Report of Regional Training Workshop in Asia and the Pacific

"Sustainable Development and Disaster Risk Management Using E-Government"

25-27 March 2015
Incheon, Republic of Korea

United Nations Project Office on Governance (UNPOG) / e-Government Branch (eGB) / Division for Public Administration and Development Management (DPADM) / United Nations Department of Economic and Social Affairs (UNDESA)

United Nations Office for Sustainable Development (UNOSD) / United Nations Department of Economic and Social Affairs (UNDESA)

United Nations Office for Disaster Risk Reduction (UNISDR)

DESA

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Part I - Overview of the Workshop

1. Introduction

The Regional Training Workshop in Asia and the Pacific on *Sustainable Development and Disaster Risk Management Using E-government* took place on 25- 27 March 2015 in Songdo, Republic of Korea. Three UN offices which are located in the Republic of Korea, respectively the United Nations Project Office on Governance (UNPOG), the United Nations Office for Sustainable Development (UNOSD) and the United Nations Office for Disaster Risk Reduction (UNISDR), collaboratively organised this training workshop. The inter-agency collaboration was very successful, with specific expertise from each office bringing great synergies and contributing to this insightful and informative workshop.

Specifically, UNOSD was responsible for organising two sessions on the first day and providing logistical support throughout the workshop; UNPOG was responsible for organising two sessions on the second day and the study tour programme on the last day; while UNISDR provided a conference venue for the workshop and also shared its valuable insights as related to disaster risk management.

The workshop invited 50 participants from 15 countries in Asia and the Pacific and 10 different organisations including international organisations, private sector and academia. The workshop started with an opening session, followed by four thematic sessions, and ended with the study tour to Korea's leading agencies for disaster risk management using e-government. Four thematic sessions focused on sustainable development and ICT, green growth knowledge platform, collaborative governance for disaster risk management, and country case studies, which helped participants understand the latest developments in these thematic areas and innovative practices and explore how to strengthen cooperation among countries and with international organisation in implementing efficient disaster risk management. During the study tour, participants gained hands-on experience on practical applications of e-government for responding to disaster risks in the Republic of Korea.

1.1. Background

The workshop was originally designed to discuss and explore innovative practices and approaches of e-government in disaster risk management for promoting sustainable development. It was very timely to organize this workshop, given that international efforts have been centred around on the Post-2015 Development Agenda and specifically sustainable development indicators, and active discussion is also under way to handle disaster risk to promote sustainable development (A/Res/66/288, para.186). Furthermore, as many governments nowadays embrace e-government in improving public service delivery, it is worth noting that this workshop put special emphasis on highlighting the critical role of e-government for disaster risk management.

E-government which is defined as "the use of ICT and its application by the government for the provision of information and public services, and as a means to engage people in decision-making processes" (2014 UN E-Government Survey, UNDESA), can play a significant role in disaster prevention and preparedness, and make it far more effective and less costly than ever before. The opportunities offered by the digital development over recent years, whether through online services, big data, social media, mobile apps, and cloud computing, are expanding the way we look at e-government and these technologies are also actively utilised by governments around the world to deal with hazard risks.

For example, governments are revealing disaster information through websites for citizens to access related information on a 24/7 basis and be prepared accordingly. Government websites could present varying degrees of information, ranging from the current status of disaster to its forecast and to guidelines to act. The Government of Japan, which is known for being very prone to disasters such as earthquakes and tsunamis, has innovated and set up an integrated information sharing system, so that related disaster data could be electronically transmitted to local authorities once detected and shared with citizens swiftly through websites, the mobile network, local broadcasts and other channels as well.

Emergency notifications via short message service (SMS) are widespread around the world thanks to high penetration of mobile phones. Denmark's Mobile Alert Systems provides instruction to citizens via their mobile services in case of natural disasters, accidents and other emergencies. The Government of Malaysia utilizes SMS for notifying citizens of limited drinking water supplies. In the United Kingdom and the United States, SMS is also provided in order to alert the population about flood dangers.

In terms of using social media for disaster management, a good example is its efficient use in responding to the Hurricane Sandy, which happened in the United States in 2012. During the Hurricane and its aftermath, the US Federal Emergency Management Agency (FEMA) analyzed social media for improving responses. The Agency looked over Twitter keywords and hashtags to be updated about what was happening on a real time basis. The Agency also monitored areas that were not active on the social media channels, indicating that communications were most likely down in these areas. Instagram photos also gave them a real time snapshot at damages caused by the Hurricane. Once developed a general idea of which areas were in most pressing need of aid, the Agency was able to allocate resources swiftly.

Moreover, the Philippines Government showcased how big data could be utilized to respond to disasters. The Philippines government started a flagship project called Nationwide Operational Assessment of Hazards (NOAH) in June 2012, and the Project NOAH includes the development of hydromet sensors (e.g., automatic rain gauges, water-level sensors, stream gauges) and high-resolution geohazard maps. Project NOAH also uses topographic maps generated by light detection and ranging (LiDAR) for flood modelling. These maps and other weather information are shared publicly through the Project NOAH website. These high-velocity and high-volume data, namely big data, have helped national and local governments become more prepared for disasters.

1.2. Objectives of the Conference

The objectives of the training workshop are:

- To discuss policies, strategies and best practices in the field of e-government for disaster risk management;
- To build up a strong network among experts and set up the mechanism/platform for sharing experiences and knowledge transfer with focus on innovative e-practices for disaster risk management;
- To explore effective and innovative ways to enhance capacity building for developing countries in the field of disaster risk management; and
- To enhance peer-to-peer learning through presentations and interactive discussions.

1.3. Main Themes

- Knowledge sharing and dissemination of lessons from players in the field of disaster risk management;
- 2014 UN E-Government Survey - new and emerging issues and main challenges of e-government development;
- E-government for disaster risk management in terms of online services, mobile application, geospatial data and big data;
- Introduction of innovative e-government best practices for disaster risk management by selected countries; and
- Strengthening the expert network in Asia and the Pacific with regard to disaster risk management.

Part II – Structure of the Workshop

1. Overall Structure of the Workshop

Day 1

- ***Opening Session***

  Opening and welcoming remarks were delivered by Head of three offices, respectively UNPOG, UNOSD, and UNISDR, followed by a keynote presentation by one staff member from Division for Sustainable Development of UNDESA about the development and prospects of the Post-2015 Development Agenda, and the cross cutting role of building resilience and disaster risk management in the sustainable development policy framework.

- ***Session 1: Sustainable Development Agenda and ICT***

  The first session provided insights on linkages between sustainable development and the potential of ICT. Speakers had in-depth discussion on how ICT can be deployed to increase efficiency and effectiveness of public service delivery that aims to enhance sustainability and resilience of societies. In their presentations, speakers also touched upon the way forward.

- ***Session 2 (two parts): Knowledge Platforms and Knowledge Sharing for Sustainable Development***

  The first part of the session focused on recognizing the importance of knowledge sharing in promoting a sustainable future for our planet. This session explored approaches on how to better coordinate and collaborate among countries for achieving sustainable development. Several approaches and processes for knowledge management and sharing were also presented.

  The second part was dedicated to the discussion about issues and obstacles in inter-organizational information and knowledge sharing.

Day 2

- ***Thematic Presentation***

  The second day commenced with a thematic presentation on e-government for disaster risk management in Asia and the Pacific, which set the underlying theme for the forthcoming presentations and discussions. Starting with the overview of UN E-Government Survey, the presentation introduced about main pillars of smart governance and innovative country practices and why adopting smart government for disaster risk management is important.

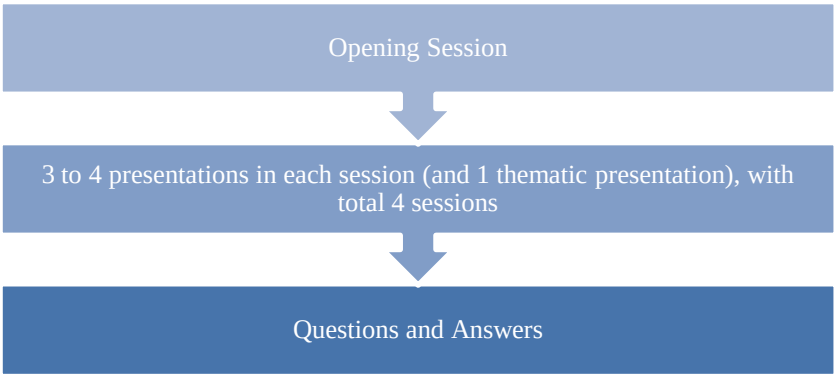
- ***Session 3: Collaborative Governance for Disaster Risk Management***

  Speakers from NGO, research institute and the private sector as well, explored a range of methods on how to identify, assess and reduce disaster risk utilising cutting-edge technologies such as open source platform, geographic information system (GIS), and big data. These methods put great emphasis on innovative solutions, often enabled by ICT, which could effectively minimize the impacts of disasters. Diverse recommendations were also proposed for promoting collaborative governance for effective disaster risk management.

Session 4 (two parts): Country Experience

In the first part, presentations by four country speakers brought many best practices to light. In the same vein, the session also addressed various aspects peculiar to each country's setting, i.e., DRM challenges and how to collaborate with all concerned stakeholders to prepare and respond to challenges. Many innovative solutions, often data-driven and ICT-based, were shared and discussed. Speakers also elaborated about key factors and recommendations for the successful deployment of DRM initiatives using e-government.

In the second part, participants were grouped in roundtable discussions on the establishment of ICT-enabled disaster risk management systems.



The Structure of the Workshop

During Opening Session

General View of the Workshop

2. Overall Organisation of the Workshop

The opening session started with opening and welcoming remarks by Mr. Jae-hong Lim, Head of UNPOG/DPADM/UNDESA, Mr. Jong Soo Yoon, Head of UNOSD/DSD/UNDESA and Mr. Sanjay Bhatia, Head of UNISDR. This was followed by a keynote speech on the Post-2015 Development Agenda, made by Mr. David Leblanc, Senior Sustainable Development Officer, DSD/UNDESA.

In the first session, Mr. James Larson, Chair, Department of Technology and Society, SUNY Korea, gave a presentation on ICT for sustainability. This was followed by the presentation of Mr. Bill (William) Ho, Department Head, Asian Disaster Preparedness Centre (ADPC), which highlighted ICT and risk governance. At the end of the session, Mr. Klaus Mueller, Chair, Department of Computer Science, SUNY Korea, introduced the ND-scope in a Geo-Spatial context.

The second session began with the presentation on state of ICT development in Asia-Pacific and its implications for sustainable development, made by Mr. Peter N. King, Senior Policy Advisor, Institute for Global Environmental Strategies (IGES). This was followed by introduction of the Green Growth Knowledge Platform (GGKP), made by Ms. Amanda Mckee, Knowledge Management and Outreach Officer, GGKP. Then Mr. Andrew McElroy, Public Information Officer, UNISDR, spoke about risk information sharing.

The third session on the second day started with thematic presentation on e-government for disaster management in Asia and the Pacific, made by Mr. Keping Yao, Governance and Public Administration Expert, UNPOG/DPADM/UNDESA. After the presentation, as the first speaker, Mr. Jinsoo Yeo, Manager, SK C&C, spoke about mobile devices and SMS for disaster risk management. Then, Mr. Michael Howden, President & CEO, Sahana Foundation, presented open source disaster management system (SAHANA). It was followed by the presentation of Mr. Sang Chul Noh, Sales Director, SPH Inc, which introduced geospatial data management (Super Map). As a final speaker in the session, Mr. Toshihiro Nemoto, Associate Professor of Tokyo University, presented the big data platform, introducing Data Integration and Analysis System (DIAS) for disaster research.

The fourth session began with the presentation on Bangladesh's best practices of early warning system, made by Mr. Dilder Ahmed, Joint Secretary, Department of Disaster Management and Relief, Bangladesh. Following his presentation, Mr. Raymund E. Libro, Assistant Secretary, Department of Science and Technology, Philippines, spoke about Philippines' project NOAH (IT-based e-governance tool and an operational disaster R&D programme). Then Mr. Bambang Dwi Anggono, Deputy Director, Government Service Application, Ministry of Communication and Information, Indonesia, spoke about Indonesia's national platform for disaster risk management.

Lastly, Ms. Jawon Lee, Professor, Department of Geography, Sungshin University, introduced Korea's national disaster management system.

After each session, the participants were given ample time for Q&A discussion and they discussed about how to strengthen collaboration between the Member States and international organisations, enhance capacity building activities, and promote knowledge-sharing.

Toward the end of each day, there were also in-depth round table discussions on how to overcome obstacles in inter-organizational information and knowledge sharing, and how to establish the system on ICT-enabled disaster risk management.

Round Table Discussion

Q&A

Part III – Findings and Major Points on Thematic Issues

1. Session I: Sustainable Development Agenda and ICT

Speaker 1: Prof. James Larson, Chair of SUNY Korea, Department of Technology and Society – ICT for Sustainability: Thoughts on Networks, Ecosystems and Intelligence

- Prof. Larson referred to evolution of a knowledge field from ICT4D to ICT4SD. Evidence for this transition was gleaned from Google's Ngram Viewer which scans text of the 30 million books that Google has digitized. Until recently most of the ICT relationship was with mass media and national development, but in the past few years there has been a sharp rise in reference to sustainable development.

- Much of his inspiration was drawn from an IISD publication on "Towards a New Paradigm" which states that sustainable development needs global communication and knowledge exchange. There are two separate domains that apply to this situation—environmental sustainability and the potential of ICT—but there is little interaction between the two.

- SUNY Korea is developing a strong focus on ICT and sustainable development, inspired by Claude Shannon's influence. In Korea there has been an explosion in telecommunication capacity from a digital highway to an information superhighway. Korea's digital growth started in the 1980's and now is one of the most connected societies in the world.

- In Manuel Castells' "The Rise of the Network Society" ICT is portrayed as a general purpose technology, cutting across all fields. Sustainable development, often cast as three overlapping circles of economy, environment, and society, tends to omit cultural diversity and governance, and could easily accommodate a fourth circle covering ICT.

- ICT is a disruptive technology. It is shifting the way the ground is shifting. The digital economy produces goods and services and provides for a high degree of creativity—a hallmark of the current Korean Government. Countries that are more advanced in ICT tend to be open communities, both internally and externally. Countries that provide significant barriers to the introduction of new ICT developments run the risk of being left behind. Prof. Larson cited Korea's late acceptance of smartphone technology, which sparked a shock in Korea, when it was realized that they had missed the boat. There were several reasons why Korea resisted the introduction of the smart phone with both manufacturers and mobile companies not realizing the

potential of a smartphone to act more like a computer than a phone, with its multiple applications.

- Achieving a green economy requires massive innovation to achieve the very ambitious goals—with direct effects, indirect enabling effects, and systemic effects. For example, how clear is the introduction of cloud computing, as the new data centers gobble up 1% of the world's energy? ICT has a direct effect on sustainability through the need to detail with mountains of e-waste. On the other hand, ICT can reduce 7.8 Gigatonnes (Gt) of GHG emissions, offsetting the 1.9 Gt that data processing centers emit. ICT can reduce emissions and help to create healthy ecosystems. Therefore, the future of ICT and sustainable development are inextricably linked. Prof. Larson also showed the recent development of carbon nanotube computing (using graphene) under the CEDRIC research program as the potential future of ICT without the downside effects of e-waste.

- Prof. Larson noted that Korea is now widely viewed as being at the forefront of mobile communication, as it turns to the 5G mobile system. He also referred to the Project Ara where mobile phones will become modular devices operating as handheld computers rather than communication devices alone.

Speaker 2: Mr. Bill Ho, Department Head, Asia Disaster Preparedness Center – ICT and Risk Governance

- Mr. Ho said that despite the recent agreements reached at the Sendai summit on disaster risk reduction to follow up the Hyogo Framework of Action, it became obvious that governments don't really understand risk. They need to move from disaster management to disaster risk management.

- To achieve this shift in thinking a more systematic approach to risk governance is needed covering science (to quantify the risk), systems (to provide effective governance), and application (to integrate disaster risk reduction into mainstream development processes).

- Disasters frequently set back development gains, so development planning needs to incorporate the risk of disasters. Some examples were provided:
  - Nepal has developed improved risk information through preparation of risk maps
  - Nepal has also developed a climate data portal incorporating climate modeling data and downscaled GCM models
  - Mandalay is located on the Saging fault and has high earthquake risks and most buildings are not resistant to the project seismicity levels, so they have conducted a city-wide assessment of at-risk buildings

- Lao PDR's Department of Disaster Management and Climate Change has created a geo-spatial risk information sharing platform—an increasing trend globally

- Mr. Ho also outlined some of the challenges and priorities in moving towards disaster risk management. Among these are (i) understanding of risks; (ii) access to information on risks; (iii) ability to manage disaster risk reduction; (iv) weak sub-national capacity; (v) lack of gender inclusivity; (vi) poor coordination within governments as well as among countries; (vii) lack of financial resources; and (viii) the difficulties of ensuring private sector engagement. In general, there is a need to ensure the buy-in by governments to move towards better risk governance.

- ADPC has trained around 14,000 graduates so there should be an excellent alumni network to spread this message, as well as a Regional Consultative Committee on Disaster Management.

Speaker 3: Prof. Klaus Mueller, Chair Department of Computer Science, SUNY Korea – The ND-Scope: Visual Exploration of Multivariate Data in a Geo-Spatial Context

- Prof. Mueller made a strong case for improved visual display of complex data. He runs the Visual Analytics and Imaging Lab at SUNY, Korea. He started by showing the bewildering extent of data currently existing globally, such as 30 billion RFID tags. The issue is how to make sense from all these data in a way that assists decision making. This can approached through 1D, 2D, 3D, or 4D images.

- Generally the way to distil patterns from the massive amounts of data is through clustering into groups, interaction, correlation, force-directed method, parallel coordination system, or fused data sets. Prof Mueller then worked through an example of developing a sales strategy through visual analytics. He stated that the ultimate goal of all these techniques is to produce better decisions.

Questions and Answers

- Prof Larson pointed out that there are 46 billion camera phones, 100 million GPS devices, >2 billion people on the web, 76 million smartphones, >12 terabytes (TB) of tweet data every day, and 12 TBs of log data every day. Mining these data raises significant questions of privacy and ethics, which the global community has yet to reach agreement on.

- A participant from China asked how to balance the internet and sustainable development in China. Prof Larson said that these questions must become part of China's development priorities and lead to strengthening of national

ICT policy. Marshall McLuhan said that the media is the message and we tend to be living in the realization of this prophesy today.

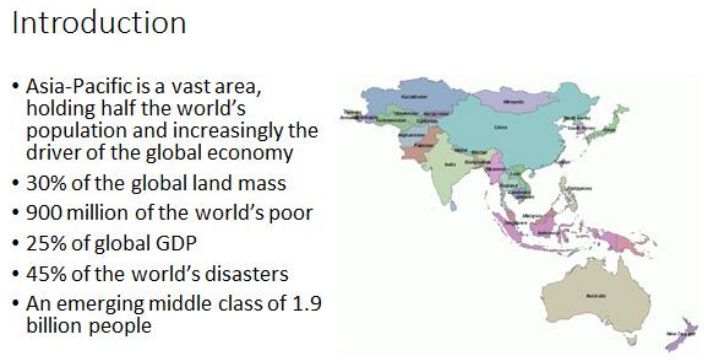
- A participant from Nepal said that empowerment is important and ICT is correlated with good governance in the development domain. Prof. Larson opined that we are moving towards world government without a "world government" through the empowerment that ICT provides. People are connected all over the world and no longer bound to their national boundaries.

- Another participant asked how the international community can set targets for ICT. Prof. Larson said the science-policy interface must address trends, feasibility, and the most binding targets. There are hundreds of existing targets through previous multilateral environment agreements and others that are not being met and yet there is no accountability for that. Any targets for ICT, therefore, must be seen as really implementable.

2. Session II (part I): Knowledge Platforms and Knowledge Sharing for Sustainable Development

Speaker 1: Mr. Peter King, Senior Policy Advisor, Institute for Global Environmental Strategies (IGES) - State of ICT development in Asia-Pacific and its Implications for Sustainable Development

- Strong on more than 40 years experience in Sustainable Development Management, Mr. King started by showing the weight of Asia-Pacific in the world using some statistics, and then showed that the emerging of a large middle class in Asian countries, in the absence of SCP patterns, we would need the equivalent of 3 Planet earth to fulfill all the demand.



- How can ICT help? Mr. King shares ideas from a leadership training program he attended recently. Among the SDGs presented by an earlier speaker, goal 12 concerns ensuring sustainable consumption and production (SCP) patterns. These can be achieved by the sharing economy and social innovation. The role of the 3Rs (reduce, reuse, recycle) is emphasized.

- Remarkably, during a presentation from Toshiba (essentially a technology company) R&D it was stated that progress will come from social innovation rather than from technology.

- A large number of nascent signs of sharing economy, most enabled by IT, is presented: car sharing, rental of luxury goods, secondhand/ flea markets, cloud computing, as well as some company names that have become trademarks for sharing (Netflix, Airbnb, Couchsurfing, Uber).

- Another example of direct IT-fueled social innovation is the use of massive data sets from cellphones equipped with GPS to plan residential development, locate advertising or optimize traffic flows

- In conclusion, sustainable development is possible if we move towards a highly efficient sharing economy, which ICT can help. Technological development needs to be matched by social and cultural innovation.

Questions and comments

- A participant from Laos discusses the translation of support for sharing into local languages, as not everybody speaks English in Asia. Michael Howden (SAHANA) points out that some products also get a cultural localization, not only a simple translation.

- It is noted that not all examples of sharing worked, the worst example being Communism. Sharing should come from the bottom, not forced from the top, and be implemented in a culturally sensitive manner. This could also allow developing countries to leapfrog over what other countries already did.

- Michael Howden also points out the impact of local, bottom up information, as well as crowdsourcing, impact investing and microfinancing

- Prof. Larson, from SUNY Korea, gives an example in which Korean government required phone companies to provide GPS data from cellphones and used it to design night service for buses, with significant positive results. Another technology that increases the potential for sharing is the commercialization of 3D printing modules, which allows sharing of design.

Speaker 2: Ms. Amanda McKee, Knowledge Management and Outreach Officer, Green Growth Knowledge Platform (GGKP) - The Green Growth Knowledge Platform: Managing Knowledge for Impact

- The speaker started by presenting the GGKP as a partnership of a large number of organizations. The twofold mission of GGKP is to identify knowledge gaps and use world class knowledge management and communication tools for dissemination of information and data.

- Example of Atlanta and Barcelona - impact of culture in practices related to sustainability

- The GGGP is an example of collaboration - as emphasized by one of the opening speeches. The large proportion of experts from developing countries – 29 out of a total of 66, almost 50%. GGKP offers more than 1000 library resources, 28 sector and theme pages and 193 country pages.

- The speaker demonstrated live some of the functionalities of GGKP, including drilling down in country data.

- Finally, the lessons learned included the added value of curation (what does your platform bring w/r to Google), as well as a warning against the knowledge platform proliferation syndrome.

Questions and Answers

- A participant asked what the technical platform underlying GGKP is – and was explained that GGKP uses Drupal, an open source content management system, customized for advanced functionalities. Additional APIs (for example reegle) are also used, and data shown on country pages is extracted from partners.

- Peter King asks how to manage and keep alive the multiple networks that exist in the domain – examples are APAC and SDPlanNet. It is recognized that a constant problem is the funding of the core secretariat.

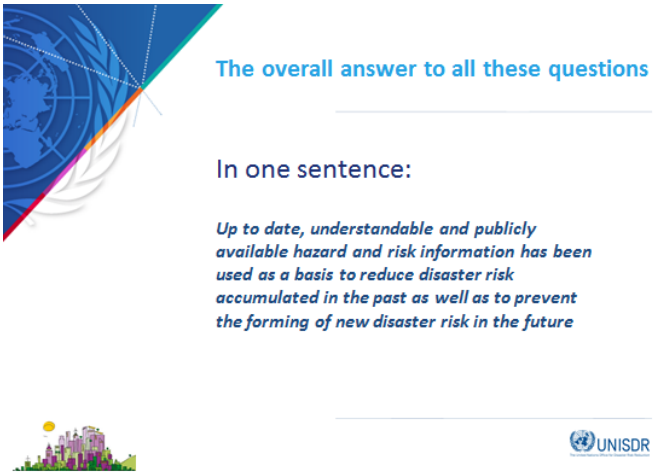
- A delegate from Laos asks about social platforms used by GGKP. The speaker explains that the online metrics have just been discussed and published in January. The choice was made not to use Facebook, but to use Twitter, LinkedIn and blogs. Stories make people easier to engage. Curating academic blogs is also useful as blogs start to be recognized as legitimate, credible and trustworthy. Pull tools (like RSS or Google Alerts) are also used by some participants, but GGKP has chosen not to implement RSS feeds to avoid flooding users with information.

Speaker 3: Mr. Andrew McElroy, Public Information Officer, UNISDR – From Narrowcasting to Broadcasting DRR and Risk Information and DRR

- The speaker started by discussing with the room the DRR conference that happened previous week in Sendai. Three other members of the audience had participated to that meeting and shared their takeouts from that event: risk identification, managing the risk, moving from disaster management (reactive) to disaster risk management (proactive).

- Some examples of similar disasters (typhoons in Philippines and India, Sandy in New York, floods in Bangkok) which produced highly different results

were shown, and the conclusion on what made the difference and ultimately saved lives is that leadership and good information can make the difference



- Information translated into action, and sometimes less is more (questioning the opportunity of 17 goals and 169 targets). It is also important to use indigenous information at its real value.

- Prevention Web is a platform for DR specialists and interested people, and effectively is the "go-to" site for professionals, policy makers and general public. Some numbers related to the platform:

  - In 2014: 1.2 million user sessions & 40,000 professionals use the site at least once a week
  - 30,000 content items from 6,725 organisations (412 from private sector)
  - 6,274 subscribers to daily/weekly updates

- Some limitations of the platforms are its anglo-centricity as well as a certain lack of priority – more curation would be needed.

Questions and Answers

- Mr. David Leblanc (UN DESA) discusses – using personal experience – the relevance of the response to Sandy by the Bloomberg administration. It is hence recognized that good practices are often symbolic and that stories are important as a means of conveying messages, but should be used with caution.

3. Session II (Part II): Roundtable Discussion - Issues and Obstacles in Inter-organizational Information and Knowledge Sharing

- Chair: Mr. Alexandru Toma, Information Systems Expert, UNOSD
- Panel members: : Mr. Peter King, Senior Policy Advisor, Institute for Global Environmental Strategies (IGES), Ms. Amanda McKee, Knowledge Management and Outreach Officer, Green Growth Knowledge Platform (GGKP) and Mr. Andrew McElroy, Public Information Officer, UNISDR

Chair introduction:

- We have seen this morning the importance and complexity of the post-2015 Agenda, which will consist of the Sustainable Development Goals. Implementation of this agenda – in addition to financial means – will need solid application of information and knowledge.
- We also saw the importance of culture and history in the attitude that people have towards sustainability, in particular the environmental and social aspects of sustainability. The example of two cities of similar size from similarly economic regions, Atlanta and Barcelona, that are so different as a layout with huge consequences for transport and energy efficiency, show the role of history and culture in attaining sustainable production and consumption. Sharing is also a matter of culture and mindshift.
- Speaking of sharing and knowledge, it is said that knowledge is the only thing that actually increases when shared. Knowledge sharing is also a matter, among other incentives, of culture. With this being said, panel members are invited to share their insight on obstacles to knowledge sharing and effort duplication in SD.

Ms. Amanda McKee, Knowledge Management and Outreach Officer, Green Growth Knowledge Platform (GGKP)

- The knowledge is still maintained in silos, and for this reason there are differences in terminology between the different sub-areas which make sharing difficult
- Exchange of information takes time and effort. We need to incentivize the process of information exchange
- Measuring the impact of our knowledge effort is also difficult: there is a constant challenge to ensure that someone is actually using the information and knowledge that we make available

Mr. Peter King, Senior Policy Advisor, Institute for Global Environmental Strategies (IGES)

- In government, knowledge is sometimes seen as power, and sharing it can feel threatening. This is a cultural issue, pervasive across many countries.
- There is also reluctance to share information on failures or bad practices. This is unfortunate as great lessons could be learned from failures, but for reasons of saving face they are not shared. Knowledge platforms would often bring to the front good practices, but not failures or bad practices.

- Terminology is indeed an issue. As an anecdote, by working with the Mekong river commission (which is a multinational entity), the speaker found out that the definition of something as simple and obvious as a forest was different in different countries, so that it becomes difficult to aggregate data at the supra-national level.
- The proliferation of knowledge platforms is another issue. Often, organizations will enter the field with the ambition to become THE ultimate reference, not taking into account what others have done before and ignoring mistakes from the past.

Mr. Andrew McElroy, Public Information Officer, UNISDR

- Some of the issues mentioned with the new media (knowledge platforms) are not new. For example, when newspapers appeared in the 17th century, there was a lot of noise on ego and celebrity, and the promotion of the "me" rather than content, serious, important issues
- This being said, some examples of great knowledge sharing can be given, and almost always associated to great leadership, like Armenia who became a leader in information for DR after the 1988 earthquake where there were 5 days with no government communication
- On the other hand, there were for example more similarities than differences in the way communication and knowledge sharing was handled by the authorities in two very high profile incidents, Cernobyl and Fukushima. Where people go for information may also show trust – like the Red Cross vs Google case in 2011.

Some additional thoughts on duplication

- Partnerships can be the answer to duplication. The real issue is however not technical, but organizational or political
- Some duplication is inevitable, just human nature which is difficult to change. An example was given on how behavior can be nudged, without necessarily using costly incentives.
- Too much knowledge content is pushed for the creator and/or administrator rather than for the actual audience. Sometimes it is better to be simple, less intellectual, to have technology for the real world. Business may be a good source – the example of a Florida DR knowledge platform for business run by business is given. It's better to be demand driven rather than supply pushed.

Floor is opened for discussion

- A participant from Afghanistan wishes to make some comments on his experience in knowledge sharing work with medical staff. While at the beginning the staff viewed knowledge sharing as a potential for job loss, at the end they came to understand the benefits. Some comments were also made on the privacy issues related to knowledge sharing.
- A participant from Nepal gives an example of duplication – when the Department of transportation built a road and a department dealing with drinking water would soon after that dig through that road, causing waste of taxpayer's money. Information coordination could have helped in that case.

- Mr. Ho, from ADPC, noted that the mentioned issue of demand driven versus supply pushed is unfortunately true, as lots of ego in social media push information that is not necessarily valuable for the final user. Other issues are accuracy of information and information overload.
- Peter King notes that the smartphone revolution has made people to expect immediate availability of information everywhere and that the quality and reliability are rarely questioned.
- Michael Howden: verification of content for knowledge platforms is very time consuming, and crowdsourcing has the potential to make valuable contributions here.
- Amanda McKee: there is indeed a need for immediate, more, and users, partners and donors pressure for always the new tool and technology. That's where expert advice is essential.
- Andrew McElroy: from experience in emergency situations, he notes that while new media like Twitter are fast, they are invalidated and would often circulate rumors rather than information. Old media adds some filtering and stability and has its place.

4. Session III: Collaborative Governance for Disaster Risk Management

Speaker 1: Mr. Jinsoo Yeo, Manager, SK C&C - Disaster Management System: Mobile Services Transforming Public Safety Responses

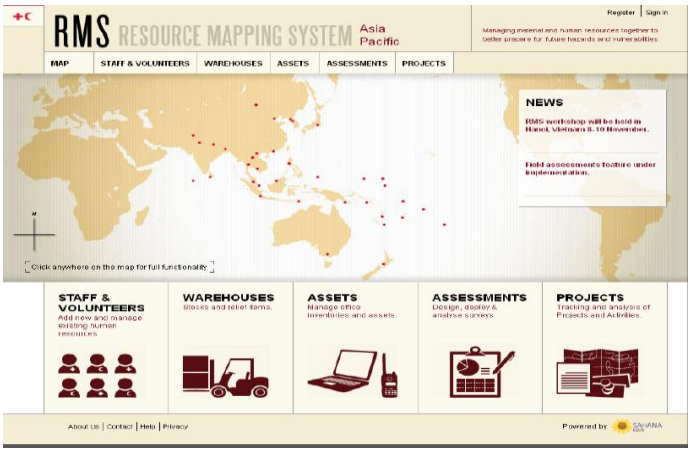
- The general procedure of Disaster Management System (DRS) consists of three stages: *Prepare, Response, and Recovery*. More emphasis is being put on the Response stage as the disaster usually happens beyond human control.

- Five key disaster management services in the *Response* stage, namely forecasting & early warning service, automatic reporting service, disaster information dissemination service, emergency response service, and command and dispatch service, should be highly integrated to ensure prompt and efficient responses to disasters.

- It is recommended for developing countries and relevant institutions with limited resources to invest in wireless network infrastructure for DRR rather than wired network, considering widespread use of mobile phones and cost effective investment in wireless network.

Speaker 2: Mr. Michael Howden, President & CEO of Sahana Foundation - Open Source Disaster Management System (SAHANA)

- Sahana, established as an open source disaster management platform, helps organisations and communities prepare for and respond to disasters by enabling them to share information, manage resources, coordinate activities and gain situational awareness. In particular, Sahana provides an integrated approach to disaster response by employing a single web-based solution during all the phases, starting from prevention to response and recovery.



Snapshot view of Sahana System

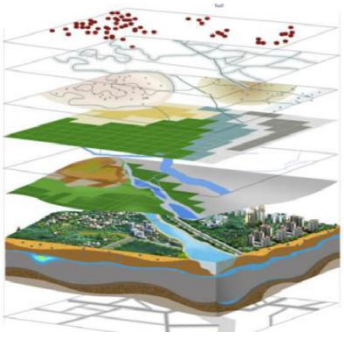
- Open source software in general could effectively promote technology transfer by providing service users with proper training opportunities for their own capacity building, and eventually empowering service users to develop new solutions fit for their specific situations.

- Challenges in deploying Sahana's modules could be categorized as: i) correctly identifying functions which are the most required to service users; ii) properly training people to use the modules; and iii) integrating the modules with existing business processes or developing new business processes.

- As big data, open government data, and social media become increasingly important in public service delivery, governments are strongly encouraged to apply these cutting-edge technologies in the disaster risk management system.

Speaker 3: Mr. Sang Chul Noh, Sales Director, SPH Inc - Geospatial Data Management

- Digital mapping is a very crucial instrument for disaster risk management since it can present different types of information in multiple layers, provide various ways to display geographical features, and create new information by analysing geographical information.



The relationship of different types of information can be depicted on one digital map through the overlay of layers

Features of GIS

- GIS can be used in four stages of disaster risk management:
  - Stage 1, *Mitigation and Prevention*: GIS helps identify disaster risk, assess priorities, and manage the disaster plan by correctly visualizing disaster-prone regions.
  - Stage 2, Preparedness: GIS provides various functions for showing various simulation results and indicating early warning sites.
  - Stage 3, Response: GIS helps users to be informed on a real-time basis where disaster takes places and how severe it is.
  - Stage 4, Recovery: GIS assists the accurate assessment of damage and appropriate post-disaster reconstruction planning.

Speaker 4: Mr. Toshihiro Nemoto, Associate Professor, University of Tokyo – Big Data

- With the objective of providing access to global and regional sensing data, Data Integration and Analysis System (DIAS) was developed for the creation of an information storage infrastructure and deepening scientific knowledge in the areas of climate change, water cycle, agriculture and biodiversity management.

- DIAS is a big data platform to effectively integrate earth environment data, which include observation data, numerical model outputs, and socio-economic data.

Q & A Discussion

- Q1. How does the Sahana raise funding for its activities?
  As Sahana is a small company, it is always looking for funds. Although it provides software for free, Sahana provides fee-based customisation and training services.

- Q2. What is Sahana's competitive edge over those less open solutions?
  Applications developed with open source such as SAHANA enable users to have more control than those less open solutions, as the source code is disclosed and shared with general public. In terms of competition, some participants argued that too many standards competing with each other would eventually result in inefficiency of operations. While, other participants argued that having multiple standards may not be necessarily bad. Their arguments are that as the scope of disaster risk management system is so broad, it may be advisable for different agencies to be equipped with different systems.

- Q3. How does the GIS generate a response plan automatically?

Sahana' project with New York City is one good practice of the GIS automated response. All NYC departments are registered in the system, and it helps analyse nearest shelters and facilities for individual employees. During the disaster, automatic messages are sent to all the employees with proper information of shelters.

- Q4: Why is the wireless networking infrastructure a better solution in Disaster Management System (DMS)?
  Installation and maintenance of the wireless networking is less costly than wired networking infrastructure. For those countries currently with no infrastructure in place for DMS, it would be advisable to introduce the wireless networking infrastructure from the beginning.

- Q5. Why Korean DMS didn't function well during the Sewol Ferry Sinking?
  Korea is equipped with a good national disaster management system and the standard operating procedure (SOP). However, when the tragedy was happening, the actual situation inside the Ferry could not be communicated to DMS. With Next Generation of DMS, the result could have been different as it enables connecting to the scene via the two-way video communication system based on advanced mobile network infrastructure and mobile applications.

- Q6. How governments could build trust?
  Information is power. More information sharing build more trust. Governments need to be a trust provider of information. Prior to disasters, governments should ensure that citizens are fully shared with policy, missions and roles in DMS. During this process, government should keep in mind that building trust takes time, and old-fashioned and simple technology in DMS is as important and effective as new technology.

5. Session IV (part I): Country Experience

Speaker 1: Mr. Dilder Ahmed, Joint Secretary, Department of Disaster Management and Relief, Bangladesh - Bangladesh Case: Early Warning System

- Bangladesh Prime Minister is strongly committed to adopting the e-system in implementing the disaster risk management, which put great emphasis on identifying challenges in implementing the nation-wide e-governance for DRM and initiating pilot projects in various government sectors.

- In order to manage different types of disaster happening in Bangladesh, different institutions are responsible for providing early warning messages, and eventually providing more customized services for citizens by responsible institutions.

Hazards	Dedicated institution according to the Government of Bangladesh
Cyclone, Storm, Drought, Cold and Hot wave	Bangladesh Meteorological Department (BMD)
Riverine Flood, Flash Flood	Flood Forecasting and Warning Center (FFWC)
Agro Forecasting	Bangladesh Meteorological Department (BMD)
Epidemic Advisory	Director General of Health Services

Responsible Institutions for Each Hazard

- Technology is important in effective responding to disasters. And, it is equally important for community to make its own efforts to embrace technology and follow government's instructions in a proactive way.

Speaker 2: Mr. Raymund E. Libro, Assistant Secretary, Department of Science and Technology, Philippines - Philippine Case: Project NOAH

- Project NOAH (Nationwide Operational Assessment of Hazards) is an e-government tool and an operational disaster R&D programme which aims to improve the Filipino government and people's capacity to effectively respond to the negative impact and adverse effects of extreme weather conditions. The general objective of NOAH is to undertake disaster science research and development, advance the use of cutting edge technologies, and recommend innovative information solutions in government's disaster prevention and mitigation efforts.

1- Homepage; 2- Twitter Feed; 3- Menu Bar; 4- Tool Bar; 5- Search Bar; 6- Base Map; 7- Zoom Options; 8- Rainfall Data

Snapshot View of Sahana System

- Open data is a key component of Project NOAH. Near real-time weather information is delivered to the public through website, social media, and mobile apps or other systems. It is worth noting that those Filipinos living outside the country with better internet connection could monitor disaster status on a real-time basis and send warning messages to their friends, families and relatives who live in remote areas of the Philippines with poor internet connection.

- Lessons learnt in implementation of the project

  - Detailed village-level hazard maps produced from high resolution topography are necessary and extremely useful.

  - Government is responsible to provide resources and vital information, but still it is the community that needs to initiate disaster mitigation efforts.

  - Local capacity and local resources should be used in disaster mitigations plans.

  - Open data policy: open data sharing could enable local and foreign scientists to work with data and produce best products in the forefront of battle against disasters.

  - Focused R & D: research and development should be on continuous basis since hazards will always be there and there will always be new lessons in every disaster.

  - Development of a culture of safety and preparedness: no technology and science could be effective unless people readily embrace them.

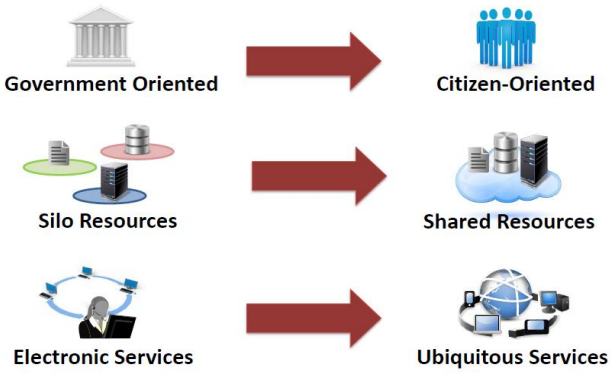
  - Bridging the communication gap: it is necessary to understand the mindset of Filipino people for effective communication. To bridge this gap, both physical and social scientists need to work together on disaster preparedness.

- Inclusive participation in the disaster effort is important. Private sector, civil society organizations, religious groups, academia, and government should collaborate and support each other due to the substantial disaster problem.

- There is a need to build an army of disaster scientists and leaders. Hazards are destined to stay here for long and it is necessary to counter the impacts with the best possible minds and as many scientists and advocates as possible.

Speaker 3: Mr. Bambang Dwi Anggono, Deputy Director, Government Services Application, Ministry of Communication and Information Indonesia - Indonesia Case: National Platform for Disaster Risk Management

- Indonesia is a natural disaster prone country and it has been trying to put efficient e-government system in place in order to respond effectively to disasters. It is worth noting that e-government systems in the country have experienced major paradigm shifts for providing citizens with personalized services at the time of disaster.



Paradigm shift of e-government of Indonesia in responding to disaster

- For effective disaster risk management through e-government, Indonesia made a strategic effort to analyze and reduce the causal factors of disasters by improving following four areas:

  - **Infrastructure**: Established the integrated national data centre along with disaster recovery centre. Secured government network enables 34 government institutions to exchange information.

  - **Software development**: Developed a variety of software to sharply meet citizen's tailored needs.

- **Human resources**: Put national CIO system in place and secured ICT-certified personnel through training government employees.

- **Security**: Developed the integrated security infrastructure and provided government employees with security awareness raising programmes.

- Appropriate regulatory and institutional frameworks are essential to the success of e-government for responding to disasters. Indonesia enacted the overarching law on disaster risk management in 2007. Since then, it has enacted several supporting regulations, such as the participation of international institutions and foreign non-governmental institutions at times of disaster, plus laws on finance management of disaster assistance. With solid regulatory framework, Indonesia has set up National Disaster Management Agency (BNPB), as a focal point of disaster management in central government, to lead other central government agencies to closely collaborate with local disaster management agencies.

Speaker 4: Ms. Jawon Lee, Professor, Department of Geography, Sungshin University, Republic of Korea - Korea Case: National Disaster Management System

- Korea becomes more vulnerable to natural disasters such as earthquake and tsunami, so it is necessary to be well-prepared for future disasters. As the leading country in e-government development, Korea has been using cutting-edge e-government technologies for disaster risk management, such as CCTV monitoring system, GIS-based prediction, and big data analytics.

- For effective disaster risk management, the following recommendations should be taken into consideration:

  - Constant research support and continuous investment on ICT database construction.
  - Development of customized ICT services fitting local situations.
  - Developing countries should seek ICT support from developed countries in disaster risk management.

Q&A Discussion

- Q1. What types of technology and tools could be utilized in evacuation and/or relocation of people from vulnerable situation and areas?

  In Indonesia, it is possible to predict the frequency of disasters through national disaster management tools. However, it could be difficult to move people away from their native places and some people may choose to stay in their hometowns despite disasters. As the useful tool to manage the disaster, ICT should also be used to train and educate people.

In the Philippines, multi hazard maps for landslide and flood are uploaded in the website, providing citizens with disaster information in the area. The best tool to convince people to move is to show high resolution maps, present simulation analysis and highlight potential risks. Households are introduced to these tools to identify safer areas, but it still remains a challenge.

In United Kingdom, government development policy is quite proactive in preventing development on floodplains and flood risk areas. Flood liaison groups have been also established and local authorities are quite successful and active in preventing flood damage in new developments.

- Q2. Bangladesh's early warning system consists of the pre-positioning of relief supplies and setting up some evacuation centers along the coast line. How does the evacuation specifically work and how effective it is?

  In cyclone prone areas, plans have been set up for evacuation. 5000 shelters have been built in the coastal area for evacuating people in mega early warning, assisted by local institutions and representatives as well as citizen volunteers.

  In the past, citizens were reluctant to evacuate and leave their animals behind, as those were their livelihood. Based on this experience, shelters have been built with 3 stories with one floor for women, another for men and the ground floor for their animals. Citizens are now well aware of the evacuation method and they know that it is safe for them to use shelters.

6. Session IV (part II): Round Table Discussion - Establishing the System on ICT-enabled Disaster Risk Management

Topic 1: Collaborative Governance for Disaster Risk Management

Group 1(chaired by Mr. Michael Howden)

- Close inter-ministerial collaboration at national level is crucial to respond effectively to natural disasters given that many times each Ministry's information is not shared with each other at the time of disaster, eventually resulting in more damages and casualties.

- Effective collaboration at international level expedites development of each country's disaster response capacity. In this regard, exchange of government experts is suggested in order to enhance peer-to-peer learning.

- In terms of cooperation between central and local governments, generic applications which require standardized system across governments can be developed by central governments and transferred to local governments. However, local governments can also create their unique applications which are sharply customised for their local situations, and can be replicated by other municipalities.

Group 2 (chaired by Mr. Raymund E. Liboro)

- Sharing information among government agencies does not pose a big problem in general, however difficulties may arise due to government officials' mindsets which try to take sole ownership of their agency's information fearing possibility of their jobs to be replaced by other people.

- Inter-sectoral data sharing can be implemented in two ways: horizontally, data can be shared in cooperation with local NGOs and private sector; and vertically, different levels of governments can cooperate for a systematic and coordinated approach to disaster risk management.

Topic 2: Data and Data Analytics for Disaster Risk Management

Group 1(chaired by Mr. Michael Howden)

- Though data sharing is one of important factors for effective disaster risk management, its implementation faces many challenges such as lack of will of leadership, low level of technology, security issues, and social/cultural barriers.

- Open government data and cloud computing can function as effective channels for developing disaster responding systems. However, security issues have to be carefully considered in their implementation process.

- It may be effective if private sector such as Google and Facebook could be

actively engaged in developing disaster response services for their users because their services such as global mapping and social media can reach extensively to a huge number of people in the world.

Group 2 (chaired by Mr. Raymund E. Liboro)

- Big data and its analytics enable governments to make evidence-based decisions and accordingly develop effective policies for disaster risk management. In this regard, governments are strongly suggested to apply these new technologies to their policy formulation from its initial stage in collaboration with private sector.

- Predictive and scenario-driven data for disaster risk management will be more in demand. Governments should build capacity to utilize the data appropriately.

Annex 1: List of Participants

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Annex 2: Agenda of the Workshop

Regional Training Workshop in Asia and the Pacific: Sustainable Development and Disaster Risk Management Using E-Government

Office of UNISDR in Songdo, Korea

25 to 27 March 2015

(to be organized by UNPOG and UNOSD)

Date	Time	DAY 1: OPENING CEREMONY & WORKSHOP	Venue
25 Mar (Wed)	09:30~10:00	**Opening Session** • Opening remarks - Mr. Jae-hong Lim Head of UNPOG - Mr. Jong Soo Yoon Head of UNOSD - Mr. Sanjaya Bhatia Head of UNISDR	**UNISDR**
	10:00~12:30	• Thematic presentation (for session I and II) - Mr. David Leblanc Senior Sustainable Development Officer, DSD/UNDESA **Session I: The Sustainable Development Agenda and ICT** **(organised by UNOSD)** • Chair: Prof. James Larson Chair of Department of Technology and Society SUNY Korea • Speakers:	

		- Mr. James Larson (Chair of Department of Technology and Society SUNY Korea) - William Ho (Asian Disaster Preparedness Center) - Klaus Mueller (Chair of the Department of Computer Science, SUNY Korea)	
	12:30~14:00	Lunch	
	14:00~16:00	**Session II – part I: Knowledge Platforms and Knowledge Sharing for Sustainable Development (organised by UNOSD)** • Chair: Peter King, IGES • Speakers: - Peter King, IGES - Amanda McKee (Green Growth Knowledge Platform) - Andrew McElroy (UNISDR)	
	16:00~16:15	Coffee Break	
	16:15~18:00	**Session II – part II (plenary discussion): Issues and Obstacles in Inter-organizational Information and Knowledge Sharing (organised by UNOSD)** • Chair: Alexandru Toma, UNOSD ***Questions for discussion:*** 1. What are organizational and technical obstacles to information and knowledge sharing, and how can ICT reduce them? 2. How could ICT – based information and knowledge sharing reduce duplication of efforts in sustainable development?	
Date	**Time**	**DAY 2: WORKSHOP**	**Venue**
26 Mar (Thur)	09:30~12:00	• Thematic presentation (for session III and IV) - Mr. Keping Yao	**UNISDR**

		Governance and Public Administration Expert UNPOG **Session III: Collaborative Governance for Disaster Risk Management** **(organised by UNPOG)** • Chair Mr. Raymund E. Liboro Assistant Secretary Department of Science and Technology, Philippines • Speakers - ***Mobile Devices and SMS*** Mr. Jinsoo Yeo Manager Global Business Team II, SK C&C - ***Open Source Disaster Management System (SAHANA)*** Mr. Michael Howden President & CEO Sahana Foundation - ***Geospatial Data Management*** Mr. Sang Chul Noh Sales Director SPH Inc (Korea Branch of SuperMap Software) - ***Big Data*** Mr. Toshihiro Nemoto Associate Professor, University of Tokyo	
	12:00~13:30	Lunch	
	13:30~15:30	**Session IV – part I: Country Experiences** **(organised by UNPOG)** • Chair Mr. Michael Howden President & CEO	

		Sahana Foundation • Speakers - ***Bangladesh case: Early Warning System*** Mr. Dilder Ahmed Joint Secretary Department of Disaster Management and Relief Bangladesh - ***Philippine case: Project NOAH*** Mr. Raymund E. Liboro Assistant Secretary Department of Science and Technology Philippines - ***Indonesia case: National Platform for Disaster Risk Management*** Mr. Bambang Dwi Anggono Deputy Director Government Services Application Ministry of Communication and Information Indonesia - ***Korea case: National Disaster Management System*** Ms. Jawon Lee Professor Department of Geography, Sungshin University Korea	
	15:30~16:00	Coffee Break	
	16:00~17:30	**Session IV – part II (plenary discussion):** **Establishing the System on ICT-enabled Disaster Risk Management** **(organised by UNPOG)** • Chair - Mr. Keping Yao Governance and Public Administration Expert UNPOG	

		Questions for Discussion: 1. Collaborative governance on building data sets on disaster prevention and response information 2. Multi-channel information release for early warning 3. Cloud computing for information sharing within and beyond government sector 4. Open data analysis: data mining 5. How to use GIS based information for disaster management and esp. monitoring and evaluating damage status 6. Business continuity at disaster	
Date	**Time**	**DAY 3: STUDY TOUR**	
27 Mar (Fri)	10:30~11:30	Study Tour 1: Ministry of Public Safety and Security	
	11:30~13:00	Lunch	
	13:30~15:00	Study Tour 2: Seoul Emergency Operations Center	
	15:00~17:00	Cultural Tour	

Annex 3: Aide-Memoire of the Conference

Regional Training Workshop in Asia and the Pacific: Sustainable Development and Disaster Risk Management Using E-Government

AIDE-MEMOIRE

United Nations Project Office on Governance (UNPOG) / e-Government Branch (eGB) / Division for Public Administration and Development Management (DPADM) / United Nations Department of Economic and Social Affairs (UNDESA)

United Nations Office for Sustainable Development (UNOSD) / United Nations Department of Economic and Social Affairs (UNDESA)

United Nations Office for Disaster Risk Reduction (UNISDR)

25-27 March 2015
Songdo, Republic of Korea

I. SPONSORSHIP AND PURPOSE

The Regional Training Workshop in Asia and the Pacific on "Sustainable Development and Disaster Risk Management Using E-government" will take place in Songdo, Republic of Korea from 25 to 27 March 2015. It is jointly organized by the United Nations Project Office on Governance (UNPOG) and the United Nations Office for Sustainable Development (UNOSD) in collaboration with the United Nations Office for Disaster Risk Reduction (UNISDR).

UNPOG is a project office of the Division for Public Administration and Development Management (DPADM) of the United Nations Department of Economic and Social Affairs (UNDESA), which was established in June 2006. Its mission is to assist developing countries and least developed countries to improve their governance capacity through innovation, e-governance and ICT for sustainable development. UNOSD was established in 2011 and its mission is to support United Nations Member States in planning and implementing sustainable development strategies, notably through knowledge sharing, research, training and partnerships. UNISDR Songdo office was established in 2010 and its mandate is to serve as the focal point in the United Nations system for the coordination of disaster reduction and to ensure synergies among the disaster reduction activities of the United Nations system and regional organizations and activities in socio-economic and humanitarian fields.

The three-day workshop will feature an opening session, four respective sessions with different themes, and a study tour. Participants will include senior government officials and experts from the private sector, academia, civil society and international organizations.

II. BACKGROUND

The United Nations General Assembly in its Resolution entitled "The Future We Want" has reaffirmed the strong need to achieve sustainable development by promoting sustained, inclusive and equitable economic growth, creating greater opportunities for all, reducing inequalities, raising basic standards of living, fostering equitable social development and inclusion, and promoting the integrated and sustainable management of natural resources and ecosystems. It stressed that all levels of government and legislative bodies play an important role in promoting sustainable development. Overall, "the goal of sustainable development is to ensure the promotion of an economically, socially and environmentally sustainable future for the planet and for present and future generations. (E/2013/69, para. 6).

In particular, Member States called for active efforts to reduce disaster risks and build resilience to disasters "with a renewed sense of urgency in the context of sustainable development and poverty eradication, and, as appropriate, to be integrated into policies, plans, programmes and budgets at all levels and considered within relevant future frameworks" (A/Res/66/288, para.186). In addition, the resolution underscored the importance of early

warning systems as part of effective disaster risk reduction at all levels in order to contain damages, including the loss of human life, and in turn to encourage the United Nations Member States to integrate such systems into their national disaster risk reduction strategies and plans.

The Final Proposal of the Open Working Group on Sustainable Development Goals (SDGs)[1], which was established in response to Rio +20 and laid the foundations for the framework of the Post-2015 Development Agenda by defining 17 Sustainable Development Goals, also stressed in its goal number 11 the need to prevent and reduce the impact of disasters and to implement the Hyogo framework for action.

Asia and the Pacific is the most disaster prone region in the world. According to the data from the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) [2], a person living in this region is almost twice as likely to be affected by a disaster as a person living in Africa, almost six times as likely compared with Latin America and the Caribbean, and 30 times more likely than a person living in North America or Europe. In 2013 alone, natural disasters in Asia and the Pacific affected more than 57 million people and caused US $128 billion in damages. As disasters disrupt all sectors of the economy and destroy hard-earned development gains, it is crucial that effective disaster risk reduction measures are integrated into development plans and poverty reduction strategies in this region

III. CONTEXT

A number of examples from around the world have proved that e-government can effectively help to respond to disasters and to manage emergency efficiently. Therefore, it is very timely that UNPOG and UNOSD jointly organise a training workshop to explore effective ways of dealing with disaster risk reduction through e-government. According to UNISDR, disaster is defined as “a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources”. In other words, when the impact of disruption goes beyond the control of human beings, that particular situation can be defined as disaster. Disaster impacts may include loss of life, injury, disease and other negative effects on human physical, mental and social well-being, together with damage to property, destruction of assets, loss of services, social and economic disruption, and environmental degradation. Disaster is composed of three categories in terms of its origin, such as natural disaster (storm, earthquake, drought and so on), technological disaster (nuclear release, toxic waste and dam failure and so on), and environmental degradation (human-induced processes such as land degradation, deforestation and wild fires etc). In this workshop, natural disaster will be covered.

[1] See http://sustainabledevelopment.un.org/sdgsproposal.html for details.
[2] See http://www.unescap.org/our-work/ict-disaster-risk-reduction for details

Experiences from around the world have shown that e-government can play a significant role in disaster prevention and preparedness, and make it far more effective and less costly than ever before. The opportunities offered by the digital development of recent years, whether through online services, big data, social media, mobile apps, and cloud computing, are expanding the way we look at e-government. E-government is "the use of ICT and its application by the government for the provision of information and public services, and as a means to engage people in decision-making processes"[3].

In terms of disaster prevention and preparedness, governments are revealing disaster information through websites for citizens to access related information on a 24/7 basis and be prepared accordingly. The websites exhibit varying degrees of information, ranging from current status of disaster to its forecast and to guidelines to act. The government of Japan, which is prone to disaster, such as earthquakes and tsunamis, has innovated and set up an integrated information sharing system, so that related disaster data are electronically transmitted to local authorities once detected and shared with citizens swiftly through website and mobile, local broadcast and so on.

Emergency notifications via short message service (SMS) of mobile phone are widespread around the world. Denmark's Mobile Alert Systems provides instruction to citizens via their mobile services in case of natural disasters, accidents and other emergencies. The government of Malaysia utilizes SMS for notifying citizens of limited drinking water supplies. In England and the United States, SMS is provided in order to alert the population about flood dangers. China also uses SMS for typhoon dangers.[4]

In terms of using social media for disaster management, hurricane Sandy, which occurred in the United States in 2012, is a good example of its use. During the hurricane and its aftermath, the Federal Emergency Management Agency (FEMA) of the US government analyzed social media for improving the response. The agency looked over twitter keywords and hashtags to know what was happening. They also monitored areas that were not active on the social media channels, indicating that communications were most likely down. Instagram photos also gave them a real time look at the damages that Sandy caused. Once the agency got a general idea of what areas needed the most aid, they were able to properly allocate resources swiftly[5].

Moreover, the Philippines government showed how big data could be utilized effectively to respond to disaster. The Philippines government started a flagship project called Nationwide Operational Assessment of Hazards (NOAH) in June 2012. Project NOAH involves the development of hydromet sensors (e.g., automatic rain gauges, water-level sensors, stream gauges) and high-resolution geohazard maps. Project NOAH also uses topographic maps generated by light detection and ranging (LiDAR) for flood modeling. These

[3] 2014 UN E-Government Survey
[4]See Chapter2, M-Government (Mobile technologies for Responsive Governments and Connected Society), publication of OECD and ITU
[5] See http://www.emergencyvisions.com/big-data-and-social-media-disaster-management/ for details

maps and other weather information are shared publicly through the Project NOAH website. These high-velocity and high-volume data, namely big data, have helped national and local governments to become more prepared for disasters. For example, in Cagayan de Oro City, there is evidence of how better access to information has saved lives. In 2011, Typhoon Sendong led to 676 deaths in Cagayan de Oro City. A year later, a typhoon with a similar strength (Pablo) only had one associated death reported. The huge deaths caused by Super Typhoon Yolanda (Haiyan), whose direction was accurately predicted by Project NOAH, suggest the importance of having local chief executives understand disaster risk data. Otherwise, information has no use to minimize the costs of disasters[6].

IV. OBJECTIVES OF THE WORKSHOP

The objectives of the training workshop are: (i) to discuss advancements and good practices in the field of e-government for disaster risk management; (ii) to enhance peer-to-peer learning; (iii) to build up a strong network among experts and set up the mechanism/platform for sharing experiences and knowledge transfer with focus on innovative e-practices for disaster risk management; and (iv) to explore effective and innovative ways to enhance capacity building for developing countries in the field of disaster risk management.

V. THEMES TO BE COVERED

- *Knowledge sharing and dissemination of lessons from players in the field of disaster risk management*
- *2014 UN E-Government Survey - new and emerging issues and main challenges of e-government development*
- *E-government for disaster risk management in terms of online services, mobile application, geospatial data and big data*
- *Introduction of innovative e-government best practices for disaster risk management by selected countries*
- *Strengthening the CIO network in Asia and the Pacific with regard to disaster risk management*

VI. PROPOSED AGENDA

- *Day 1*
  - *Session I:* The Sustainable Development Agenda and ICT

[6] See http://www.rappler.com/business/features/56231-big-data-measuring-progress-and-development for details

- *Session II-part I: Knowledge Platforms and Knowledge-sharing for Sustainable Development*
- *Session II-part II: Issues and Obstacles in Inter-organisational Information and Knowledge-sharing*

- *Day 2*

  - *Session III: Collaborative Governance for Disaster Risk Management*
  - *Session IV-part I: Country Experiences*
  - *Session IV-part II: Establishing a System of ICT-enabled Disaster Risk Management*

VII. EXPECTED OUTCOME

After the training, it is expected that the participating countries' capacities and competences will be strengthened in terms of designing e-government strategies for disaster risk management. It is also anticipated that the expert network in the field of disaster risk management will be further strengthened for facilitating knowledge sharing and exchange of ideas of innovative e-practices, including through South-South cooperation between developing countries. UNPOG and OSD would also better understand the demands for capacity building from developing countries in the region. With the participation of leading and advanced countries and other international organizations, UNPOG and OSD would expect more technical and funding support to implement capacity building activities in the region.

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Annex 4: Summary of Study Tour

1. Overview

The United Nations Project Office on Governance (UNPOG) and the United Nations Office for Sustainable Development (UNOSD) co-organized the study tour for the Workshop participants to visit Korean government agencies for hands-on experience in using e-government for disaster risk management on 27 March 2015, in conjunction with the Regional Training Workshop, which was titled *sustainable development and disaster risk management using e-Government* and held on 25-26 March 2015 in Songdo, Republic of Korea. The purpose of the study tour to two Seoul-based government agencies, namely the Ministry of Public Safety and Security and Seoul Emergency Operations Center, is to provide the Workshop participants with learning experiences from best practises in Korea.

The study visit was structured to include presentations by officials and experts, Q&A session and on-site facility inspection. The duration of the study visit in each agency was approximately 90 minutes. In total, 24 participants joined the study tour, accompanied by NPOG and UNOSD staff.

2. Study Tour to Korean Government Agencies

2.1. Ministry of Public Safety and Security

The study visit to the Ministry of Public Safety and Security took place from 10:00 am to 11:30 am on 27 March 2015 at the Central Government Complex in Seoul. After welcoming remarks, Mr. Jae-joon Jeon, Head of the Central Disaster Safety Situation Office, made an introductory presentation with a detailed overview of the Ministry's organizational structure and activities. Mr. Yong-gyun Kim, Director of Disaster Management Department, made the second presentation on Disaster Response Systems in Korea, and he emphasised that Korean government is currently laying out the strategy to address future disasters in a more effective and efficient manner subsequent to the Sewol Ferry Tragedy in Korea last year. In general, thematic topics were mainly focused on response procedures, simulation and training methods, and command-collaboration systems among central and local agencies.

2.2. Seoul Emergency Operations Center

The study visit to Seoul Emergency Operations Center took place from 1:30 pm to 3:00 pm. The visit started with an insightful comprehensive briefing by Mr. Young-sun Bae, Manager of Situation Control Team, on the operational activities of the Emergency Operations Center. In his presentation, Mr. Bae highlighted the leverage role of e-Government for effective and efficient disaster response management. One concrete example cited is the application of GIS system, which enables the immediate access to information about the location of people in distress. After the presentation, participants were taken to visit the situation room where thousands of emergency phone calls are directed on daily basis. Participants also visited the information network department and the civil defence warning control post.

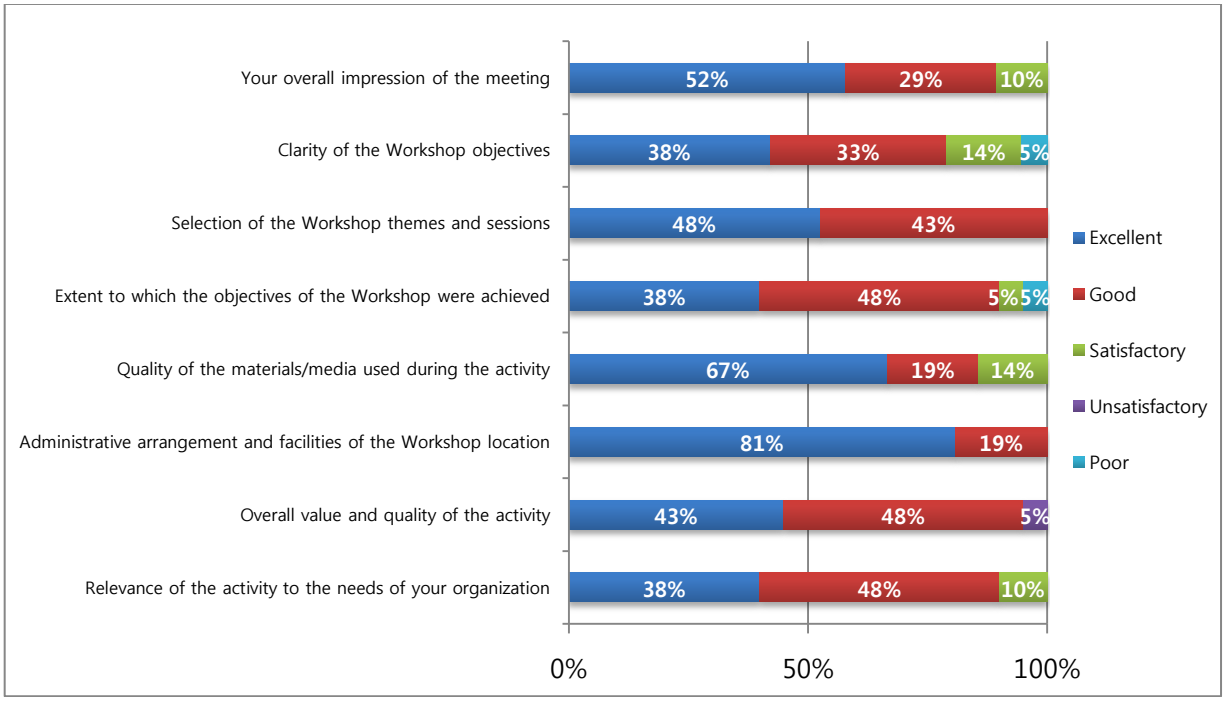
3. Study Tour Schedule

27 Mars, 2015 (Friday)		
Time	**Programme**	**Participants**
10:00-11:30	**Ministry of Public Safety and Security** *Presentation 1* ▪ Overview of the new ministry - Organizational structure - General activities ▪ Q&A session *Presentation 2* ▪ Disaster Response Systems - Lesson learned - Strategy development ▪ Q&A session	Workshop participants
11:30-13:00	***Lunch***	

13:30-15:00	**Seoul Emergency Operations Center** *Presentation 1* ▪ Overview of the organization - Organizational structure - General activities ▪ Deployment of ICT ▪ Q&A session *Inspection of situation room*	

Annex 5: Evaluation Report

Towards the end of the second day of the workshop on 26 March, 21 participants have filled out the evaluation questionnaire and provided comments and feedback. Majority of the participants had a very positive impression on the consultative meeting. In particular, sharing experiences were found to be interesting to participants and some indicated that the presentations from the private sector and NGOs were very useful. Given an opportunity to meet various people and having a chance to build network with different organizations were also found to be helpful in the workshop.



1. What was the most useful element of the Workshop?

- Discussion and sharing of information
- Good practices and experiences shared from other countries and organizations, administrative arrangement & facilities provided
- Every element was useful and relevant - Role of ICT in sustainable development and experience sharing regards to disaster risk reduction were most useful as my opinion
- Use of ICT for early warning system and detection risk before disaster strikes
- Lots of diverse & interesting examples were presented, Good diverse group of participants
- Nice complementary between general discussion of day I and case studies on day II
- Collaborative governance for disaster risk management was the most useful element of this workshop

- Strategies on developing disaster risk management system, Information on GIS
- National case studies, Update on global process, innovative thinking on transformation to SD
- Disaster risk management using e-government, ICT and risk governance, ICT for sustainability, mobile devices and SMS
- Strengthening e-government or smart governance need to build – collaboration and share vision, leadership, inclusion/ integration/ partnership/ digital connectivity/ innovation. Those lead to a collaborative governance
- Country experience, trend and scholar's study for international challenge of DRM
- ICT-enabled DRM strategies, general procedure of DRM, case studies on disaster-prone territories (countries)
- Mobile devices & SMS, Philippine case
- Case study, sharing of cases from different parts of the world
- Many presentations from day 2 were excellent, well focused and practical, good resource persons
- Experiences sharing among the countries, and electronic system is required that man behind the screen is also very important for disaster risk reduction.
- Meeting people from other organizations.
- The opening presentation that clearly demonstrated the need of e-Governance in developing countries.
- Presentations from private organizations
- All of workshop

2. What was the least useful element of the Workshop?

- Presentation about GIS technology, Need more applicative, Not easy to find halal food.
- None of the element was least useful
- All the sessions were useful. Perhaps they could have been ordered differently. E.g. Day II should have come before day I, this would have helped give some specific context for the broader discussion on sustainable development & ICT
- No element was the least useful of the workshop, every element was useful
- Every element of the workshop are all useful elements
- No workshop have not useful element
- Local government level issues were not highlighted
- I found the first day sessions were as a whole not focused enough and too far from the topic
- Some of the sessions seemed very technical
- Probably the questions for discussion often moved away from real issue
- The Workshop was very well organized.
- Presentations of concepts and theories
- Majority of the respondents indicated that none of the elements was least

useful.

3. What are the TWO most important things you gained from the Workshop?

- Data sharing is important for DRM. E-devices is useful for disaster management along with community
- Good resources persons to contact as needed. Increase awareness of what is going on at the country level
- The use of big data
- ICT & risk governance, E-government for DRM
- Disaster Risk Management – ICT solutions, innovation practices 2. Case studies – Philippines, Indonesia, Korea etc.
- Collaborative governance for Disaster Risk Management, Sustainable Development Agenda and ICT.
- ICT – E–Government for DRR need to build enabling for trust-leadership, open data policy.
- E-government for disaster risk management in Asia and the Pacific. Prevention is more effective. Using IUCT in DRR, we can manage more effective than past DRR management.
- Impossible cost of implementing the SDGs 2. Relevance of ICT to achieving national transformation towards SD.
- The importance of having DRM system in the country 2. Having develop strategies for Disaster Risk Management and implementing it
- Learn more from many country experiences. 2. Get relationship from each other. (both from the participants and the presenters).
- Met a lot of good contacts, Learnt interesting case studies.
- First global and regional collaboration is necessary for sustainable development and Disaster Risk Reduction. Second, Governance competency and sharing vision helps to developmental endeavors.
- The way that presentations/sessions organised from very general information to detailed figures/practices
- Experience from other country
- Sharing of experience of other countries and very useful informal discussions with experts and other participants.
- First, it was great to participate, having a chance to present our DMS and project references.
- Also, it was useful to hear from the representatives of the developing countries. We will use this insight when we participate in future projects.
- Global network, various knowledge from different countries
- Presentation of SAHANA and SKT

4. Please give us any comments or suggestions:

- Keep up your best efforts to involve countries to learn from each other to save lives

- We need to develop cooperation among country: standardization, multilateral SOP
- A bit more time for group working and discussions, Q&A after each presentation.
- Such type of workshop./training helps to enhance knowledge and capacity. At least 15 – 20 minutes should be spent for each participant to share country wise experience.
- The agenda of day II was a bit tight, but all elements were useful so many be extended the workshop duration.
- If possible, UNOSD should provide training to ASEAN countries who lack of capacity in using ICT as Cambodia (NCDM)
- Continue to collaborate among UN offices
- As this was our first time to participate, we were not sure of the scope and direction of the presentation. If chances are given, we would like to participate once again with richer contents. We only made a concise presentation aiming to keep it short and we have much more we can share regarding DMS. Thank you once again for the opportunity.
- Thanks for organizing, supporting the workshop
- It was a fruitful workshop, thanks