Disaster Risk Management & Climate Change Joint Platform 2013
Communications and Information Technology Sector Role in Disaster and Climate Change Policy

Ministry of Communications and Information Technology

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1. Introduction

The Ministry of Communications and Information Technology (MCIT) in collaboration with the Ministry of Finance (MOF), Ministry of the Prime Minister and Cabinet (MPMC) and the Samoa Audit Office (SOA) is developing a government-wide Information Communications Technology (ICT) policy. This is a long-term process, but the risks posed by climate change-driven are immediate. To address immediate ICT needs for disaster response and climate change MCIT will be working with the Ministry of Natural Resources and Environment (MNRE) and other relevant ministries to develop workable solutions within the larger ICT strategy that can support the immediate implementation of disaster response management and climate change policies. MCIT can provide advising, data, and training services for MNRE and key stakeholders on government ICT capacity, programming through 2AP Radio, process management for standardizing ICTs across government, and advice on acquisition procedures for training, enterprise-grade software, and Free and Open Source Software (FOSS) applications.

This paper will present three key areas within Objective 4.4 of the *Draft Final Sector Plan for the Communications and Information Technology Sector 2013-2017* (henceforth the *Sector Plan*) that tie into disaster risk management and climate change, proposing ways these key goals can support Objectives 5.1 and 5.2 in the proposed *Sector Plan*. Objective 4.4 includes tasks that are fully within MCIT's mandate to implement. Objectives 5.1 and 5.2 include tasks that are under the mandate of MNRE to implement, and MCIT can provide support in their implementation. This paper will introduce the current best practice policies on using ICTs for disaster response, and then describe how Objective 4.4 of the *Sector Plan* supports DRM and CC and how MCIT can support MNRE through Objectives 5.1 and 5.2.

2. Current international policies and practice for ICTs in DRM and CC

While using communication infrastructure for command and control during disaster response is not a new concept, the significant growth in access to high speed internet, mobile phones, and personal computing devices is changing the ways that governments interact with communities, and communities share information with each other to respond to crises. One area that has garnered a great deal of attention is the use of mobile phones in disaster response. The International Telecommunications Union (ITU) has been working to develop standard protocols for using mobile phone infrastructure to share information after disasters, and developing backup systems for keeping mobile infrastructure running if towers are destroyed[1]. While innovative and creative uses of civilian and commercial communication infrastructure is allowing

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[1] Disaster Response: Faster Better. 2012. Interview with Bilel Jamoussi, Chief of Study Groups Department, ITU Telecommunication Standardization Bureau. Available at: http://www.emergencycomms.org/issue-01/pdfs/articles/itu-disaster-response.pdf Last accessed: 28 October, 2013

governments and communities to work together more efficiently, the deployment and management of infrastructure and bandwidth with disaster survivability in mind is critical[2].

As ICTs have become more common worldwide, they are being used by local communities to share information laterally, as well as linking government to the village level.[3] This has driven major changes in how information flows, the risks associated with big data and crowdsourcing when working with at-risk or traumatized communities, and the methodological challenges associated with managing and making sense of the huge volume of data that comes through the ICT networks.[4] Mobile phones are having a particularly notable impact on decentralized citizen responses to disasters[5], and this is especially true in the Pacific where climate change and natural disasters have a significant impact on public safety and economic development.[6]

Making these kind of communication systems work during an emergency requires a great deal of communication and coordination between agencies and a well-developed legal process that allows for access to, and use of, public and private communications equipment. It also requires the government to do public outreach and local training so communities know how to effectively use their ICTs during an emergency. The next section will outline the legal and operational justifications for MCIT participating in DRM and CC processes.

3. Legal frameworks and justification for MCIT participation in DRM and CC

The *Telecommunications Act 2005* outlines some basic statutes for the use of communication infrastructure during disasters, with language defining the start and stop of disaster response being found in the *Disaster and Emergency Management Act 2007*. The Government of Samoa, through MNRE and the Ministry of Police and Prisons (MoPP), can demand access to both public and private telecommunications during periods of emergency to address the immediate

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[2] Technical Report on Telecommunications and Disaster Mitigation (Henceforth 'TRTDM'). 2013. ITU-T Focus Group on Disaster Relief Systems, Network Resilience and Recovery. Focus Group Technical Report. Available at: http://www.itu.int/en/ITU-T/focusgroups/drnrr/Documents/Technical_report-2013-06.pdf Last accessed: 28 October, 2013

[3] For more, see: Crowley, John. 2013. "Connecting Grassroots and Government for Disaster Response." Commons Lab of the Woodrow Wilson International Center for Scholars. Washington, D.C.

[4] For more, see: OCHA. 2013. "Humanitarianism in the Network Age." OCHA Policy and Study Series. Available at: https://docs.unocha.org/sites/dms/Documents/WEB%20Humanitarianism%20in%20the%20Network%20Age%20vF%20single.pdf Last accessed: 29 October, 2013.

UN Foundation. 2011. "Disaster Relief 2.0: The Future of Information Sharing in Humanitarian Emergencies." Available at: http://www.globalproblems-globalsolutions-files.org/gpgs_files/pdf/2011/DisasterResponse.pdf Last accessed: 29 October, 2013

[5] West, Darrell and Elizabeth Valentini. 2013. "How Mobile Devices are Transforming Disaster Relief and Public Safety." Issues in Technology Innovation. Brookings Institution. Available at: http://www.brookings.edu/~/media/research/files/papers/2013/07/16%20mobile%20technology%20disaster%20relief/west_valentini_mobile%20technology%20disaster%20relief_v20.pdf Last accessed: 29 October, 2013

[6] OHCA Pacific. 2013. "Pacific: New technology changing disaster response." Available at: http://www.unocha.org/top-stories/all-stories/pacific-new-technology-changing-disaster-response Last accessed: 29 October, 2013

needs of disaster response.[7] MNRE and MoPP can also direct telecommunications providers to allow international multilateral and bilateral entities to use infrastructure, bandwidth and spectrum in response to a national emergency.[8] Private telecommunications companies and internet service providers can apply to the Office of The Regulator (OoTR) to be reimbursed for costs associated with the disaster response operations, but cannot demand reimbursement for commercial revenue lost during disaster response.[9] These policies should be in line with the International Telecommunications Union's guidelines and expectations for member states' use of spectrum and bandwidth during emergencies.[10]

In order to more fully implement the following objectives from the *Sector Plan*, the Attorney General's Office (AGO) identified areas that are still undefined in the statutes governing the use of telecommunications assets during disaster response. One of the key areas is defining responsibility for costs associated with using private telecommunications infrastructure; there is only a provision for allowing providers to request reimbursement from the OoTR.[11] The AGO also suggests ascertaining, in consultation with MNRE and OoTR, whether the requests that would be made to the carriers and internet service providers (ISPs) are feasible given the available technical capacities.[12]

With these legal and policy issues in mind, MCIT can focus on objectives within the *Sector Plan* that are most aligned with the overall disaster response strategy, while also being legally and practically feasible.

4. Tying the *Sector Plan* into the larger DRM and CC process
The following sections highlight Objective 4.4 of the *Sector Plan*, which MCIT is tasked with implementing. It will tie these sections into Objectives 5.1 and 5.2 of the *Sector Plan*, which are led by MNRE and will explain how MCIT can support MNRE through its primary objectives.

4.4.1 Conduct an assessment of ICT capacity (ICT Division)
MCIT will be leading an assessment of the government-wide ICT hardware and software capacity, working with MOF and PSC. While this assessment is meant to plan strategy going forward, it can also guide MNRE as they design response policies that integrate ICTs in a practical way. While MNRE is the implementing Ministry for the DMO and disaster response

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[7] *Telecommunications Act 2005*. Sections 70.1 and 70.3

[8] *Telecommunications Act 2005*. Sections 70.1 and 70.3

[9] Ibid. Section 70.2

[10] "Spectrum management guidelines for emergency and disaster relief radio communication." Resolution 647 (WRC-07) Available at: http://www.itu.int/dms_pub/itu-r/oth/0B/06/R0B060000130001PDFE.pdf Last accessed 30 October, 2013

[11] *Policy to set aside and negotiate SMS text messages and emergency bandwidth in times of disaster and emergency*. Advice from AGO to MCIT on *Telecommunications Act 2005*. File no: MCIT.A1.1310.01

[12] Ibid.

and climate change policies, MCIT can be the clearing house that advises on ICT integration into the policies and programs for both government and multilateral partners.

5.1.1 Develop a climate change policy, and where one exists check if ICT is included as a key driver

MNRE will be leading on climate change policy, either updating existing policies or creating new ones based on inputs from internal and external policy and research documents. In order to effectively integrate ICTs into the climate change and disaster management policies, MNRE and the DMO need a reliable assessment of the ICT capacity across government in the immediate timeframe. MCIT will work with the Meteorology Division of MNRE to make sure their website is mobile-friendly.

5.2.2 Seek financial and expert assistance for the implementation of climate change early warning and monitoring system

MCIT can provide a reliable assessment of both existing ICT capacity, as well as needs assessments for MNRE, MFAT, MOF, and MPMC so that requests for international funding and capacity building are most effectively meeting the ICT needs of the disaster management and climate change policies. Key areas where MCIT can provide advice is in the vetting of technical assistance consultants, providing MNRE/MFAT/MPMC with technical assessments of gaps in ICT capacity, and budget estimates for the ICT portions of technical assistance programs.

4.4.2. Standardized ICT across Government (Policy Division)

While there is still much work to be done on standardizing the suite of hardware and software systems that will be used across government, MCIT can provide routine assessments of existing universal ICT capacity across government for policy planning purposes. This is important when developing policy, since a government-wide policy needs to be designed to be inclusive of all ministries and to achieve inclusivity baseline ICT capacity needs to be identified. ICTs in this case include radio, internet and mobile telephony; making sure that as many mediums as possible are shared across government should be a goal of the disaster response and climate change policy's ICT portions.

5.1.2 Provide relevant training to policy staff that work in implementing climate change policies

Since MCIT has technical knowledge of the communications and ICT sector, it can provide training services and technical support for larger bids to procure ICT training. Radio 2AP can also provide training on how radio works and the time needed to gather and pass information through the AM radio spectrum during disasters. MCIT can also provide regular updates of baseline government ICT capacity as new technologies or integrated systems come on line, making sure that training occurs as new systems becomes available.

5.1.3 Seek assistance from SPREP and other organizations to develop climate policy with a focus on ICTs

MNRE and the OOTR should consult on draft ICT policies for disaster response management and climate change, making sure that ICT capacities match the mandates of the policies, and that new policies will not overtax the existing bandwidth and spectrum during an emergency.

4.4.3 Develop a strategy for integrating FOSS

MCIT, with the support of MOF and Audit Office, will be developing a government software strategy and will be exploring the opportunities to integrate Free Open Source Software (FOSS) into government ICT systems. Given the challenges that are inherent to using FOSS, particularly the staffing and HR requirements, MCIT will be looking at using proprietary software solutions for whole-of-government ICT needs and then helping other ministries identify their unique needs that could be met with FOSS. In the disaster management and response field, FOSS is increasingly being used because of its flexibility and low cost, but to take full advantage of this ministries and agencies need to have programmers and software developers on staff with the engineering and technical knowledge to manage FOSS programs.

5.1.2
Given the unique benefits and challenges of using FOSS, MCIT can facilitate the provision of advising and training services for units that will be using FOSS. Training and experience are critical with using FOSS for disaster response, since offices will be directly responsible for maintaining the software. FOSS can also include mapping and data collection products such as the Alerts Crowdmap currently being maintained and use by the DMO.[13]

5.2.1 & 5.2.2
Proposals that make use of the mobile phone and radio spectrums should be cleared through the OOTR and MCIT Policy. This can help prevent overload on the communication infrastructure during emergencies and support effective allocation of resources across the national communication network.

5. Conclusions and Next Steps
Based on the domestic and international policy and legal frameworks cited in Section 3, there is a clear role for MCIT to play in the Government's disaster risk management and climate change processes. While the *Sector Plan* provides an overview of MCIT's strategy over the next three years (2013-2017), there are already existing projects and infrastructure in place that can be put to use in support of disaster response and climate change resilience. As part of next steps, MCIT could work with MNRE and the DMO to take advantage of these ongoing projects. Below are examples of these programs and projects, with explanations of how they can be used for disaster response and climate change presently.

1) Policy Role
The MCIT's policy and OOTR's regulatory roles should be strengthened as these greatly contributes to development activities relating to infrastructure, capacity and capability building programs, awareness programs, coordination of development partners and fulfillment of conventions agreements.

2) Feso'otai Centers
MCIT manages Feso'otai centers around the country. These are local telecenters in villages, and MCIT currently provides training for local managers on how to use the equipment and software. MCIT could coordinate with DMO to develop a training module for the Feso'otai center managers, or have a DMO trainer travel on training visits. These centers can act as coordinating

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[13] Available at: http://alerts.crowdmap.com

centers for first responders, and provide a hardened asset for local leaders to reach out and communicate among each other and with the government disaster response services.

3) Radio 2AP
Radio 2AP is the government AM radio station. Because AM tracks topography and is an analog bandwidth, it works very well as a transmission medium during natural disasters. During Cyclone Evan in 2012 Radio 2AP transmitted without interruption, and upgrades have been made to the backup generator to prevent loss of electricity. Radio 2AP also has its own internet access separate from the main office, so that it remains online if government buildings lose internet access. Radio 2AP can also use twitter as another means of information dissemination in collaboration with MNRE and other government agencies.

4) Community Disaster and Climate Risk Management Program
Depending on funding, MCIT could provide advice on the design of materials and hiring of trainers who could accompany disaster responders and the Red Cross to villages to provide ICT and disaster communication training.

5) Baseline updates
MCIT will be doing updates on government ICT capacity over the coming 12 months. These can be provided to MNRE so that the DMO is updated on the communications capacity across government.

6) Samoa National Broadband Highway
The Samoa National Broadband Highway has been installed by Huawei and will begin testing in late December. The current goal is to have it online for commercial and government use in April 2014. It covers the entire coastline, linking all villages to a high speed internet cable and upgrading mobile phone service to full 4G LTE transmission speeds.

6. Closing
MCIT can play a key role in disaster management and climate change adaptability, providing services that are immediately available and preparing policy and strategy for future needs. By following recognized best practices set forth by ministries in neighboring countries, and the resolutions developed by the ITU, MCIT can meet the needs of its partners in government to ensure that communication and ICT systems are up to date and ready to serve the needs of all Samoans during times of emergency.