMT.

- Establish direct links with and provide necessary guidance and support to the district administration.

- Assign tasks to DMT, response agencies and supporting services.

- Coordinate with SoDMA and donors for resources and support.

Finally, the Federal Member State government should, according to the NDMP, activate their SOPs for disaster response as soon as it is known that a disaster has occurred; set up appropriate coordination mechanism involving various State institutions, private sector, NGOs and UN agencies (including cluster/sectorial meetings with OCHA/UN, if necessary); use and administer the Disaster Management Fund; and ensure that the temporary relief camps have adequate provision of drinking water and bathing, sanitation and essential health care facilities, among other actions.

District administration's key actions during the disaster response include the following:

- Notify the State authority and the SoDMA that a disaster has occurred.

- Establish a control room in the district headquarters and keep contact with the NEOC at the SoDMA and State Control Room.

- Issue a warning notice to all stakeholders involved in disaster response and ensure that the communities at risk have been warned through communication and dissemination system established at the preparedness phase.

- Operate emergency rescue work with the facilities locally available and coordinate with other agencies the mobilization of rescue teams in the affected areas.

- Arrange and direct the evacuation of threatened communities to safer locations.

- Convene regular meetings of all relevant agencies (relevant district line departments, SRCS, NGOs, etc.) to ensure coordination and resolution of operational bottlenecks and gaps.

- Ensure that needs assessments carried out in the district are coordinated and information collated systematically and needs assessment data are fed back into relevant disaster response plans.

- Consider rapid rehabilitation of key infrastructure, like functioning government offices, roads, healthcare facilities, etc.

Recovery and reconstruction

Finally, regarding the recovery phase of disaster management process, the NDMP establishes that both, federal and state governments, should spell out a clear policy for recovery, which outlines all aspects of transition from relief to recovery (or early recovery), rehabilitation, reconstruction, return, resettlement and reintegration (in case of displaced). This policy should define operational aspects as well as a clear use of resources and a timeframe within which rehabilitation and recovery will take place. Specific elements that must be considered by federal and state governments during this phase, according to the policy, should be restoration of public services, infrastructure and essential government services, roads, housing, drinking water sources, provision for sanitary facilities, availability of credit, supply of agricultural inputs, livelihoods restoration, and restocking of livestock.

2.2.2. National Disaster Management Fund

The NDMP determined the establishment of a National Disaster Management Fund (NDMF), managed by the SoDMA with oversight from the NDMC and the National Audit office, with contributions from the Federal Government, local organizations, private sector, and international donors. These resources should be allocated and utilized only for implementation of disaster preparedness activities when there is a high probability of disaster; for launching emergency/life-saving response, and for short-term rehabilitation measures and planning of recovery/reconstruction activities. To use these resources, proposals must be submitted by line departments of the Federal Government and State authorities to the SoDMA, which evaluates de proposal and recommends it to the NDMC for approval.

Action Item 1

1. *Develop a comprehensive legal, policy and institutional framework for disaster management in the country. This framework should define a single institution that leads and coordinates the disaster risk management system in Somalia. Federal Government of Somalia established the Somali Disaster Management Agency (SoDMA) as the lead institution for disaster management in Somalia.*

2. *Integrate the telecom/ICT component in the country's established emergency policy and institutional framework. The telecom/ICT component should be integrated to the Somalia's National Disaster Management Policy (NDMP), particularly on aspects related to the key actions to be delivered by the different actors involved in emergency management at all government levels. For instance, establishing a direct link between district and sub-district authorities requires having telecom/ICT systems in place to disseminate alerts and warnings between authorities, for example, through mobile, radio broadcasting, or other type of technologies. Also, ensuring that a database of all emergency contacts is readily available for dissemination of alerts and early warnings should consider telecom/ICT issues, such as defining the frequencies and compatible equipment to be used for these communications. This also applies for key actions such as establishing a control room in the district headquarters and keep contact with the National Emergency Operations Centre at the Somali Disaster Management Agency and State Control Room. Identifying sites to be used as relief/temporary camps should also consider guaranteeing that communications networks and infrastructure are available at those sites so that affected people and authorities will be able to communicate during a disaster event or an emergency, for example through VHF radios or other technologies. Safe warehouses or equipment positioning hubs, for instance, can help guarantee the availability of communications networks and infrastructure. Finally, key actions defined in the NDMP such as organizing training workshops and mock drills periodically should also consider the telecom/ICT component, by including specific sector telecom/ICT trainings and drills, and by inviting all stakeholders involved in emergency telecommunications to these trainings.*

3. Agencies Involved in Disaster Risk Management in Somalia

In Somalia, the Prime Minister's Office has the overall responsibility for providing leadership and political space for an integral governmental approach to comprehensive disaster management. In that sense, the Prime Minister's Office has attributions such as issuing directives to the concerned Ministries for activating all necessary resources in support of response, relief and recovery operations in coordination with SoDMA; support the creation and strengthening of national integrated disaster risk

reduction mechanisms and promote integration of risk reduction into development policies, programming and planning at all levels of government; allocate resources for development and implementation of DRM policies, programs, laws and regulations in all relevant sectors and authorities at all levels; and ensure adequate resource reallocation to concerned Ministries for relief, recovery and rehabilitation operations/initiatives.

3.1. Somali Disaster Management Agency(SoDMA)

The SoDMA is the agency in charge of formulating and supervising the implementation of policies that enhance the mobilization of life-saving humanitarian assistance in Somalia and coordinate the delivery of such assistance to people who need it the most[5].

The Somali Disaster Management Agency (SoDMA) was appointed in August 2012 by the Prime Minister to strengthen the work of the Somalia Disaster Management [6]; that is, to coordinate the activities of government agencies at federal and state levels to ensure that adequate measures are taken to mitigate, prepare for and respond to disasters and assist in the recovery from the effects of disasters.

Currently the SoDMA is responsible to develop a comprehensive policy for disaster management that enables the creation of a framework for the establishment of a disaster management system for the entire country. Also, the SoDMA has the following specific functions regarding disaster management in Somalia:

1. Deliver and protect the residents and citizens of Somalia and their properties against disasters in the country and save them from the vulnerabilities and lack of resilience against some of the calamities.

2. Manage all manmade disasters and those arising from natural hazards that happen in the country.

3. Prepare short and long-term action plans for the protection or mitigation of all disasters that happen in the country and for tackling them in real time.

4. Establish control centers and places in the districts and the regions in the country from which disasters that take place are managed.

5. Mobilize and deploy teams and sectors that are capable of prevention and urgent response against disasters.

6. Collect data on the dangers of disasters and provide early warnings alerts when necessary.

7. Direct aid organizations that address disasters towards the addressing of prevailing needs, taking into consideration the priority of the need.

In order to fulfil these responsibilities, the Agency is integrated by a number of advisers and separate Departments, each of which has specific functions, including issues regarding Humanitarian Response; Policy and Planning; Administration and Finance; and Communication Media, Public Relations and Aid Coordination.

3.2. National Disaster Management Council (NDMC)

The NDMC was established as an inter-ministerial body to provide overall guidance and advise for strategic disaster management in the country, as well as to facilitate the coordination at the federal level between the different government institutions that participate in the disaster management process.

According to the National Disaster Management Policy, the NDMC is chaired by the Prime Minister, and is integrated by most of the country´s ministries, with the notable exception of the Ministry of Communications and Technology (section 3.4).

The NDMC meets at least twice a year (besides *ad hoc* meetings during major disasters as and when needed) to:

- Review national disaster management system and provide strategic advice for disaster risk reduction and emergency response management.

- Promote dialogue across sectors with a view to integrate disaster risk reduction into sectorial development plans and programs of different ministries.

- Facilitate coordination of multi-hazard and multi-

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5   SoDMA. About the Agency Retrieved from: https://sodma.gov.so/english/
6   The Somalia Disaster Management Agency (SODMA) was created in 2022 by the Prime Minister. Source: Somali Disaster Management Agency- SoDMA. (2023). National Disaster Management Policy.

sectorial measures in relation to disaster risk reduction and emergency response management.

- Review disaster preparedness measures and provide strategic advice.

- Allocate resources for development and implementation of DRM policies, programs, laws and regulations in all relevant sectors and authorities at all levels.

- Ensure adequate resource allocation to support relief, recovery, and rehabilitation operations/initiatives as and where necessary.

- Review disaster management plans of various federal departments, states and DMA, if these involve funding from the National Disaster Management Fund and approve allocations.

Along with the above, the NDMC has the responsibility to produce guidelines to assist the federal ministries, departments, and states to formulate their respective disaster management plans, as well as to approve the National Disaster Management Strategy and Standard Operating Procedures for Disaster Management developed by the SoDMA.

3.3. Somalia Disaster Management Coordination Group (SDMCG)

The SDMCG is a coordination group comprising of senior officials (Permanent Secretaries, Directors General/Executive Directors) of all relevant National agencies/departments, focal points of Member States, Civil Society, Heads of United National agencies, SRCS, NGOs and private sector. It is convened by the SoDMA (ex-officio Secretary) at least three times a year in normal times, and at least once every month in times of major disasters, to guide operational aspects of comprehensive disaster management in Somalia.

In particular, the SDMCG will undertake the following functions:

- Coordinate various activities of all stakeholders during all the phases of the disaster management process.

- During disasters, ensure coordinated needs assessments and identification of vulnerable populations, advise various agencies/departments about addressing the needs and prioritization.

- Advise NDMC and SoDMA on mobilization, allocation, and management of the National Disaster Management Fund.

- Advise NDMC and SoDMA on technical and socio-economic of aspects emergency response management and Disaster Risk Reduction.

- Ensure that a comprehensive approach to risk and vulnerability assessments exists in the country, and data is gathered systematically, analyzed, and disseminated to relevant stakeholders at national, State and district levels.

- Facilitate linkages with State disaster management authorities at the appropriate level and assist the latter in undertaking similar coordination at Member State level.

- Propose and/or review long-term recovery plans.

3.4. Ministry of Communications and Technology (MOCT)

This Ministry is the lead federal government body mandated to formulate policies, laws and regulations regarding posts and telecom/ICTs.[7] According to the Communications Act, specific roles of the Minister include, among others, the negotiation and execution of international communications treaties and agreements, on behalf of Somalia, between sovereign countries and international organizations and bodies; the representation of Somalia at proceedings of international organizations on matters related to communications; and providing material assistance to the National Communications Authority in the establishment of its operations.[8]

3.5. National Communications Authority (NCA)

The NCA is the regulatory body for the communications sector in Somalia. It was established through the Communications Act, and its mandate is to regulate the telecom/ICT sector including,[9] among other provisions, having a plenary authority to license and regulate

7   Ministry of Communications and Technology. (2018). About Us. Retrieved from: https://moct.gov.so/en/about-us/
8   Somali Communications Act of 2012.
9   National Communications Authority. (2019). About NCA. Retrieved from: https://nca.gov.so/

telecommunications and broadcasting services throughout the territory of Somalia.[10]

In order to achieve these mandates, the NCA is headed by the Director General, and is integrated by a Deputy General Manager, an Internal Auditor, and different departments in charge of regulatory, engineering, legal, operations, and corporate issues, as shown in Figure 2.

Figure 2. Organizational Structure of the NCA
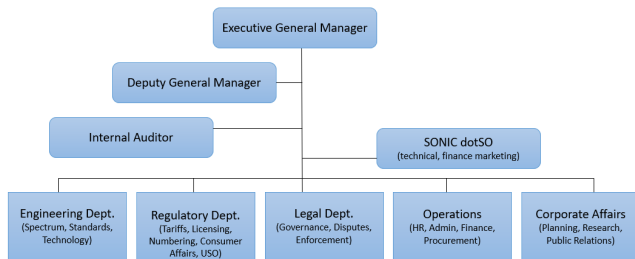
Source: NCA (2019)

Action Item 2

Somalia should develop institutional, regulatory and legal frameworks for the use of telecom/ICTs for disaster risk management. Although the National Disaster Management Policy currently establishes different mechanisms and institutional arrangements to facilitate the coordination at the federal level between the government institutions that participate in the disaster management process, it is recommended to also establish similar telecom/ICT arrangements at state level such as developing a telecommunications network and telecom/ICT infrastructure to facilitate this coordination.

The Minister of Communications and Technology, in particular, should have a sit along the other ministries that comprise the National Disaster Management Committee (NDMC), and be in close coordination with the Office of the Prime Minister. Also, the Minister of Communications and Technology, as well as the National Communications Authority, should participate in the Somalia Disaster Management Coordination Group (SDMCG).

Mitigation Phase

4. Vulnerability to Natural Hazards in Somalia

Somalia is susceptible to frequent natural hazards, especially droughts, floods and epidemics, whose impact on the population is magnified by the county's socioeconomic conditions, such as high levels of poverty, low access to safe water and basic sanitation, and malnutrition.[11]

According to SoDMA, Somalia's arid and semi-arid lands make up more than 80% of the country's landmass, making the nearly 70% of Somalis that are dependent on climate-sensitive agriculture and pastoralism for living, vulnerable to extreme weather conditions, such as low rainfall. Historically, severe droughts in Somalia have occurred since 1964,[12] affecting millions and killing thousands of people, half of them children.[13]

Drought-related water borne diseases are also common in Somalia. Diseases like cholera/acute watery disease and diarrhoea affect many people in the riverine areas, as well due to polluted water. According to SoDMA, it is the children, women, elderly, and the poor who suffer most from these epidemics.

Also, riverine and flash floods are an annual phenomenon in the country, caused by the rainy season between March-May and September-November in the riverine areas along the rivers Jubba and Shebelle. Cyclones and storm surges can also produce floods in littoral towns and faraway rural areas.

Finally, Somalia is also prone to moderate earthquakes, of magnitude varying between 4 and 5.5, as well as other less likely hazards that include Tsunamis, fires, and insect infestations.[14]

Table 1 shows the number of disaster events that have occurred in Somalia in the last 60 years, as well as the number of people that resulted death, injured and affected by each type of hazard. Droughts have historically been the deadliest type of hazard in Somalia, causing almost 40,000

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10   Somali Communications Act of 2012.
11   Somali Disaster Management Agency- SoDMA. (2022). National Disaster Management Policy.
12   In 1964, 1969, 1974, 1987, 1988, 2000, 2001, 2004, 2008, and in 2011.
13   Somali Disaster Management Agency- SoDMA. (2022). National Disaster Management Policy.
14

deaths, and affecting nearly 20 million people. Epidemics, on the other hand, have occurred 29 times between 1960 and 2020, causing more than 6,800 deaths and leaving nearly 27,000 injured. The most recurrent hazard as well as the third deadliest are floods, which have caused the death of almost 3,000 people in the 45 events registered during that period.

Table 1. Disasters in Somalia (1960-2020*)

Event type	# Events	Deaths	Injured	Affected
Drought	16	39,673		19,919,124
Earthquake	1	298	283	104,800
Epidemic	29	6,828	27,291	99,136
Flood	45	2,925	52	5,377,446
Insect infestation	1			
Storm	6	251		404,380
Total	**98**	**49,975**	**27,626**	**25,904,886**

* November 25th. Covid-19 pandemic not included.

Source: EM-DAT: The Emergency Events Database – Universite catholique de Louvain (UCL) – CRED, D. Guha-Sapir – www.emdat.be, Brussels, Belgium

The ten greatest disasters by number of deaths in Somalia in the last 60 years have all been droughts, floods, and epidemics (Table 2). The droughts of 2010 and 1973 caused the death of nearly 20,000 people each, because of famines mainly. While the flood of 1997, that affected the Juba River basin and regions in the south of the country, killed more than 2,300 people and left 1 million affected. Other disasters, especially epidemics occurred in 1985-85-87 and 2000, 2007 and 2016, have caused the death of between 390 and 1,300 people each, because of bacterial and viral diseases, including cholera, diarrhoea and the rift valley fever. The data presented in Table 2, additionally, does not include the Covid-19 pandemic, which as to August 9th, 2021, has caused more than 850 deaths.[15]

Table 2. Ten Disasters with the greatest number of deaths (1960-2020*)

#	Year	Disaster Type	Disaster Subtype	Event Name	Deaths	Injured	Affected
1	2010	Drought	Drought		20,000		4,000,000
2	1973	Drought	Drought		19.000		230,000
3	1997	Flood	Riverine flood		2.311		1,000,000
4	1986	Epidemic	Bacterial disease	Cholera	1,307		7,093
5	1985	Epidemic	Bacterial disease	Cholera	1,262		4,815
6	2007	Epidemic	Bacterial disease	Cholera	1,133		35,687
7	1987	Drought	Drought		600		500,000
8	1997	Epidemic	Viral disease	Rift Valley fever	500		
9	2016	Epidemic	Bacterial disease	Diarrhoea/Cholera	497	14,165	
10	2000	Epidemic		Acute watery diarrhoeal syndrome	390		

Source: EM-DAT: The Emergency Events Database – Universite catholique de Louvain (UCL) – CRED, D. Guha-Sapir – www.emdat.be, Brussels, Belgium

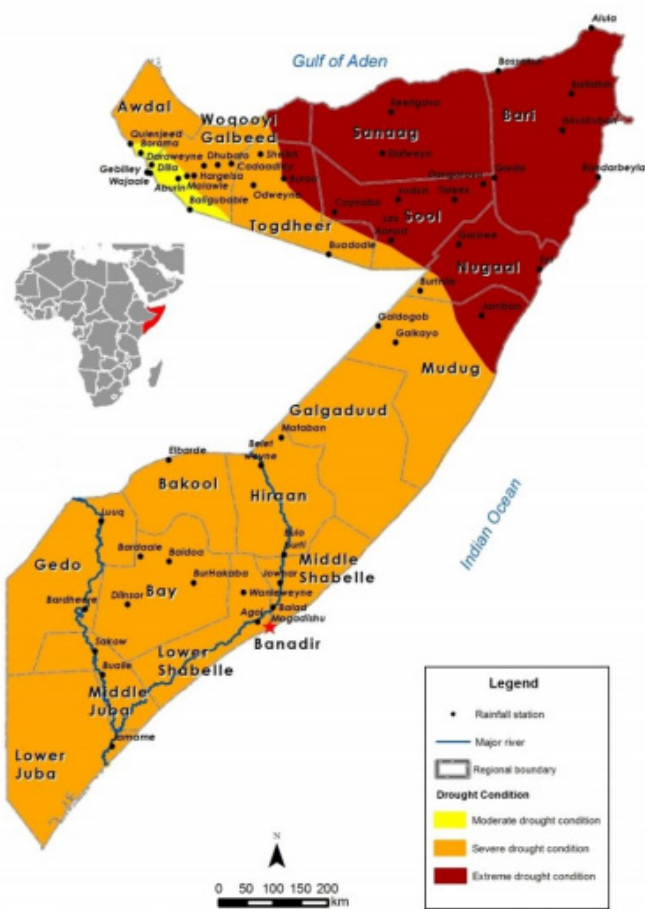### 4.1. Vulnerability Maps

The regions of Lower and Middle Shabeelle are the most affected by floods in Somalia (Map 1). According to SoDMA, the Shabeelle River begins to burst over its banks at an area near the country's border with Ethiopia, approximately

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15   Worldometer. (2020). Total Coronavirus Cases in Somalia. Retrieved from: https://www.worldometers.info/coronavirus/country/somalia/

40 Km from Beled Wayne town, and the floods start at Burdhinle around the Beledweyne at times reach the town of Jalalaqsi. Furthermore, in the Middle Shabeelle region, a canal frequently breaches causing flash floods around populated towns like Jowhar, affecting over 50 villages along a 100 km stretch of the middle Shabeelle. In the lower Shabeelle, the river floods in areas like Afgooye, Mubarak and Awdheegle surrounding areas, affecting pastoralist livelihood in over 70 villages. The Jubba river, which runs through a mountainous terrain, also causes floods over a significant area of land inhabited by a large number of people.[16]
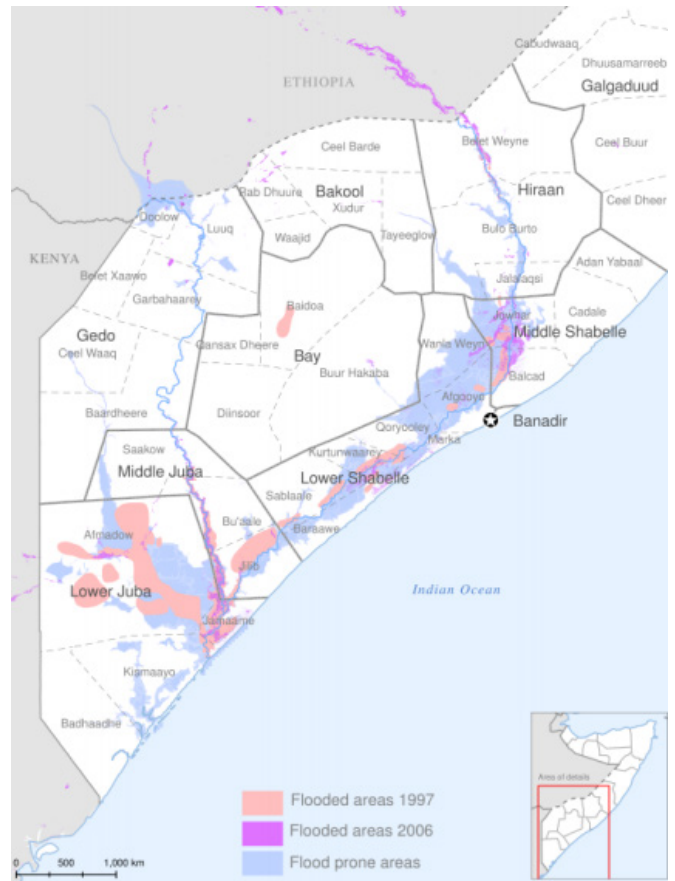
Map 1. Somalia Flood Prone Areas

Source: SODMA (2022)

Droughts, on the other hand, commonly affect the northeast part of the country, even though the whole territory has a severe drought vulnerability, as depicted in Map 2.

Map 2. Drought Affected Areas in Somalia

Source: SoDMA (2022

Action Item 3

The Somali Disaster Management Agency (SoDMA), jointly with relevant agencies involved in assessing and monitoring natural hazards in Somalia, should maintain updated vulnerability maps for the different types of hazards in the NETP, and especially for hazards such as droughts, floods and epidemics. This information must be described at the municipal level and should be available to telecom/ICT operators. Also, it should include information on the most vulnerable communities, specifying the type of hazards they are prone to, as well as the telecom/ICT resources available in each of them.

5. Telecom/ICT sector in Somalia

The Somalia telecommunication market has persisted despite the lack of guidance from a regulatory or central government since 1991. The National Communications Authority (NCA) was established through the Communications Act, and it is responsible for facilitating

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16 Somali Disaster Management Agency- SoDMA. (2022). National Disaster Management Policy.

the development of the ICT sector, enabling and ensuring fair and sustainable competition, carrier interconnection, transparency in the implementation of the Communication Law, protecting consumer interest and rights, and maintaining its role as an independent regulator.[17]

5.1. Mobile Sector

Currently, Mobile Network Operators providing services in the country are Hormuud Telecom, Somtel, Telesom, Golis, Nationlink (non-operational), AMTEL, and Somlink (new operator). These operators provide mobile services to nearly 7,7 million subscribers (2019), which represent approximately a penetration rate of 51%.[18] Regarding mobile broadband, there were only 523,520 active subscribers in 2019, representing nearly 4% of the population.

Since 2012, mobile operators in the country started launching 3G services. Somtel International and Telesom began offering LTE services, while Somnet and Sahal Telecom launched time division duplex LTE (TD-LTE) networks in Mogadishu. Operators in Somalia have prioritized LTE services instead of fixed broadband due to the poor condition of the fixed-line infrastructure in the country.[19]

5.2. Fixed Services

The number of fixed-line broadband subscribers remains very low. The number of fixed broadband subscribers in the country increased from merely 82,000 in 2015, to only 92,000 in 2019, representing a penetration rate of 0.7% in 2019, from the 0.6% rate registered in 2015.

Most Internet connections in the country are provided via dial-up, ADSL, and long-range Ethernet (LRE), and lately most companies are beginning to provide VoIP services. Fibre optic networks are limited to some of the big cities with limited coverage. Therefore, Internet Service Providers use wireless networks to cover the cities and wireless backbones between cities.[20]

5.3. International Connectivity

Somalia is connected to different international submarine fibre optic cables:

- Dalkom Somalia, operates since 2014 the Mogadishu Segment of the East Africa Submarine Cable System (EASSy) and the landing station that supports a capacity of more than 10 Tbps. The company is also building a 1,000 square metre data centre to host equipment for all Mogadishu telecommunications and Internet service providers, facilitating their connections to international networks.

- The Gulf2Africa (G2A) cable was completed in December 2017 with a length of 1,500 km and landing stations in Berbera and Bosaso in Somalia. It was designed for 20 Tbps of capacity with the latest 100G technology.[21]

- The Djibouti Africa Regional Express 1 (DARE1) cable construction was completed in June 2020. It has a length of 4,854 km and landing stations in Bosaso and Mogadishu in Somalia. This cable was designed with a three-fibre-pair trunk, which can deliver a capacity of 40 channels at 300 Gbps per fibre pair. The Bosaso branch of the DARE1 cable is 108 km long and counts with two fiber pairs.[22]

- The PEACE Cable, estimated to entry into service in the fourth quarter of 2021, will have a length of 15,000 km, with landing stations in three cities in Somalia: Bosaso, Kismaya and Mogadishu. This cable is capable of providing transmissions of over 16 Tbps per fibre pair.[23]

- Africa-1 will have a length of 10,000 km and is estimated to entry into service in 2023. This cable will have one landing station in Somalia, in the city of Berbera, and will be equipped with ASN 1620 Softnode transmission equipment, featuring high performance 200/300/400 Gbps advanced coherent XWAV line cards.[24]

- 2Africa will have a length of 37,000 km and, upon completion in 2023, will have a landing station in the Somalia's capital, Mogadishu. The 2Africa cable

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17 Information provided by the National Communications Authority.

18 ITU World Telecommunication/ICT Indicator (WTI) Database – 2020.

19 ITU. (2019). Measuring the Information Society Report Volume 2 - ICT Country Profiles – Somalia.

20 Information provided by the National Communications Authority.

21 SGS. (2016). Gulf to Africa(G2A), a New Groundbreaking Cable System by Xtera's Turnkey Subsea Solution.

22 Submarine Cable Networks. DARE 1. Retrieved from: https://www.submarinenetworks.com/en/systems/asia-europe-africa/dare1

23 Peace Cable. About Us. Retrieved from: http://www.peacecable.net/

24 CR. (2021). Africa-1 sub-sea cable system construction works begins. Retrieved from: https://constructionreviewonline.com/news/egypt/africa-1-sub-sea-cable-system-construction-works-begins/

system will implement the SDM1 technology, allowing deployment of up to 16 fibre pairs and a capacity of up to 180 Tbps.[25]

Map 3. Submarine cable connecting Somalia
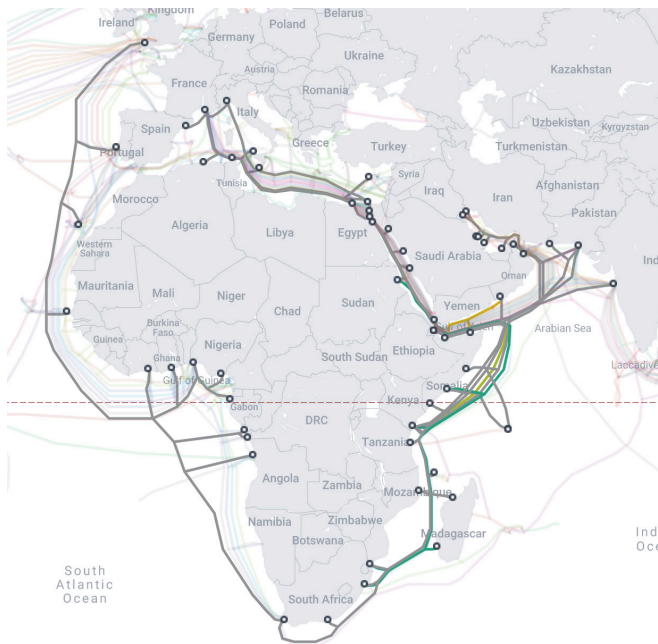
Submarine Cables
2Africa (2023)
Africa-1 (2023)
Djibouti Africa Regional Express 1 (DARE1)
Eastern Africa Submarine System (EASSy)
Gulf2Africa (G2A)
PEACE Cable (2022)

Source: TeleGeography (2021)

5.4. Satellite

Somalia is linked to the outside world via satellite links operated by private telcos.

Action Item 4

The National Communication Authority shall develop and update periodically the network inventory and coverage of mobile and fixed, terrestrial and satellite telecom/ICT network and service providers, and radio and television broadcasting service providers. It should include also in the inventory other types of telecom/ICT networks relevant for

disaster relief such as radio-amateur and first responders' networks.

Somalia should encourage the use of satellite networks to increase coverage of communication services, especially in rural communities and regions without terrestrial coverage of mobile and fixed telecom/ICT services.

6. Vulnerability analysis of critical telecom/ICT infrastructure

The telecom/ICT operators and the government agencies responsible for government telecom/ICT networks in Somalia must develop and present a vulnerability analysis of the critical infrastructure of their networks based on the risk maps and assessments of the different types of hazards presented in Section 4 of this document. Telecommunications operators should also include coverage maps of their networks in this vulnerability assessment, which must be approved by the SoDMA and endorsed by the NDMC and must be part of Somalia's NETP, maintaining the confidentiality deemed necessary.

Action Item 5

All telecom/ICT service operators, mobile, fixed, and radio and television broadcasting operators, as well as government networks, jointly with the National Communications Authority, must develop (or update) and present for approval by the Somali Disaster Management Agency a vulnerability analysis of the critical infrastructure of their networks according to the different types of hazards to which Somalia is prone to. This vulnerability analysis should also include the coverage maps of the telecommunications operators' networks.

7. Specific Telecom/ICT Regulatory Framework for Disaster Management

The Somali Communications Act was first drafted in 2012; nonetheless, it only received approval from both the upper and lower houses of the parliament in August 2017.[26] The object of the Communications Act of 2017 is, in general, to provide for the development of telecommunications

25 Submarine Cable Networks. Home – 2Africa. Retrieved from: https://www.submarinenetworks.com/en/systems/asia-europe-africa/2africa

26 World Bank. (October 2nd, 2017). Legal ICT Framework Is a Pivotal Moment for Somalia. Retrieved from: https://www.worldbank.org/en/news/feature/2017/10/02/legal-ict-framework-is-pivotal-moment-for-somalia

and broadcast policy and regulation for the country,[27] and to establish and estipulate the responsibilities for the National Communications Authority (NCA) as well as to define the role of the Ministry of Communications and Technology.

In relation with telecom/ICTs for emergencies, the Communications Act mandated the NCA to develop and manage the National Frequency Allocation Table. In addition, the NCA was required to plan and allocate frequency bands for national security and allow the use of these bands by the military and the emergency preparedness agency.[28] The National Frequency Allocation Table developed by the NCA, therefore, allocated spectrum for emergency services as follows:[29]

- 153 - 154 MHz   Emergency Mobile services
- 335.4 - 387 MHz   Emergency Fixed services
- 387 - 399.9 MHz   Public safety & emergency network
- 410 - 430 MHz   Fixed - Land mobile (Trunked Radio)
- 450 - 460 MHz   Fixed Wireless Access
- 460 - 470 MHz   Fixed services

Supported on the Communications Act of 2017, also, the NCA established that licensed telecommunications service providers are required to provide to their customers services such as emergency services and services for disabled customers.

Regarding the emergency services, in particular, the Communications Act determined that the NCA has the responsibility to promote public safety using a specific number designated as the national emergency assistance number for telephone services throughout Somalia. Also, according to the Act, the NCA should take action to encourage the prompt deployment throughout the country of the necessary infrastructure for the provision of access to those emergency services.

Although the Somali Communications Act establishes some requirements and responsibilities regarding emergency services in the country, it does not determine specific responsibilities for the NCA to develop a comprehensive regulatory framework related to telecom/ICTs for DRM. The NCA should be held accountable by law of establishing a regulatory framework that includes all the necessary

provisions in each of the four phases of disaster risk management for the telecom/ICT sector. Based on the mandate provided by the law, the NCA should develop the following regulations:

Mitigation and Preparedness phases:

1. Establish a unique national emergency Toll free number (3-digit number). Calls made to this number must be free for the end user and not generate interconnection charges between operators.

2. Oblige telecommunications service providers to carry out vulnerability analyses of their networks according to risk maps of different geographical areas and to establish corresponding contingency plans that guarantee, to the extent possible, vital communications for emergency management and disaster risk reduction, as well as the timely restoration of user communications. These plans should be submitted to and approved by the NCA.

3. Require that radio and commercial broadcasting operators, public and private television broadcasting operators, as well as civil society entities with assigned radio frequencies, transmit information campaigns for the mitigation of disasters and emergencies. These campaigns should be developed in coordination with the SoDMA and the NCA, and should have a regulated duration and broadcasting timeline.

4. Require that radio and commercial broadcasting operators, public and private television broadcasting operators, as well as mobile providers, disseminate alerts to inform the population of a hazard accurately and in a timely manner.

Response phase:

1. Ensure that providers of commercial fixed and mobile telecommunications services take the necessary measures to make available their networks and sufficient capacity for communications to the authorities and affected population, free of charge and in a timely manner, as soon as a disaster situation or emergency is declared.

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27 Somali Communications Act of 2012.

28 Id.

29 Information provided by the National Communications Authority.

2. Require mobile service operators to provide SMS messages to their customers, and encourage them to use these messages instead of mobile data services. Also, require that commercial telecommunications, as well as fixed and mobile service providers to limit the duration of calls to, for example, a maximum of 2 minutes in the geographic area of the disaster for a period of 12 hours following the event that generates the emergency. These norms would not apply to calls made from or to the numbers of the authorities involved in the emergency response.

3. Ensure that providers of commercial fixed and mobile telecommunications services give priority in communications to calls made by the authorities for a period of 24 hours after the emergency is declared, extendable as decided by the responsible authority (e.g. NCA).

4. Oblige radio broadcasting, commercial and community operators, as well as public and private television broadcasting operators, to transmit messages to inform and update the public about the disaster. These messages could include helpful content regarding health services, shelter, food, and family reunification, among others.

5. Oblige telecommunications service providers to immediately assess the damage to their networks and implement the previously prepared contingency plans, in order to re-establish communications as soon as possible.

6. The NCA could facilitate the issuance of authorizations for the use of the radioelectric spectrum on a temporary basis to national and / or international organizations for a period not exceeding 6 months in order to attend the emergency. No charges should be generated for the temporary use of the radioelectric spectrum during the emergency.

Recovery phase:

1. Require commercial and telecommunications service providers to re-establish permanent solutions after a disaster, in order to restore and improve communications to end users, with the aim of building back better.

Action Item 6

The National Communications Authority should establish specific regulations for the telecom/ICT sector on disaster risk management in the country. These regulations should be based on its functions granted by legislation, encouraging telecom/ICT network and service providers to actively participate in each one of the phases of disaster risk management.

7.1. Frequencies for Public Protection and Disaster Relief (PPDR)

The International Telecommunication Union (ITU) Region 1 frequency arrangements for broadband PPDR in the 694-791 MHz frequency range in accordance with the Arab States are presented in Table 3.

Table 3: Frequency arrangement for broadband PPDF in the 694 – 791 MHz frequency range

Frequency arrangement	Paired arrangements				Notes
	Mobile station TX (MHz)	Centre gap (MHz)	Base station TX (MHz)	Duplex separation (MHz)	
a)	698-703	50	753-758	55	2 × 5 MHz
b)	698-708	45	753-763	55	2 × 10 MHz
c)	698-713	40	753-768	55	2 × 15 MHz
d)	698-718	35	753-773	55	2 × 20 MHz

Source: Recommendation ITU-R M.2015-2

The implementation of PPDR in these frequencies is based on International Mobile Telecommunications (IMT) technology with bandwidths of 2 x 5 MHz, which has the potential to be harmonized in region 1, and is in line with 3GPP Band 68.[30]

There are three models for PPDR using these frequencies:[31]

1. Model one: Exclusively public safety-dedicated network, with spectrum being used exclusively by public safety users.

2. Model two: Shared public safety and commercial network, with distinct public safety and commercial network cores, and priority access and pre-emption rights for public safety use during emergencies and other times of need.

3. Model three: Commercial network, *i.e.*, public safety users obtain services from one or multiple commercial providers.

The model to be used should be based in a specific study for Somalia, and should include an analysis of the compliance of the following general principles:

- Interoperability: Allow first responders on the network to access other users, as authorized, from anywhere and at any time.

- Permanent access: Allow first responders to have permanent, immediate and uninterrupted access to the network.

- Coverage: Provide access in uncovered urban, rural, and remote areas.

- Resilience: Be resilient and robust in meeting the access requirements mentioned above.

- Provide mission critical services: Offer mission critical services to first responders, including data and video.

- Security: Include network security mechanisms for information and data.

- Sustainability: Be friendly to the environment and establish resources to keep updated in the future, meeting the goals and needs required.

- Accessibility: Be accessible to the entire community of first responders.

- Spectrum use: Use spectrum efficiently and effectively.

Action Item 7

The National Communication Authority should carry out the corresponding analysis and studies to decide which model (i. public safety exclusive dedicated network, ii. Shared public safety and commercial network or iii. Commercial network) would fit Somalia's needs for broadband PPDR in the 694-791 MHz frequency range.

8. International Conventions or Treaties

Although Somalia signed in 2015 the Sendai Framework for Disaster Risk Reduction, the country is currently not a signatory of any agreement or treaty related to emergency telecom/ICTs for DRM, such as the Tampere Convention.[32]

8.1. Tampere Convention

Somalia should become a signatory of the Tampere Convention and initiate the procedures to accede to the treaty that leads to its ratification. Subsequently, the country should take the necessary legislative actions to apply the contents of the Convention to current legislation, adding or complementing the provisions of the current regulations regarding telecommunications for international assistance on DRM.[33]

If the country ratifies the Convention, it is important that both the Ministry of Communications and Technology, and the NCA, as well as the Ministry of Foreign Affairs and the customs authority, initiate the required steps for its implementation. Likewise, it would be relevant to make some legislative and regulatory adjustments at the national level, complementing the current regulations on international assistance for disaster management. These steps will help all those involved in DRM in the country internalize and effectively adopt this legal framework for cooperation.

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30 ITU (2018) Recommendation ITU-R M.2015-2.

31 Following "Progress Report on National Public Safety Broadband Network", Canada (2020).

32 United Nations Treaty Collection. Chapter XXV – Telecommunications. Retrieved from: https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXV-4&chapter=25

33 International Telecommunications Union (2020), *ITU Guidelines for national emergency telecommunication plans*.

In accordance with the above, and within the framework of the Tampere Convention, the responsible authority regarding telecom/ICT regulation (The MOCT and the NCA), must establish specific regulations for the implementation of the Convention, including, for example:

1. Exempt from any type of charge, including charges for the use of radio spectrum and for service license, among others, international aid provided through the Tampere Convention.

2. Temporarily and expeditiously issue any authorization for the use of the radio spectrum that is necessary, in line with the provisions of national legislation.

3. Simplify or exempt any other existing regulation that prevents the use of telecom/ICT resources from international aid under the Tampere Convention.

To execute the agreement, in the event of its signature or ratification, it is also recommended to inform the government entities of the cooperation framework so that stakeholders have a clear knowledge of the relevant legal provisions and can effectively apply them when a disaster strike.

8.2. International Cooperation

Finally, there are other mechanisms within the framework of international cooperation that Somalia can use to improve DRM. For example, the United Nations Office for the Coordination of Humanitarian Affairs (OCHA); the United Nations Office for Disaster Risk Reduction (UNDRR); or the Emergency Telecommunications Cluster, can offer a set of tools and procedures that countries can use to promote more efficient disaster management.

In relation to international cooperation for the management of telecom/ICTs for DRM, it is recommended that Somalia work together with the International Telecommunications Union (ITU), considering it develops different activities on issues of telecommunications for emergencies. These activities include the publication of manuals on emergency telecommunications; emergency radiocommunications specifications applicable to all phases of a disaster; databases of available frequencies for emergency radiocommunication services on land

and space, and the International Emergency Preferences Scheme and a Common Alert Protocol, among others.

Action Item 8

1. *Somalia must initiate the process to be bound by the Tampere Convention. To this end, it is recommended that both the Ministry of Communications and Technology, the National Communications Authority (NCA), the Ministry of Foreign Affairs, and the Customs Authority, initiate the necessary steps for the ratification of the Convention. Subsequently, the necessary legislative and regulatory adjustments for the effective implementation of the Convention must be made by the relevant authorities.*

2. *The NCA must establish specific regulations for the implementation of the Tampere Convention.*

3. *Coordination and collaboration with different international agencies such as the ETC (Emergency Telecommunications Cluster) and the ITU (International Telecommunications Union) on issues of preparedness and response to eventual disasters or emergencies is imperative. This will avoid duplication of efforts and overlapping of work.*

Preparedness Phase

9. Standard Operating Procedures (SOP)

Standard Operating Procedures (SOPs) are defined as formal written guidelines or instructions for incident response. They generally have both operational and technical components and allow emergency response personnel to act in a coordinated manner across all disciplines in the event of an emergency.[34] These detailed instructions or procedures promote a uniform and standardized response during emergency response operations. These SOPs should be aligned with the legislative and regulatory frameworks as well as with the specific policies and plans related to DRM.

In addition, from a technical point of view, SOPs should

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34 United States Department of Homeland Security (2014), *National Emergency Communications Plan.*

consider the existing interoperability possibilities and, if necessary, the allocation of radio spectrum in a specific band that allows communication to take place, based on the existing radio equipment.

In Somalia, the National Disaster Management Policy establishes that every State Government must develop SOPs for disaster preparedness and response for action at State, district and sub-district levels, and ensure training and orientation of all relevant staff and community leaders in the SOP.

Action Item 9

1. *Somalia's Federal and state governments should maintain updated standard operating procedures (SOPs) for emergency and disaster response, especially those related to communications within and between agencies.*

2. *These SOPs should detail the technical means for communication (voice/data), including interoperability between the equipment (wireless) and the communication networks of the government entities.*

3. *Maintain an updated database with the focal points of every agency involved in disaster management.*

4. *SOPs must clearly define which radio frequencies should be used for the communications between the contact points (key decision makers) compatible with the radiocommunication equipment being used.*

10. Contingency Plans of Mobile/ Network Operators

A contingency plan for telecom/ICT must include specific procedures depending on the unique characteristics of the location, such as the level of connectivity of the site, the available facilities or equipment deployed in the area, redundancy, and power sources, among other elements.

This contingency planning, in addition, should include solutions and alternatives that can be deployed to maintain

operations and communications in the affected area by the agents responsible for DRM. This should be helpful for making advance decisions on resource management, and to develop procedures for the expected use of the full range of available technical and logistical responses, especially with respect to telecommunications.

Action Item 10

Public and private networks, including mobile, fixed and broadcasting operators must, individually, develop and periodically update their contingency plans for an emergency. Measures such as network redundancy, mobile base stations, secondary energy sources, among others, must be considered and included in the network design, especially in those areas/communities at risk according to the hazard maps and risk assessments, and considering the network vulnerability analysis.

Other type of networks, such as satellite networks, should also be considered in the contingency plans, e.g., satellite equipment in safe warehouses ready to be used in response to an emergency or disaster event. New technologies such as drones or high-altitude platform stations (HAPS), should also be analysed and included in the contingency plan if possible. Mobile wireless technology is a key enabler of several of these disruptive technologies applicable for disaster situations.

11. Early Warning Systems

Somalia lacks a nationally owned and managed emergency alert and early warning system. However, early warnings are currently triggered by the Food and Agriculture Organization (FAO) Somalia Water and Land Information Monitoring (SWALIM), the Food Security and Nutrition Analysis Unit (FSNAU), and the Famine and Early Warning Systems Network (FEWS NET).[35] The EAS managed by SWALIM covers climate, floods and droughts monitoring and alerting, as described below. While the FSNAU and FEWS NET focus on providing early warning and analysis on acute food insecurity, dynamics of food, nutrition, and livelihood security, and agroclimatic conditions, among other variables.[36]

Weather monitoring:[37] There are over 100 manual rainfall stations, eight synoptic weather stations and 11 automatic

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35   World Bank. (2020). *Somalia Crisis Recovery Project – Project Id P173315.*

36   FEWS NET. *About Us.* Retrieved from: https://fews.net/about-us

37   FAO. (2020). *Weather Monitoring.* Retrieved from: https://www.faoswalim.org/water/climate/climate-data-collection

weather stations in the country. Data from the manual stations is transmitted to SWALIM's Nairobi office on a regular basis through satellite, GPRS, e-mail or telephone. The automatic weather stations, located in Hargeysa, Borama, Sheikh, Aburin, Burao, Dollow, Garowe, Galckayo, Baidoa and Mogadishu, transmit information (such as rainfall, temperature, relative humidity, atmospheric pressure, wind speed, wind direction and solar radiation) almost in real time to SWALIM's offices through satellite feeds every four hours.

### Map 4. SWALIM's weather monitoring stations

Source: FAO (2020)

Flood Monitoring:[38] the Flood Risk and Response Management Information System (FRRMIS) is a web-based information dissemination and sharing platform that brings together the essential information on floods under a single user interface. According to SWALIM, this system is based on Geographical Information Systems (GIS) and web technology. Flood monitoring also feeds on a map (using high resolution satellite images) of the riverbank

breakages and areas of potential flooding along the Juba and Shabelle Rivers.

The FRRMIs management process is detailed on Figure 3.

Figure 3. FRRMIS Process
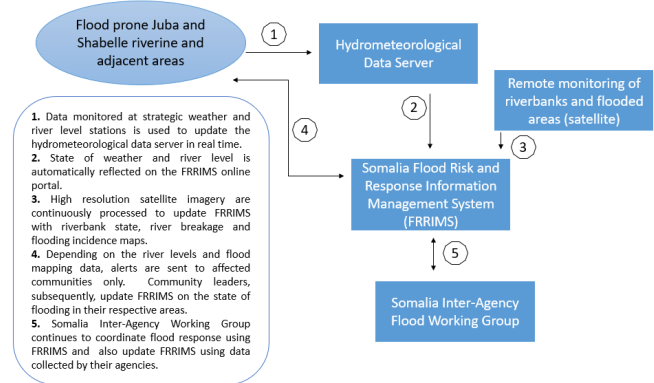
Source: FAO (2020)

Drought monitoring:[39] SWALIM monitors and analyses rainfall data to indicate if drought conditions exist. In 2010, SWALIM developed a drought measurement tool (a statistical index - the Combined Drought Index - CDI) that compares the present hydro-meteorological conditions with the long-term average characteristics in the same seasonal period, in order to categorize present conditions from mild to extreme levels.

The data from the different SWALIM's monitoring and warning systems is processed and disseminated to the public as information through SWALIMs information dissemination channels, which include[40]:

- The flood alert mailings, that are only activated when an emergency threatens.

- Periodical bulletins and alerts, to which users have to subscribe to receive, and include, among others, a daily rainfall forecast, a weekly update on river and rainfall levels, a drought situation bulletin for times of drought in the country, and a variety of alerts which are produced as needed in response to crisis or emergency conditions.

- Online systems, such as The Water Sources Live Map (web application that has features for both data management and data visualization through the

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38 FAO. (2020). _Flood Monitoring._ Retrieved from: https://www.faoswalim.org/water/floods/flood-monitoring

39 FAO. (2020). _Drought Monitoring._ Retrieved from: https://www.faoswalim.org/water-resources/drought/drought-monitoring

40 FAO. (2020). _Information Management._ Retrieved from: https://www.faoswalim.org/information-management

internet), the SWALIM special data catalogue (geo-node), and the FRRMIS.

- Offline systems, such as the Combined Drought Index (CDI) or the Irrigation Information Management System (IIMS).
- A flood preparedness information bulletin (in English and Somali languages) to give relevant information to communities regarding actions to take before, during and after a flood.

Emergency alerts should be provided to citizens and residents of Somalia with information that a significant crisis has occurred or is imminent and requires immediate attention. As more people in Somalia turn to their mobile devices for information[41], there is an increased need to develop innovative mobile enabled alerts and warnings technologies with enhanced capabilities[42]. The Somali Disaster Management Agency (SoDMA) may use this to increase public awareness, decrease alert notification times and ensure the highest state of readiness.

Action Item 11

Somalia must develop surveillance and monitoring systems for probable threats prior to the occurrence of disasters and/or emergencies. With the cooperation of the telecom/ICT service providers, solutions to warn and alert the public could be implemented, i.e., through mobile broadcast technology or broadcasting networks (radio and TV).

Also, the country should maintain efforts to re-establish the hydro-meteorological monitoring network that collapsed during the country's internal conflict and keep contributing to the SWALIM's effort to maintaining efficient monitoring and alerting systems.

Somalia must also enhance the Government agencies' capacity to translate and disseminate warnings to trigger effective planning and response measures by local institutions and at-risk communities.

The Common Alerting Protocol (CAP) is one of the most efficient mechanisms to warn people of a possible disaster

immediately and communicate a few key facts of any emergency through different telecom/ICT networks, such as mobile networks, Internet, sirens and broadcast radio and television, among others.

Cell broadcasting can also be an efficient mechanism for emergency authorities to send one-touch notifications to cell phones in affected areas by causing the cell phone to sound a ring and to display a warning message on the screen.

12. Drills and Training

The development of an effective NETP should consider including practical strategies that improve the capacities and training of all people involved in the management of emergency telecom/ICT. This is important because considering the development of these capabilities improves the speed, quality and effectiveness of emergency preparedness and response.

Drills, trainings, and exercises play a vital role in readiness and proficiency in accessing and using communications capabilities during emergency situations. This is also essential in ensuring that interoperable emergency equipment is well maintained, operational and ready for deployment. In addition, this ensures that appropriate levels of readiness by personnel so as deploy, set up, and use equipment effectively, both on their own and in conjunction with other responders.

The Emergency Telecommunications Table-top Simulation Guide, developed by the ITU (2020) and the online training tool on How to Develop Tabletop Simulation Exercises (TTX), provide all the relevant information needed to develop and carry out this type of exercise.[43]

Action Item 12

Telecommunications training, sensitization workshops, and drills for emergencies should be regularly carried out to improve emergency responders' capacity with communications equipment and enhance their ability to execute policies, plans, and procedures governing the use of communications networks. The telecom/ICT sector

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41 GSMA (2018). *Humanitarian Connectivity Charter Annual Report*

42 GSMA (2021). *Capacity Building Course 'Responding to Disasters and Humanitarian Crisis'*

43 These documents can be consulted in the following links: https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Documents/Publications/2020/TTX_Guide.pdf

https://academy.itu.int/index.php/training-courses/full-catalogue/practical-disaster-response-how-develop-table-top-simulation-exercises-ttx

should actively participate in these drills and exercises and develop and carry out their own to implement the NETP effectively.

13. Support for People with Specific Needs

Telecom/ICTs can also be a key tool in disaster response and management operations to reach traditionally marginalized or especially vulnerable groups before, during, and after a disaster. Telecom/ICTs can use multiple modes and channels, such as TV, radio, SMS-text messages, or the different Internet-based services and resources: video, instant messaging over the Internet, web conferencing, and social networks, among others, which all allow instant communication and sharing of photos and/or videos and satellite communications.[44]

In that sense, dissemination of disaster preparedness and planning content should be provided in multiple formats. For example, subtitles can be included in visual communications so that persons with auditive difficulties could receive the message, or visual and sound alerts could be introduced in public spaces to meet the needs of as broad a swath of the population as possible.

Action Item 13

Develop mechanisms, working together with network operators and telecom/ICT service providers, to understand the accessibility requirements needed to guarantee that vital communications accessible to all persons, including people with disabilities, the elderly, women, and girls, as well as refugees and immigrants. This should be linked to the existing early warning systems in the country, such as the SWALIM's systems, so that people receive and understand the alerts for early actions to take place.

Response Phase

14. Communication and Coordination

In the response phase, all contingency plans and standard operating procedures established in the mitigation and preparedness phases must be executed. Telecom/ICT must

be established to enable communications between first responders, decision makers in the government and the community.

During the disaster response phase, authorities can establish emergency operations centres or communication and coordination command posts to provide critical communications to users in each organization involved. These positions can be fixed or mobile, local or remote, and could be located in a vehicle or in a shelter, among other possibilities.

The functions of these centres or posts are to assess the emergency situation, inform a dispatcher, and identify and request appropriate resources when necessary. Therefore, these command posts should be in contact with each other (one in a remote location outside the perimeter of potential danger, and the other one at the site of the emergency, for example), in order to respond to the direct requirements that are generated in the emergency area, to dispatch equipment and personnel, anticipate the need to provide more support and assistance, and position additional resources in the area.

Considering this, it is important to maintain interoperable and continuous communications between command posts and between the rest of the stakeholders involved in the response to the emergency. As such, it is necessary to use all available means of communication and maintain close coordination with the various agencies involved.

SOPs and contingency plans, including temporary satellite connectivity and any other available means of communication, are particularly important when terrestrial networks are down, and key decision makers need to communicate to coordinate the emergency response.

In Somalia, currently, the Federal Government is setting up a National Emergency Operations Centre (NEOC) led by an inter-ministerial Committee of the Office of the Prime Minister (OPM) and SoDMA, although no results have been achieved until now.[45]

Action Item 14

Somalia should continue to develop the National Emergency Operations Centre (NEOC) to act as the focal point for coordinating response to emergencies and

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44 International Telecommunications Union (2020), *ITU Guidelines for National Emergency Telecommunication Plans.*

45 World Bank. (2020). *Somalia Crisis Recovery Project – Project Id P173315.*

disasters on a 24 hours/day basis. The country should also consider planning for the establishment of communication and coordination command posts to provide critical communications to users in each organization involved during the response phase of a disaster. These positions can be fixed or mobile, local, or remote, and could be located in a vehicle or in a shelter, among other possibilities. Maintaining interoperable and continuous communications between command posts and the rest of the stakeholders is vital for an effective response to the emergency.

15. Collection and Analysis of Information

A key element during the response phase of disaster management is to develop ICT assessments to prioritize the deployment of critical ICT infrastructure to the most affected areas, and to collect and analyse information related to the immediate needs of the population affected by the emergency to manage the safe delivery of the response. Gathering and evaluating information is particularly important because this information can be communicated in a timely manner to the corresponding authorities (e.g. health entities, firefighters, civil police, among others), and to respond to the needs of the affected population as soon as possible.

For achieving this, it is necessary to use all the available telecom/ICT networks, and to include the collection of geospatial information from the disaster, to analyse the information obtained and coordinate the response planning geographically.

16. Emergency Awareness and Updates

During the response phase, it is also necessary to continue monitoring and warning of *new risks* to the affected population and to disseminate updates about the emergency situation.

To achieve this goal, multiple methods of communication such as radio and television broadcasting, text messages and/or audio messages through mobile operators, social networks, applications, among others, should be employed.

Call centres should be established to connect affected populations with their relatives during the response phase. Generally, these call centres can be in shelters, and should use means of communication that do not congest the networks, for example, text messages. These call centres can also be established in collaboration with telecom/ICT operators in additional locations such as hostels and hotels.

In the event that the country does not have the capacity (*e.g.* equipment, human or financial resources) to establish this type of call centres, this service can be provided by international organizations, such as the Emergency Telecommunications Cluster (ETC). In the Central African Republic, for example, the ETC established a dedicated Covid-19 call centre in the country's capital, Bangui, to give advice to callers and to refer potential cases of Covid-19 to the Ministry of Health as part of the national response to the pandemic.[46]

Action Item 15

During the response phase, call centres should be established to warn the affected population of new risks, to disseminate updates about the emergency situation, and to connect affected populations with their relatives. Generally, these call centres can be located in shelters, and should use means of communication that minimize network congestion, for example, text messages. To establish these call centres Somalia could use satellite networks or seek collaboration with telecom/ICT operators or international organizations to establish the required telecom/ICT infrastructure.

Recovery Phase

17. Assessment of damage, reconstruction and improvement of telecom/ICT infrastructure

During the recovery phase, the damage caused to the telecom/ICT networks should be evaluated as a precursor to timely reconstruction and improvement of the damaged infrastructure. This reconstruction should seek,

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46 ETC (2020). Central African Republic – Situation Report # 37. Available at: https://www.etcluster.org/sites/default/files/documents/ETC%20CAR%20SitRep%20 37_July%202020.pdf

at a minimum, to restore communications to the same conditions as they were before the disaster. But preferably, ICT infrastructure should be rebuilt on the principle of *building back better*; that is, reconstructing a more resilient infrastructure that can withstand future disasters.

It is necessary to maintain the availability of a minimum level of communications for those who carry out the damage assessment and reconstruction activity and to establish communication priorities to manage available communications resources.

Action Item 16

Restoration and reconstruction of the telecom/ICT infrastructure should be based on lessons learned and on the principle of building back better, to considerably reduce the risk to the people and communities in the wake of future disasters and shocks. Also, these activities should involve the active participation of the private sector, including fixed, mobile and satellite network and service providers.

18. Recovery Activities Follow-up

Telecom/ICTs must have the capacity to support the recovery activities of the affected area after the disaster. This includes continuing to transmit relevant information for, among other objectives, updating the public on the emergency on topics such as health services, shelter, food, or family reunification.

Action Item 17

Based on the experience acquired during the disaster management, a report should be developed after the response and recovery phases identifying lessons learned and including necessary modifications and improvements that should be made to the NETP. The NETP should be updated every 2 to 3 years or as deemed necessary.

Annexes

The following information must be collected and included in Somalia's NETP considering the confidentiality needed in specific cases, e.g., coverage of commercial networks.

A1. Inventory of Telecom/ICT networks

Radio broadcasting

Company	Station Name	Transmitter Location (address)	Frequency (FM/AM)	Coverage (localities)

Television broadcasting

Company	Station Name	Transmitter Location (address)	Frequency	Coverage (localities)

Mobile providers

Mobile Provider	Coverage (District, Cities/Localities)	Technology (2G, 3G, 4G)

Fixed providers

Fixed Provider	Coverage (District, Cities/Localities)	Technology	Service

Satellite

[Satellite equipment, equipment location, voice and/or data services, satellite provider, frequencies, etc.]

Amateur Radio

[Network specifications to be provided, e.g., repeater locations, frequencies, voice and/or data service, type of equipment, etc.]

A2. Disaster management network

[Frequencies of operation (HF, VHF, UHF, etc.), repeater locations – radio sites, inventory of mobile and portable radio terminals, callsigns, who is responsible for the equipment/network, etc.]

A3. Private networks

[Name/owner, site locations, frequencies, coverage, etc.]

A4. Contact information

[Contact information of key people from the government and the private sector (networks) who need to have priority in their communications in case of an emergency]

Name	Institution	Private/Public	Contact information

A5. International telecom/ICT support

[Contact information of key telecom/ICT people/international organizations for disaster relief]

Name	International Organization	Contact information

A6. Standard Operating Procedures

[SOPs for communications within the SoDMA (including Directorates, etc.), and between the SoDMA and other bodies such as the NDMC, SDMCG, and other high-level government authorities, first responders, etc. What means of communication will be used? (including wireless technology, frequencies, equipment, etc.) What are alternative means of communication?]

A7. Contingency Plans

[Summary of contingency plans from telecom/ICT services providers. The detailed plans are generally not made publicly available.]

Acronyms

CAP	Common Alerting Protocol
DMT	Disaster Management Team
DRM	Disaster Risk Management
ETC	Emergency Telecommunications Cluster
FAO	Food and Agriculture Organization
FRRMIS	Flood Risk and Response Management Information System
GIS	Geographical Information System
HAPS	High-Altitude Platform Stations
ICS	Incident Command System
ITU	International Telecommunications Union
MOCT	Ministry of Communications and Technology
SoDMA	Ministry of Humanitarian Affairs and Disaster Management
NCA	National Communications Authority
NDMC	National Disaster Management Council
NDMF	National Disaster Management Fund
NDMP	National Disaster Management Policy
NEOC	National Emergency Operations Center
NETP	National Emergency Telecommunication Plan
NGO	Non-Governmental Organization
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
OPM	Office of the Prime Minister
SDMCG	Somalia Disaster Management Coordination Group
SEOC	State Emergency Operations Centre
SOP	Standard Operating Procedure
SRCS	Somalia Red Crescent Society
SWALIM	Somalia Water and Land Information Monitoring
telecom/ ICT	Telecommunication and information and communication technology
UN	United Nations
UNDRR	United Nations Office for Disaster Risk Reduction

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