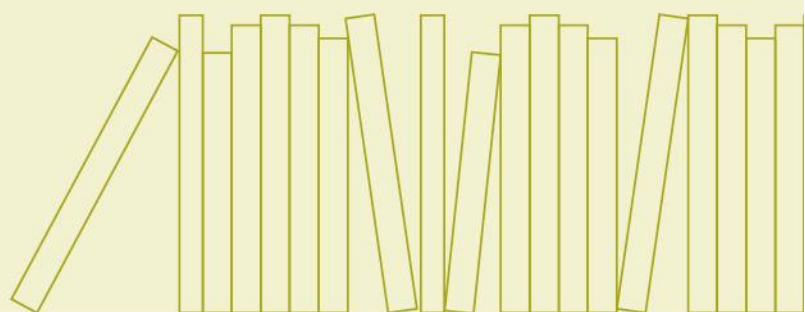Economic Commission for Latin America and the Caribbean

ECLAC SUBREGIONAL HEADQUARTERS FOR THE CARIBBEAN

Report of the expert group meeting on strengthening cooperation between telecommunications operators and national disaster offices in Caribbean countries

UNITED NATIONS

ECLAC

REPORT OF THE EXPERT GROUP MEETING ON STRENGTHENING COOPERATION BETWEEN TELECOMMUNICATIONS OPERATORS AND NATIONAL DISASTER OFFICES IN CARIBBEAN COUNTRIES

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This document was prepared by Peter Nicholls, Chief, Caribbean Knowledge Management Centre, and Robert Williams, Associate Management Information Officer, under the supervision of Dillon Alleyne, Deputy Director, ECLAC subregional headquarters for the Caribbean.

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A.   RECOMMENDATIONS

After extensive engagement among representatives of disaster offices, telecommunications companies, and other organizations, consensus was reached in support of the following recommendations:

1.   National disaster offices and telecommunications companies can build on their shared desire to reduce disaster risk and increase national resilience. There is goodwill between these groups, and each recognizes the potential value of increased coordination. However, it was also noted that collaboration is frequently constrained by capacity limitations on the part of disaster offices, as well as commercial concerns of telecommunications operators that tend to discourage information sharing.

2.   While there may be a role for regulators to play in refereeing negotiations between the telecommunications operators and disaster offices, it was recommended that the use of regulation to compel the cooperation of telecommunications providers should be considered only as a last resort. It was suggested that more would be achieved through the cultivation of a productive partnership based on the pursuit of mutually beneficial goals.

3.   As the entities responsible for the coordination of disaster management in their countries, it was recommended that national disaster offices take the lead in inviting the telecommunications industry to work towards strengthening this relationship. At the same time telecommunications companies, recognizing their responsibility as corporate citizens, should actively engage in this effort. A recommended first step for increased collaboration would be to ensure greater involvement of telecommunications companies in national disaster simulation exercises.

4.   Disaster offices and telecommunications operators should also take steps to improve their practices for information sharing. It was recommended that telecommunications companies share selected portions of their disaster response plans with disaster offices for review and comment. Further, it would be worthwhile to establish procedures for the regular exchange of updated GIS mapping data, so that telecommunications companies would have up-to-date hazard maps, while national disaster offices would be equipped with current information on the national communications infrastructure.

5.   There is a need to establish more formalized mechanisms of agreement between national disaster offices and telecommunications operators. Research conducted in preparation of this meeting found that, though a number of formalized mechanisms exist – including advisory bodies, telecommunications operator licenses, and acts of legislation – many of the operations-level practices were not codified, and were subject to either informal or ad hoc procedures, or governed by assumptions. These practices could be made more robust if responsibilities, procedures, and data transmission standards were formally agreed to, documented, and revisited on a regular basis.

6.   Regional organizations, such as Caribbean Association of National Telecommunications Organizations (CANTO) and Caribbean Disaster Emergency Management Agency (CDEMA), may wish to sponsor the development of a model Memorandum Of Understanding (MOU) that would be suitable to establish these formalized practices. The MOUs between the British Virgin Islands Department of Disaster Management and that country's various telecommunications operators could also be used as models for such agreements[1].

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[1]   This MOU can be found at http://www.bviddm.com/memorandums-of-understanding/.

7.   Systems that provide advance warnings of an impending disaster, delivered via mobile phones, have the potential to save lives and reduce damage to property. It was recognized that these systems were crucial to building national resilience in Caribbean countries, but in many cases were unavailable or inadequate. There were several areas noted in which progress was required in order to establish effective early warning systems in the Caribbean subregion. First was the need to perform an in-depth evaluation of the competing technology options that could be used to implement a mobile phone-based early warning system. Ideally, this could be accomplished through collaboration at a subregional level, to draw from a broad depth of experience and avoid the duplication of efforts, with organizations such as CANTO, CDEMA, ECLAC, and the Caribbean Telecommunications Union (CTU) contributing to the effort. Second, there was a need to identify funding sources to provide the capital investment needed to implement these projects – with the Universal Service Funds possibly being a resource. Thirdly, there was a need to effectively integrate these systems into existing communications control mechanisms, such as the Common Alerting Protocol (CAP) systems that were being deployed in a number of Caribbean countries, and to ensure that a regularised testing regime be implemented. It was noted that this was a task that should happen at the national level.

B.   ATTENDANCE AND ORGANIZATION OF WORK

1.   Place and date the meeting

8.   The expert group meeting entitled "Strengthening cooperation between telecommunications operators and national disaster offices in Caribbean countries" was convened by the ECLAC subregional headquarters for the Caribbean on 15 June 2016 in Port of Spain. The meeting also included online participants located in The Bahamas, Barbados, Jamaica, Montserrat, Puerto Rico, Trinidad and Tobago and the United States of America.

2.   Purpose of the meeting

9.   The purpose of the meeting was to review an upcoming study to be published by ECLAC, also entitled *Strengthening cooperation between telecommunications operators and national disaster offices in Caribbean countries*. Comments provided as part of the meeting were used as the basis for further development the study, which was released in May 2017.

3.   Attendance

10.   The meeting was hosted by the Caribbean Knowledge Management Centre (CKMC) of the ECLAC subregional headquarters for the Caribbean in Port of Spain. Representing the CKMC was the Chief of that Unit, as well as the unit's Associate Information Management Officer. The meeting brought together officials from disaster management offices and telecommunications companies located in The Bahamas, Jamaica, Montserrat, Puerto Rico, and Trinidad and Tobago. Among these were the Caribbean Disaster Emergency Management Agency (CDEMA), Caribbean Association of National Telecommunications Organizations (CANTO) Secretariat, members of the CANTO Disaster Management Working Committee. Representatives from two different providers of early warning solutions were also present. Also in attendance was the ECLAC consultant who had contributed to a draft of the study that was under review. Six (40 %) of the fifteen participants were women. A complete list of attendees is annexed to this report.

4. Agenda

11.   The meeting adopted the following agenda:

1.   Opening

2.   Telecommunications and disasters in the Caribbean: Tropical Storm Erika and Hurricane Joaquin

3.   The institutional landscape

4.   Understanding organizational needs and limitations

5.   Coordination for disaster mitigation and preparedness

6.   Mobile applications for Disaster Risk Management

7.   Coordination for post-disaster response and rebuilding

8.   Conclusions and recommendations

9.   Closing remarks

C.   SUMMARY OF PROCEEDINGS

1.   Opening

12.   The Chief of the CKMC, ECLAC subregional headquarters for the Caribbean, Peter Nicholls, welcomed the participants. He informed them that ECLAC was committed to building the capacity of Caribbean stakeholders in the area of Information and Communications Technology (ICT) for sustainable development. He noted that in a subregion that is especially vulnerable to natural disasters, ECLAC understood the importance of supporting policymakers in developing their ICT capacity to achieve sustainable development goals in the short, and, medium-term, including in the area of disaster risk management.

13.   He explained that the genesis of the study, *Strengthening cooperation between telecommunications operators and national disaster offices in Caribbean countries*, grew out of recommendations from a previous Expert Group Meeting[2] that was convened by the ECLAC subregional headquarters for the Caribbean. That EGM was conducted in October 2013, in connection with a study[3] on ICT for disaster risk management in the Caribbean, February 2014, that raised more concern on the part of national disaster offices (NDOs) about the lack of formalized agreements with telecommunications service providers regarding coordination on support for all phases of the disaster management cycle. He noted the concern was reiterated in October 2015

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[2]   The EGM report of Information and Communications Technology for Disaster Risk Management in the Caribbean is available at http://repositorio.cepal.org/handle/11362/38258.

[3]   The study on Information and Communications Technology for Disaster Risk Management in the Caribbean is available at http://repositorio.cepal.org/handle/11362/36735.

following Tropical Storm Erika in Dominica, where need was expressed for better coordination on incident and status reporting in the immediate post-disaster time-frame.

14.   He advised that ECLAC had been exploring how disaster planning and management within the Caribbean telecommunications sector could be enhanced by employing better coordination between telecommunications service providers and national disaster offices. ECLAC had also been reviewing how enhanced collaboration could be supported by regional organizations active in fields related to telecommunications and disaster risk management. In this regard, ECLAC approached CANTO in October 2015 to discuss the creation of joint research initiative with the CANTO Disaster Recovery Planning (DRP) Working Committee[4], of which ECLAC had been a member since 2013. As part of this initiative, ECLAC engaged an experienced consultant to collect information from Caribbean telecommunications companies and disaster management offices with respect to current practices on inter-institutional collaboration. With the input provided by the consultant, the Associate Information Management Officer for ECLAC prepared the draft study which was now being presented for the consideration of the meeting participants.

2.   Telecommunications and disasters in the Caribbean: Tropical Storm Erika and Hurricane Joaquin

15.   The Associate Information Management Officer began his presentation by recalling the recommendation from the 2013 Expert Group Meeting report that "Telecom operators in particular, need to be brought into formalized agreements with regard to supporting disaster response and recovery operations when the need arises."

16.   He provided a brief account of Tropical Storm Erika's passage through the Caribbean and its impact on the telecommunications sector. The heavy rains in August 2015 affected Dominica, Dominican Republic, Haiti and Puerto Rico. Buried fibre optic backbones were damaged by landslide and flooding damage, with bridge crossings particularly at risk. Some 68 out of 98 cellular sites were affected in Dominica, with a number of diesel generators running out of fuel after three days. The Red Cross reported a lack of Wi-Fi at distribution centres. An estimated USD 10 million in damages and losses were sustained by the telecommunications sector.

17.   He presented the telecommunications-related recommendations of the Rapid Damage and Impact Assessment produced by the Commonwealth of Dominica (27 August 2015). These included measures needed to ensure that first responders and disaster response personnel have priority access to networks; that the Emergency Operations Center (EOC) should serve as the information and communications focal point of the Government during and immediately after the disaster; that telecommunications companies should be required to make daily reports to the EOC as they assess and repair damage; and that the EOC should provide a standard template for reporting, which is linked to an emergency management information system.

18.   He provided a brief account of the passage of Hurricane Joaquin, which reached peak intensity off the Bahamas on 3 October 2015. The high wind and storm surge event saw wind damage to the aerial network, with the collapse of low-grade utility poles and extended electricity outages; the collapse of monopole cell towers; microwave dishes blown out of alignment and cable head-ends destroyed. More than four weeks of service outages occurred in some places due to damage to electricity and transportation infrastructure.

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[4]   Subsequent to the holding of this EGM, the CANTO Disaster Recovery Planning Working Committee has been renamed to the CANTO Disaster Risk Management Committee.
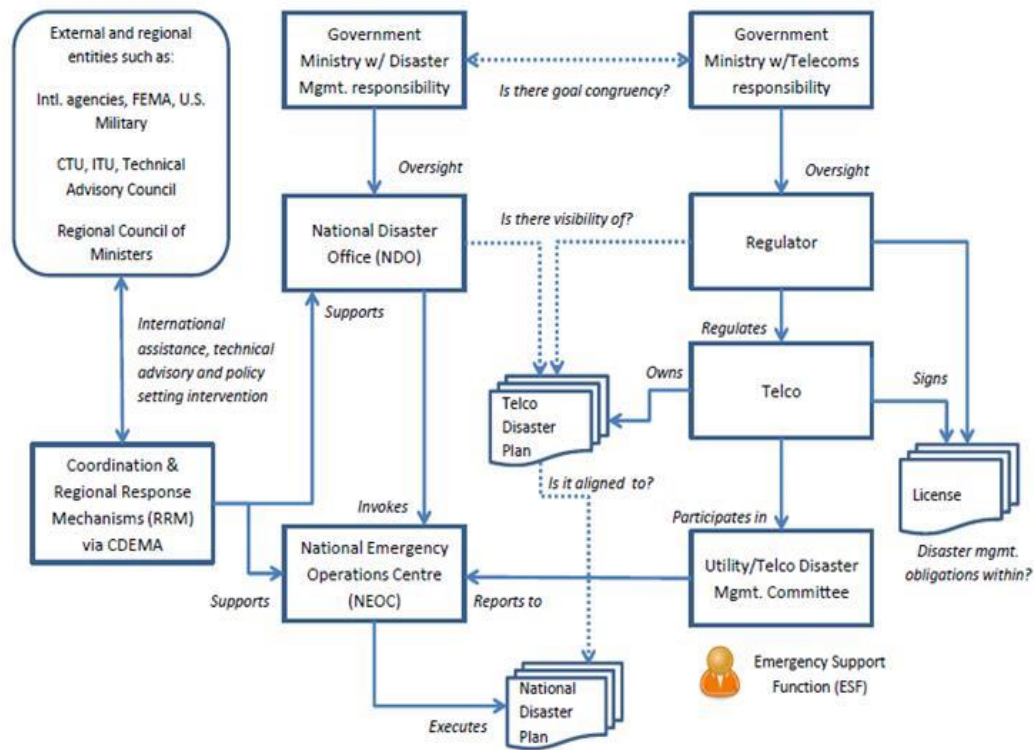
Discussion

19.   The discussion that ensued centred on the need to formalize agreements between telecommunications operators and national disaster offices. The ECLAC Consultant indicated that the interviews conducted revealed many gaps and deficiencies between these two key stakeholder groups in disaster risk management. He stated that the study being reviewed may be used as a guide for the application of disaster management procedure by different authorities.

3.   The institutional landscape

20.   The ECLAC consultant explained the relations among telecommunications and disaster management entities. The stakeholders and their interactions were detailed in a diagram developed for the study, presented below as Figure 1. Broadly, the primary institutions are the NDO, the various telecommunications companies, and the telecommunications regulator. The disaster office and the regulator each report to their respective ministry within the government, and the telecommunications companies are often subsidiaries of large, multinational corporations.

Figure 1
Relations among telecommunications and disaster management entities

Source: Shiva Bissessar.

Discussion

21.   In the discussion that followed, participants considered various issues, including the respective responsibilities of telecommunications operators, regulators and national disaster offices. The ECLAC consultant stated that there was a need for intervention by regulators in the development of the relationship between the national disaster offices and telecommunications

operators. Acting in the role of mediator, and with the power and institutional knowledge associated with their licensing authority, regulators can help to match the needs of the disaster offices with the provision of resources, assistance, and infrastructure from the telecommunications officers.

22.   The representative of ECLAC stated that, in his assessment, many of the current telecommunications operator licenses in the Caribbean subregion are very broad in their scope and do not entail specific disaster risk management responsibilities for telecommunications operators. He pointed out a few exceptions in the licenses of the British Virgin Islands and of Eastern Caribbean Telecommunications Authority.

23.   In contrast, the ECLAC consultant stated that during the interviews many of the NDO representatives were of the opinion that emergency requirements of telecommunications companies are integrated within license obligations, though he was unable to verify if that was in fact the case. He noted that these disparate impressions highlight the need for regulators to play a more active role in ensuring that emergency response was included as one of their respective license obligations. He further stated that one participant described the relationship between regulators, national disaster offices and telecommunications companies as being akin to a triangle. The interviews also highlighted the need for more regulator intervention and the importance of bridging the gap between the needs of national disaster office and what is provided by the telecommunications regulators.

24.   The representative from LIME Jamaica noted that licenses would make telecommunications operators more compliant, although she expressed concern at the duplication of roles among various oversight bodies. She questioned whether the regulatory body should be an oversight body or whether the oversight body should be a distinct committee. She raised concerns that in the case of the latter the oversight body could well replace the national disaster committee within the island. She spoke specifically to the Jamaican experience noting that the national disaster body has responsibility for ensuring that telecommunications companies have instituted their national disaster plans. She cautioned about the potential issues that can arise including duplication if the responsibilities were handed over to the national disaster bodies. With reference to the diagram presented in his presentation, the ECLAC consultant clarified that the role of regulator was distinct from national emergency operations centre. He further stated that the recommendation was based on comments and calls from the national disaster management offices for further guidance and understanding from the telecommunications companies. The intention was not for the regulator to subsume the roles of national operations centre.

25.   With reference to the presentation and study, the representative from LIME Jamaica noted that the telecommunications companies generally have company disaster plans that are linked to the established national disaster plans. She noted that the need to assess the effectiveness of the plans. She noted that at the time of the CANTO simulation that telecommunications companies were able to produce their respective plans. However, the issue that remains unanswered is the extent of the effectiveness of those plans. She flagged those issues for further discussion and review.

26.   In terms of early warning systems, she stated that those systems should be under the purview of the national disaster body and not just the telecommunications companies. She spoke of the experience of Jamaica, and highlighted the collaborative approach being employed to develop their early warning system. Against that backdrop, she emphasized the importance of collaboration with the national disaster agencies and telecommunications companies.

27.   The representative of the Disaster Management Coordination Agency in Montserrat spoke to his experience and engagement with Telecommunications companies noting that the intervention or support of those companies can only be solicited at a legislated stage in the disaster management

cycle, typically when a state of emergency has been declared. He also stated that telecommunications operators are concerned about legal liability associated with the operation of early warning systems for disaster, and indicated that this has been a contributing factor in their lack of engagement with efforts to deploy the technology. In response to this intervention, the ECLAC Associate Information Management Officer noted however that most licenses include clauses that effectively permit national governments to use telecommunications companies' resources within the first 30 days when a natural disaster occurs.

28.   On the issue of early warning systems, the ECLAC consultant recounted one example that had been flagged by the representative of Trinidad and Tobago which related to the telecommunications companies experience during a nationwide exercise (for the day of policing). Due to some of the challenges that arose during the staging of that event, one telecommunications company questioned whether alerts or advisories should have been issued to the public and whether that role was one of the responsibilities of the telecommunications companies. This highlighted the need for formalized agreement with clear demarcations of the types of alerts of advisories that should be issued and whether those advisories should be issued solely in response to natural disasters or if it can be used for sharing information to the public on other events of a human nature that can affect their daily lives.

29.   In his contribution to the discussion, the representative from Virtual Vision drew attention to the Sendai Framework for Disaster Risk Reduction 2015-2030 which recommends that the offices of disaster management (ODMs) use multi-hazard warning systems. The representative from Office of Disaster Preparedness and Management (ODPM), Trinidad and Tobago, reinforced the need to consider not only what is required of telecommunications companies but also the various mediums for issuing early warnings to the public.

4.   Understanding organizational needs and limitations

30.   The common challenges identified included a reluctance to share information on the part of telecommunications companies, due to the competitive commercial environment in which they opperate. This constraint has made it difficult for telecommunications companies to make potentially sensitive information available to disaster management offices. Another challenge was the cost of information maintenance, necessary to avoid the risk of making incorrect decisions based on out-of-date information and data. A third challenge is the limited congruity between the needs of regulators and disaster management offices, with information being shared for regulatory purposes not necessarily suitable for the purpose of disaster risk reduction.

Discussion

31.   On the issue of information sharing, the representative from Montserrat stated that as Disaster Coordinator he needed little technical information. Instead, it would be more practical to have on record arrangements or agreements that clearly outline and assure the disaster offices of the commitment of the telecommunications companies to disclose the requisite information during a disaster cycle. He further noted that open sharing of technical information would not be a safe practice for telecommunications companies. In response to that intervention, the representative of ECLAC stated that it was important to respect the privacy of the telecommunications companies. Further, noting that the information needs of each party differed, he proposed the establishment of standard definitions of the types of information that could be shared by each party so as to ensure clear lines of information sharing among all parties.

32.   On the issue of information sharing and security, the representative from ODPM, Trinidad and Tobago related a challenge experienced by the ODPM in their engagement with private enterprises. He cited, in particular, the initial unwillingness of the private entities involved in the initiative to share information because of their concerns about how this information could be used by their competitors. To address those concerns, Memoranda of Understanding (MOU)/Memoranda of Agreement (MOA), with specifics of what information could be shared, who could access it and how it could be used were developed among the concerned parties. Noting the success of that approach, he offered it as one option for addressing the trust concerns. In response to that intervention, the Associate Information Management Officer sought the consent of the ODPM with sharing copies of the MOU. ODM agreed to share the MOU when approval to share them had been granted.

33.   The ECLAC consultant noted that information sharing should not be one-way or limited to just what the telecommunications companies can share with the national disaster offices, but should also include sharing of information from the national disaster offices with the telecommunications companies. He identified some specific types of information that the national disaster offices and telecommunications companies could share, including hazard maps and disaster planning expertise. The representative of the ODPM, Trinidad and Tobago acknowledged that hazard maps can assist telecommunications operators with the planning of their infrastructure. He called for a discovery exercise to be conducted, which can identify the information held by both parties, and select what can be shared.

34.   The representative of CANTO noted that Trinidad and Tobago was planning a national hurricane drill in the near future. The Trinidad and Tobago Cabinet approved the conduct of national disaster preparedness drill in July and asked what was the expected role of the agencies, in attendance at the EGM, in that national exercise. She identified that exercises are an ideal event to observe national response and test policies. In response to that question, the representative of the ODPM, Trinidad and Tobago stated that the drill has been scheduled for 20 July 2016 and that all agencies were expected to participate and play different roles in the exercise.

35.   The representative of Virtual Vision endorsed the initiative of strengthening cooperation between telecommunications operators and national disaster offices in the Caribbean and reflected on the experience of his company with conducting a similar disaster preparedness drill in Tobago. During that exercise the Virtual Vision team collaborated with Distributed Systems Limited (DSL)[5] and undertook to assess the communications systems including live testing of the multi-hazard warning systems. He commented on the usefulness of that exercise and experience for highlighting the aspects of their system that needed to be modified and for giving an appreciation of the types of information that is needed and required on a minute by minute basis and he gained a better understanding of the needs of managers of national disaster offices. He reiterated the need for strong collaboration between the telecommunications companies and national disaster management offices.

36.   In sharing examples of the use and importance of using mobile social media applications before and during disaster emergencies, the ECLAC consultant concurred that national disaster offices needed the support of telecommunications operators. He underscored the need for a technology assisted response to support disaster management, and noted that this was clearly revealed in the study. He cited the use of WhatsApp groups during disasters as an emerging trend

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[5]   Distributed Systems Limited http://www.distributedsystemsltd.com/Main/.

and flagged the need for potential regulation of Over The Top (OTT) services during disasters, as well as Cellular Sites on Wheels (COWs).

5. Coordination of disaster mitigation and preparedness

37.   The ECLAC Associate Information Management Officer presented the section on coordination of disaster mitigation and preparedness. Areas noted for coordination for mitigation include improving the use and sharing of geographic information system (GIS) maps for hazards and telecommunications; developing policy to prevent network congestion in a post-disaster environment; enabling agreements for the sharing of capacity between telecommunications operators during an emergency situation; and preventing cell tower vandalism.

38.   Areas of coordination noted for preparedness included sharing of telco disaster response and business continuity management plans; establishing a protocol to advise national disaster offices of telecommunications service outages; establishing geographically-targeted mobile phone-based early warning systems; integration of telecommunications providers into Common Alerting Protocol (CAP) systems; co-location of emergency telecommunications equipment; and ensuring that emergency telecommunications facilities are regularly tested, and that telecoms companies are integrated into national disaster drills.

<u>Discussion</u>

39.   The representative from CMAS Holdings, LLC noted that there was an excellent report out of Japan a number of years ago relating to the importance of Government's investing on an ex-ante basis in the mobile communications system for disaster management. She further noted a conversation a few years ago with a United Nations Development Programme (UNDP) representative about possible fiscal coverage of a mobile alert system implementation in the Caribbean. She recalled that at that time UNDP was very keen on getting CAP implemented in the Caribbean as a priority but said it would consider the funding under certain circumstances.

40.   She also noted that while the CAP protocol is great to have and very helpful in standardization of systems, it is, however, not essential to have CAP capability to have a cellular emergency alert system—though CAP will certainly help automate the security of the system as to who initiates alerts, populates their content and how alerts are sent to specific targeted areas.

6. Mobile applications for disaster risk management

41.   The ECLAC Associate Information Management Officer presented the section on mobile applications for disaster risk management.

42.   In relation to short message service (SMS) based notifications, he advised meeting participants that the findings from interviews conducted with Caribbean DMOs had revealed that that frequency of testing ranged from every four weeks to "one time 4 years ago" to "never"; that systems were not tested at scale; and that past experiences had shown delays in message delivery service up to 24 hours later and with cases of messages delivered out of sequence. It was also noted that given there are no "geo-fencing" capabilities to target users in a particular region, broadcasting contribute to post-disaster network congestion.

43.   Cell broadcasting was presented as another option, with its one-to-many messaging avoiding network congestion; the ability for recipients to be targeted based on the location of cell towers; with examples noted in Europe and the United States. Cost of implementation was

suggested as a deterrent of cell broadcasting, with reference to a comment from a NDO from the 2015 EGM that "The telephone company is just not interested in supporting cell broadcasts, even in a limited way."[6]

44.   The advantages and disadvantages of application-based public alert systems for early warning were then presented. Advantages listed included the relative ease to implement and customize the system on a per-country basis; the ability for applications to support a high level of functionality including mapping, incident reporting and support for submission of real-time on-site photographs and other media. Challenges mentioned included the limitation of application installation to smart phone devices; the requirement for a dedicated data plan and the challenge to achieve widespread installation, especially to devices already sold to the public.

45.   As an example of a Caribbean based early warning system, the representative from Virtual Vision gave a presentation on the Virtual Vision platform which is being utilised by the Tobago Emergency Management Agency (TEMA).[7]

Discussion

46.   Key points during this discussion included capacity sharing, network congestion, concession agreements and early warning systems. Participants shared their experiences and observations on various disaster mitigation and response tactics and issues as they relate to telecommunications services.

47.   The ECLAC consultant informed the participants that during the floods in New York, which took place in 2012, the approach to capacity sharing by telecommunications operators, included public broadcasts against the use of the voice network, since limited talk time was available. He advised that this strategy may be suitable for the Caribbean subregion. He also noted that in Jamaica, telecommunications operators were in agreement with concessions for the public, but enquired about possible subsidies from the government to make this approach feasible.

48.   The ECLAC Associate Information Management Officer shared that telecommunications operators in Ecuador had provided users with free access to WhatsApp for a limited period. Participants offered further possible solutions for congestion and battery power issues, including the use of off the grid technology, such as satellite internet, WiFi hotspots, solar-powered chargers and charging stations; and having scheduled times for phone usage. He further noted that it was important to recognize that electricity is a very important part of infrastructure.

49.   The representative of LIME Jamaica applauded the use of post-disaster limited talk time, noting that this was the most critical period of time when the telecommunications support is needed by the public. She however expressed uncertainty on how to treat with the issues of capacity sharing.

50.   The representative from CMAS Holdings, LLC advised that some vendors, including her own, offered proprietary software enhancements to SMS systems that provide congestion control and geo-fencing features, similar to what is possible through cell broadcasting. Such systems can identify cell numbers attached to a given cell tower, and can provide alerts customized by language

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[6]   Report of the Expert Group Meeting on Information and Communication Technologies for Disaster Risk Management in the Caribbean: http://repositorio.cepal.org/bitstream/handle/11362/38258/LCCARL419_en.pdf?sequence=1.
[7]   A video presentation on the TEMA Virtual Vision platform is available at http://www.tema365.com/web/virtual-vision/.

and location. They can identify new numbers as they come into the danger zone, and can alert these new numbers accordingly. This "enhanced SMS" solution was another possible option that should be considered in the implementation of mobile public warning systems.

51. The representative from ODPM, Trinidad and Tobago noted that in addition to the broadcast messaging mentioned on social media networks, e.g. Facebook, etc. there was a new SOS feature being used, recognizing that after the earthquake in Italy and bombing in Nice, France, that persons had access to wireless networks and just enough coverage to press the SOS feature on to indicate that persons were safe.

7. Coordination for post-disaster response and rebuilding

52. The ECLAC Associate Information Management Officer presented the section on coordination of post-disaster response and rebuilding. Areas of coordination noted for response included standardization of protocols on the elevation of network priority for disaster-related communications; establishment of an effective mechanism through which telecommunications companies can provide network status reports to disaster offices; establishment of a mechanism through which intelligence collected by telecommunications crews in the field can be passed on to disaster management authorities; coordination on the placement of Cellsite-on-Wheels (COW) facilities to locations of greatest need; and dissemination of public information notices and other outreach activities.

8. Closing remarks

53. The closing remarks were made by the Chief of the CKMC.

<u>Annex I</u>

List of participants

Vydia Bhagan, Representative, Disaster Recovery Planning Workshop Committee, Caribbean Association of National Telecommunications Organizations (CANTO), Trinidad and Tobago.

Billy Darroux, Director, Disaster Management Coordination Agency (DMCA), Montserrat.

Gail Edwards, Representative, Disaster Recovery Planning Workshop Committee, Caribbean Association of National Telecommunications Organizations (CANTO), Trinidad and Tobago.

Oronde Lambert, Manager - Information and Communications Technology (ICT), Caribbean Disaster Emergency Management Agency (CDEMA), Barbados.

Dennis Marcelle, Information Technology Services Provider, Office of Disaster Preparedness and Management (ODPM), Trinidad and Tobago.

Aggrey Marsh, Developer, Virtual Vision, Trinidad and Tobago.

Sheila Mercado, Telecommunications Regulatory Board of Puerto Rico, Puerto Rico.

Judith O'Neill, Chief Operating Officer, Cellular Messaging Alert System (CMAS) Holdings, LLC, United States of America.

Shelon Padmore, Managing Director, Distributed Systems Limited (DSL), Trinidad and Tobago.

James Richardson, Engineer, Trinidad and Tobago.

Sherry Rolle, Senior Manager of Business Continuity, The Bahamas Telecommunications Company Ltd., The Bahamas.

Heather Wallen-Bryan, Business Continuity & Safety Manager, LIME Jamaica, Jamaica.

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