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# Changemakers in Action: Cutting-edge technologies for disability- inclusive early warning and preparedness

8 June 2021, 09.00-11.00 AM CET

## Event Report

### Welcome remarks by moderator

#### **Mr. Setareki Macanawai, Pacific Disability Forum**

- Welcomed the participants, invited speakers and special guests to this development dialogue, on the use of cutting-edge technologies for disability-inclusive early warning and preparedness.
- Described the purpose of the event: to raise awareness of the agenda of disability inclusive risk-informed development and provide a platform for exchange of innovative ideas on early warning technologies and last mile services, addressing the specific requirements of persons with disabilities to better manage risk and build resilience.
- Presented the wide range of stakeholders participating in the event, including persons with disabilities and their representative organizations, technology providers, global and social media outlets, governments, academia, UN Agencies and international development partners, about 300 participants in total.
- Thanked organisers, partners, speakers and participants.

## Keynote remarks

### **Ms. Usha Rao-Monari – Under Secretary-General and Associate Administrator of UNDP**

- Welcomed speakers, guests and participants.
- Reminded the audience about the fact that persons with disabilities make up 15% of the world's population, and are disproportionately impacted by disasters, conflict, and humanitarian crises. However, most often, their inclusion is not prioritised, and is still emerging in this area of work.
- Discussed the importance of becoming better at making sure no one is left behind.
- Reminded the audience that the event is aimed at answering questions, bringing light on innovative technologies, and partnerships that already exist, as well as will help imagine what the next generation, cross-cutting technology can be.
- Underlined that for achieving the SDGs, disability inclusion cannot be a stand-alone solution but must be mainstreamed across all development programmes.
- Emphasized the need for government-wide inclusive legal frameworks and policies, the importance of pursuing innovative solutions, e.g in Georgia – UNDP worked with persons with disabilities to co-design an innovative system to ensure access to life saving emergency services.
- The session should be seen as a springboard for innovative solutions.

### **Mr. Haoliang Xu – Director, Bureau for Policy and Programme Support**

- Welcomed participants and colleagues.
- Underlined that persons with disabilities are disproportionately affected by climate change and disaster impacts, yet are often not included in prevention, response and recovery.
- The pandemic has reinforced the need to address these underlying risks, reduce poverty and eradicate inequalities for communities and countries in the face of crisis.
- Reminded that technology cannot solve everything on its own, so cutting-edge technologies aimed at co-creating early warning and preparedness solutions which are inclusive and accessible to people with disabilities are required.
- The UNDP work on disability inclusion is guided by the principles of the UNDP guidance note on disability inclusive development.
- UNDP understands that while the future is uncertain, it must be inclusive.

## Panel discussion

*Guest reflection on question 1 “How can a human-centered design (HCD) be applied to identify solutions by and for persons with disabilities?”*

### **Ms. Jenny Casswell – Research & Insights Director, Mobile for Humanitarian Innovation, GSMA**

- Stated that technology can be seen as an opportunity for inclusive disaster risk reduction (DRR) but digital tools can be barriers if they are not appropriately designed for people with disabilities.
- GSMA started to work with quantifying the disability gap to try to move beyond anecdotal information on how less likely someone with disabilities is to own a phone while working with UNHCR in 3 refugee contexts.
- Human-centered design (HCD) must come in to co-create services with users at the center with mobile operators and humanitarian organizations; when persons with disabilities are not adequately included in planning process – they are restricted from accessing lifesaving info and services.
- HCD means that the people closest to the problem are included in creating solutions, because they have a lot of knowledge, and these methods can be effective for marginalized groups who are facing unique disadvantages.
- HCD design tools are pulling out first person perspectives and focused on creative problem solving.
- HCD methods are focused on the user journey, enabling users to document the steps taken in accessing services, document the challenges faced and come up with ideas on what they would want/need.
- Participatory HCD methods are especially useful for marginalized groups with intersecting challenges that hard to uncover with other methods – e.g. used to assess the challenges that refugees living in Kenya with visual and hearing impairments face when trying to navigate health system when they don't know which services they're entitled to in the host country.
- HCD tools are malleable, adapted to different user groups' needs, e.g. Butterfly works in Kenya – using a variety of media to suit user needs: for communication maps – used tactile objects like clay and figurines for people with visual impairments to allow collaborative and creative problem solving – people could map out their steps taken in accessing services – and imagine how the experience could have been instead.
- GSMA research also found that people with hearing impairment faced challenges in communicating with health professionals, mobile money agents, and recommended accessible alternatives like video relay for call centres for persons with hearing impairments.
- Stressed the need to increase awareness of existing technologies like Empesa which allows people to interact through voice command technology.

*Guest reflection on question 1 “How can a human-centered design (HCD) be applied to identify solutions by and for persons with disabilities?”*

**Ms. Armine Hayrapetyan – Sendai Framework National Focal Point, Ministry of Emergency Situations of Armenia**

- The Sendai Framework for DRR is one of the most important national frameworks for recognizing people with disabilities. It encourages member states to engage persons with disabilities, and their representative organisations in assessment of disaster risk and in designing and implementing DRR programmes.
- However, gaps still remain as early warning systems are inaccessible to people with diverse disabilities, due to lack of support systems before, during and after disasters enabling inclusion and meaningful participation of persons with disabilities. Risk information is often inaccessible due to environmental, institutional and attitudinal barriers.
- How to address the barriers?
  - One of the answers is in the 1st guiding principle of the Sendai Framework for DRR-collecting disaggregated data.
  - Including the Organizations of Persons with Disabilities (OPDs) as the most reliable sources for identification of people with disabilities, especially in the most marginalized communities.
  - Testing relevant technologies with people with disabilities as co-designers.
  - Some successful examples of partnerships exist but more needs to be done.
  - Disability rights advocates can play an important role, but disaster management agencies tend to have limited interaction with them.
  - Adequate support is needed (i.e. in Armenia, people with disabilities have been appointed in the crisis management center, they have been affiliated as experts, allowed less working hours than other shift members and provided with accessible transportation to work. (Recently the government also removed rules that prevented persons with disabilities from being recruited in rescue forces).
  - Limited collaboration between DRR actors, Government organisations, NGOs, persons with disabilities and their representative organizations.
  - Stressed the need to work closely with persons with disabilities and OPDs who can bring lived experiences into the picture.

*Guest reflection on question 2: “What are the most relevant cutting-edge technologies from a provider perspective, reflecting on the opportunities (and challenges) of co-creating, piloting and scaling up these solutions for disability-inclusive early warning and preparedness?”*

**Dr. Charudatta Jadhav – Head of Accessibility Center of Excellence, Research and Innovation Unit at Tata Consultancy Services**

- User research conducted for identifying the challenges for people with disabilities in disaster management during the entire process from alert to tracking, until persons with disabilities reach safe zones.
- Communication and alert are extremely important so there is a need for additional mechanisms for proactive support.
- Government bodies need disaster management resources and technology solutions to ensure that each person is taken care of and provided support.
- Solution presented: disaster alert engine through a sim card that works on any mobile device (smartphone) -provides the alert and there are multiple ways of alerting (text & audio, native language, vibrations, flashlight of the camera, screenshot). The generated alert comes with a special key which requires the recipient to confirm the alert so that from there on, the person can be tracked and guided to the safety zone. It is a mobile application, tracking done with AR, providing multimodal alert systems using the positioning system. The evacuation is done quickly; hybrid solution, adaptable to the building environment and to the management system.
- The technology is integrated with the DRM system, access being given to government bodies, police, civil authorities to provide mechanisms of cross validation to prevent false alarms (these are not sent out).

*Guest reflection on question 2: “What are the most relevant cutting-edge technologies? – From a user and co-creator perspective, reflecting on the opportunities (and challenges) to involve persons with disabilities and OPDs as co-creators?”*

**Mr. Bimal Paudel – National Project Coordinator, National Federation of the Disabled-Nepal (NFDN)**

- Spoke from the perspective of national Organization of Persons with Disabilities
- Stressed that there are many options for strengthening the inclusion of persons with disabilities in disaster risk management, but for each solution we need to assess if they are really accessible, affordable and feasible for communities. In order to answer this question, one must look into the processes, tools, techniques and databases used.
- Communication and distribution of warnings, mobile SMS, smoke and earthquake indicators are currently designed for mass populations. They do not consider the need for multiple formats and multiple features for persons with diverse disabilities. They must build on the specific capacities and the ownership of communities and societies.

- Stressed that the dissemination and communication of warnings via mobile SMS – needs multiple formats and features – for example, a text message without audio may not be useful for somebody with a visual impairment.
- It is also a matter of investment aimed at strengthening the main accessible routes to the safe places so that early warning system based on technology can really support persons with disabilities to reach safe places.
- People with disabilities are currently not actively engaged in the processes of designing EWS, but rather seen as passive recipients of the services post-disaster so their vulnerabilities and barriers are not properly understood and addressed. Need to engage OPDs for getting feedback from user testing and support inclusive workplaces.
- Accessibility paradox: “think and re-think whether the system is currently excluding anyone” - through engaging OPDs, user references and feedback from the process of user testing can be provided.
- Are OPDs really being engaged during the different stages of creating EWS for disaster preparedness? Are they trained and accustomed to using these systems so that they can lead to success?

**Pre-recorded video by Mr. Chintamani Paudel – NFDN’s federal board member and disability activist from Dang District, Nepal**

- Reminded about the need to question the extent to which Organizations of Persons with Disabilities have been engaged in different stages of early warning and preparedness – consider whether they are really being trained and habituated in using the systems.
- Works with advocating, at local level, for rights and entitlements for persons with disabilities and has been engaged in assessment and planning process, including early warning committee at community level. People with intellectual disabilities, autism etc. are rarely involved in these activities; as including them is often seen as a waste of time, which is a problem.
- Noted that community evacuation centres must be made accessible for people with different disabilities.
- Identified key gaps: many physical infrastructures and communication services are still not accessible, warnings via SMS do not cover the audio and visual needs, sometimes only sirens or drums are used, geographical remoteness and unavailability of vehicles makes it even more difficult for persons with disabilities to reach safe places.
- People with disabilities and their family members should be properly trained.

*Guest reflection on question 3: “How can communication technologies and social media be used to deliver last mile services so that early warning and risk information reach everyone?”*

**Ms. Mihoko Sakurai – Center for Global Communications, International University of Japan**

- Engaged in research over the past 10 years on strengthening delivery of early warning from local municipalities to citizens, specifically on how to utilise technology - risk information delivery to risk groups through information technology.
- In Japan, there is a national EWS via smartphones. The meteorological agency detects a hazard – sends an alert message to smart phones automatically – local municipalities can use it to issue evacuation orders as well, delivered by text and audio. Can be translated into several foreign languages.
- Current practice on risk information delivery is based on geographical area depiction, which means a lot of information is determined by the physical address of the people and the messages are the same. However, there is a need to contextualize the information and deliver individualized information (i.e. evacuation site). Local communities are the most important for delivering lifesaving information to at-risk groups (i.e. training people with disabilities on how to receive and understand lifesaving information delivered by different authorities).
- Challenge: personal information sharing (psychological issue which must be taken into consideration when designing technology for future action).
- Provided an example of an operational system already in place - one municipality provides a list of names of at-risk persons and persons who will help them, forms a group, trains them on how to receive and understand lifesaving information.
- Identified challenges: hesitancy to provide personal info about persons with disabilities to staff in local government – further research will aim to understand such hesitancy in the community and the ways to address it.

*Guest reflection on question 3: “How can communication technologies and social media be used to deliver last mile services so that early warning and risk information reach everyone?”*

**Mr. Joshco Wakaniyasi – Manager Inclusive Development, Pacific Disability Forum**

- In the Pacific, main problem is connectivity because it brings up the challenge in reaching to people, even though the hardware is in place. We need to make sure that the messages are delivered in due time, considering their disability. Questions to ask: when does the information actually go out? When is it received?
- Social media platforms are currently used by people with disabilities; they have developed their own systems on these platforms to receive crucial

messages. However, the gaps remain due to text blasts and everyone receiving the same message rather than the messages being broken down further for people with diverse disabilities.

- Current gaps: the OPDs are unfortunately not included. When included it is just to check a box, their consultation is offered in early stages but their engagement fades with time (programmes designed without their involvement); messages are often only via text whereas for many persons with disabilities, the messages need to be enhanced – may need audio or other format; relying on third- or fourth-hand stories results in misleading information and miscommunicated messages. Most of the concentration on how to ensure inclusiveness in the modern era is at national level, how do we best ensure that we reach everyone?
- Setting up groups formed of people with disabilities is crucial in trial, innovation and creation of early warning systems. They must be in the center of these processes to ensure the technologies are actually adapted to end users.
- Inclusion has improved over the last 5 to 6 years – there is better communication with national disaster organisations. However, most of it is on a person-to-person basis, sustained by personal connections and political will.
- “How can we ensure that the technology created is also affordable to people with disabilities?”
- Reiterated that the lived experience of persons with disabilities must be part of the trial when innovating and creating. It must be at centre, throughout the whole design process.

*UNDP representative reflection on question 4: “What are some of the UNDP take-aways in terms of including persons with disabilities and their representative organizations in development initiatives, be they focused on prevention, preparedness, or recovery?”*

### **Ms. Céline Moyroud – UNDP Resident Representative for Lebanon**

- Answered from the perspective of Lebanon, following recent blast explosion in the Beirut Port.
- Provided the audience with the current context – recovering and rebuilding from the blast explosion as a turning point, as there is a big focus on physical reconstruction, and persons with disabilities must be included in the decision-making.
- Highlighted need to go back to the “Leaving No One Behind” principle - going beyond physical reconstruction and focusing on the people in the middle of recovery processes, need for advocating with government and donors – to ensure that recovery of the port of Beirut will be inclusive for all persons with disabilities, and that their needs are not an afterthought.
- UNDP needs to connect recovery with more structural issues, of inclusion, working on normative and human right agenda and advocate for including the voices of those groups that haven’t been sufficiently included, including persons with disabilities – across data, early warning, preparedness and disaster response.



- The issue of accessibility and the need to connect recovery with more structural issues and issues of inclusion faced in the country.
- The need to work on a human rights agenda and issues around countries that signed and ratified the Convention on the Rights of Persons with Disabilities and looking at the implementation of specific laws. Lebanon has ratified the convention and created laws, but these haven't been implemented and need to be part of an integrated agenda.
- Emphasized the hope that Lebanon will use this opportunity to revisit its national DRM framework during the Covid-19 pandemic and blast recovery.

## Comments from invited guests

### **Atif Sheikh, Special Talent Exchange Program (STEP), Pakistan & South Asian Disability Forum**

- When talking about cutting-edge technologies adopted by stakeholders and bodies all over the world, most of the technology must be seen as an ecosystem. Some countries lack many parts of the ecosystem, and wherever they do have them, they need to be inclusive.
- Focus should be made not only on people with physical disabilities but those who cannot read or write or who have intellectual disabilities.

### **Delal Leonor, Asian Disability Forum**

- Stated that every time there is a calamity, persons with disabilities are being left behind, and that in her experience from working on DRR across the world, the participation of persons with disabilities is not augmented.
- Recommended scaling up research on increasing the participation of persons with disabilities across the whole process of DRR, to build an evidence base for a guidance for key stakeholders at national and local levels,

### **Anil Pokhrel, Chief Executive of National DRM authority**

- Stressed that the focus is often on communicating the messages to persons with disabilities but the following three-fold approach must be followed:
  1. Data system downsized to the household level from the national information system, using geospatial data as part of the national data systems to reach people with different disabilities.
  2. An integrated multi-hazard risk assessment system (accessible to people with disabilities).
  3. A common alerting protocol is needed which addresses all hazards and all media, targeting persons with different disabilities.
  4. Response systems and other infrastructure and development work that goes on in the communities need to be inclusive of the needs of persons with disabilities.,

### **Vashkar Bhattacharjee, a person with disability from southern Bangladesh**

- In Bangladesh, work conducted (for 2 decades) has been focusing on creating one system which is affordable and accessible, focused on inclusive DRR policies and guidelines that are really making a positive impact for people with disabilities.
- There is now a lot of focus on developing accessible early warning systems, but challenges include low literacy, affordability and accessibility for persons with disabilities.
- While Bangladesh is one of the countries most impacted by climate change, it aims to overcome the challenges through innovative technologies.
- There is a legacy of inclusive policies, guidelines and circulars – which are making a positive impact for persons with disabilities in Bangladesh, which is a model for inclusive disaster risk management in other countries in the region and beyond.

## Questions and comments from participants

- 1. Because of climate change, disasters have changed. New disasters like cloud bursting, pandemics have emerged and others may come forward. Persons with disabilities need to be part of the process for climate change adaptation. How to proceed?**

**Armine Hayrapetyan** – there are no prescriptions and recipes readily available for any specific country or model, the world is a living organism, which is evolving every day and the society is growing and changing every moment. Whilst there are many barriers, the most important thing is for communities and government to interact – need to keep in focus people with disabilities, engage them in open and free dialogue to ensure that the recipes we have are not getting old.

**Joshco Wakaniyasi** – when addressing climate change for the Pacific region, the one size fits all concept for information technology does not work. The type of audience, type of disability and the information suitable must be taken into consideration. The target audience for early warning messages and preparedness have different disabilities, so it is important to engage OPDs in how messages are created and developed, to ensure they are suited for every person, including every person with disability. Stressed importance of those working in the technology space to work to build the capacity of OPDs so that information can better reach everyone.

- 2. Lead time is an important factor, because it is more often than not that persons with disabilities receive support last, e.g. for evacuation process. This is important for saving lives, and for saving assets. In communities of Bangladesh, many people need lead time to save their assets. Thus, we need to discuss not only the warning and technology, but how to ensure the system is fair – for example, in this case persons with disabilities need more lead time to take follow up actions such as saving assets. Capacity building is extremely important at community level for persons with disabilities and Organizations of Persons with**

**Disabilities, and multi-hazard contexts must be considered. How can we make sure that early warning systems have more lead time, making them more effective and include better follow up actions? How do we react to early warning systems from a contextual perspective?**

**Charudatta Jadhav** suggested to differentiate the first alert (a normal message/SMS) - divided into three parts: vibration and special sounds as part 1, followed by specific instructions with audio, text or screensaver so all disabilities are covered and feedback loop to make sure what is needed is covered and that the messages are accepted (need for the recipient to accept the message and confirm it, after that the message tells the person what happens at that time) - guided communication with tracking mechanisms.

**Jenny Casswell** – one key approach that GSMA has been taking to improve lead times is through strengthening partnerships between mobile operators, government and humanitarian organizations and ensuring industry wide approaches. This is done by setting up a humanitarian connectivity charter – containing 3 principles of preparedness, scale, collaboration – to build resilience of mobile operators. Right now, there are over 100 operators in over 100 countries, who are signatories to the charter and workshops have been held around the world, to ensure preparedness is tailored to contexts and people living in those contexts. HCD is a key to embed into something like the Humanitarian Connectivity Charter, working in partnership with persons with disabilities at the center of the approach and making sure that mobile operators, humanitarians and government partners are coming together.

**Bimal Paudel** – the issue of ensuring inclusive DRR for persons with disabilities is often considered separately from disaster risk management, and from supporting access of persons with disabilities to regular services. For example, even agencies that focus on designing and building accessible roads, may not have considered the need for accessible exit routes on the roads, which would be needed for evacuation of persons with disabilities during emergencies.

**Atif Sheikh** – In Pakistan, there are many disaster-prone areas, but also a lack of trust in organizations that deliver warnings, especially after previous evacuation orders were delayed. Highlighted the need for advocacy and awareness raising to strengthen trust, before early warnings will be listened to.

**3. What would be the top recommendations to be included into national and local DRR strategies or policies to ensure that technologies for disability inclusive early warning and preparedness can be realistically implemented in low-resource countries and communities, especially considering the challenges in these countries and communities?**

Speaker suggested that for effective emergency evacuation, malls, airports and other public buildings need to adopt indoor positioning system where GPS does not work effectively, so that this can be used to track user and provide effective evacuation orders. Proposed public- private partnerships where all authorities work

together to provide the system. Key aspect: connectivity to mobile app for DRM and other solutions – key aspect

Speaker reminded that among persons with disabilities, there are many different needs and capacities and thus there is a need for collaboration amongst suppliers, recipients, target population, as a way to build awareness.

In terms of policies, it is important to focus on collaboration, understanding the different needs relating to gender within the disability community. If you have the best technology but the resources are not accessible to people with disabilities, it defeats its purpose. The support system should be available to all, so the individuals must be engaged in constructing policies and frameworks. There is also a need for improving awareness, collaboration among suppliers and recipients of information and target population.

**Armine Hayrapetyan** - The most important topic suggested by the Sendai Framework is the creation of databases for people with disabilities for understanding risk and all-inclusive society. Awareness raising campaigns in many low-resources countries or remote regions are not inclusive, which is extremely important at national and local level, as well as it is important to ensure public-private partnerships for people with disabilities.

**Jenny Casswell** - Ensure better data and codefine challenges and solutions with people with disabilities; solutions do not need to be high tech, basic technologies can still be highly impactful as long as they are designed collaboratively for people who need them the most and HCD is used in doing so.

**Bimal Paudel** - Strategies for making these policies must focus on two aspects: local and national level centralizing people with disabilities in different contexts; and for strategy, making sure disabilities and special needs, capacities are strategies are addressed and available at community or/and local level.

## Closing remarks

### **Ronald Jackson, Head, Disaster Risk Reduction & Recovery for Building Resilience, Crisis Bureau, UNDP**

- Thanked participants for a rich dialogue with fantastic perspectives and key recommendations - a conversation which not only identified challenges but presented solutions.
- Stressed that key stakeholders must not be left out of the process in DRR and even though there has been progress, there still is a long way to go towards overcoming attitudinal barriers, understanding risk and vulnerabilities, collecting disaggregated data.
- Takeaways:
  - technology options emerging so that we can engage to address the issue of early warning

- people in the society as key changers
- co-defining solutions and the idea that people with disabilities should be a part of co-creation
- finding a balance between the accessibility paradox and affordability, access and restrictions based on the context, refugee situations etc. including individuals in all phases is necessary.
- Stressed that UNDP remains committed to strengthen access, inclusive programming, as an important part of achieving UNDP's mission towards achieving SDGS, and UN Convention on the Rights of Persons with Disabilities.
- Reiterated UNDP's pledge to continue to play role in the UN system as convener, to bring together stakeholders with wide range of interests; to promote a rights-based approach; to promote active involvement of persons with disabilities as co-creators and partners in development initiatives.
- Stressed need for capacity-building for persons with disabilities, highlighting projects carried out in Philippines and Sri Lanka.
- UNDP has the opportunity to scale up innovative solutions by and for people with disabilities and grassroot organizations; committed to raising the standards of disability inclusion and bring about unified transformative and lasting changes.

## Questions and Answers

**Q: To Armine Hayrapetyan:** Do you have database of how many disabilities person are in capital Yerevan and in remote place like Nagornokarabakh?

**A:** Yes, there exists such a database run by the Ministry of Labor and Social Affairs, which also helps the persons with disabilities to be employed at various organizations.

**Q: To Bimal Paudel:** During the mega earthquake when all telecommunications infrastructure will be down, how will you manage rescue for disabilities person in Nepal?

**A:** That is why I always focus on the multi-method approach to address the inclusion of people with diverse needs and abilities. Telecommunication would definitely be the important and one of the most advance options as to use early warning system. However, all the systems and structures during the disaster (emergency/humanitarian crisis) might be collapsed. For that period, your preparedness plan primarily should reflect such devastating situation and have the clear plan which is also locally manageable. Furthermore, the support system at local level ought to be in place. For instance, local volunteers, dedicated persons for those contexts or any specific measures can be adopted to communicate and evacuate properly by local authorities or any concerned agencies.

**Q:** Where will this report be available?

**A:** We will share it with you through a mailing list and it will also be posted on the event website.

**Q:** Do any universal/inclusive early warning systems exist in any country that will help us to learn more about how to make that system regional and country context?

**A:** The session today will provide a few selected examples. After the event, we will release a session summary and Q&A, and we will add more examples.

**Q: To Jenny Casswell:** What is the difference between Human Centered Design and Universal Design?

**A:** Human centred design (HCD) is a practical and iterative methodology for problem solving. Using highly participative HCD methods can be particularly useful for marginalized groups, because they often face intersecting challenges that are hard to uncover through other methods. The principles of Universal Design refer to broad-spectrum ideas meant to design and develop buildings, products, services and environments that are inherently accessible and usable to everyone.

**Q:** How do we ensure that people who lives in rural areas will benefit from the use of technology? At least in our country, many persons with disabilities do not have smartphone and access to internet is not affordable to those who have them. Many still uses basic phone. In many places, mobile phone signal is also problematic to even receive basic messaging (SMS) or phone call.

**A:** One of the ways would be to involve Organizations of Persons with Disabilities who can make contact with members in the rural areas. We will also be touching upon this issue in today's session.

**Jenny Casswell:** This is a complex challenge indeed. At the GSMA, we have been working with mobile operators and partners to improve coverage in remote areas. <https://www.gsma.com/mobilefordevelopment/connected-society/innovation-funds/rural-connectivity/>"We've also been working through our Assistive Tech team on an Innovation Fund to drive the digital inclusion of people with disabilities: <https://www.gsma.com/mobilefordevelopment/gsma-innovation-fund-for-assistive-tech/>

**Q:** It is heartening to know that the Ministry of Emergency Situation in Armenia employs people with disabilities. What are some of the important guidance you would like to provide to other countries?

**A:** The first important step is to understand, that the persons with various disabilities can be contributors as well", the closer dialogue with the Organizations for Persons with Disabilities is key. In the Armenian case, the necessary amendments in legislation were also seen as strong background. And the most important thing is to engage the Persons with disabilities and organizations at all levels - data gathering, solution testing and designing, as well as decision-making.

**Q:** Early warning devices needed during calamities. How can we help communities to be resilient?

**A:** There needs to be good preparedness efforts that involves persons with disabilities.

**Q:** What kind of technology has been created and how it works to make it easier for people with disabilities?

**A:** We will be presenting some of the examples during today's event. However, we acknowledge that there's still a gap in this area. Here's an example from a mobile operator in Kenya - Safaricom: <https://www.potentash.com/2021/02/10/mpesa-voice-important-visually-impaired/>"

**Q:** If we want to design an evacuation system for multi-disability, what should we pay attention to? For example, a warning system for the blind and deaf in one community.

**A:** You will need to be inclusive of all persons with disabilities including the marginalized impairments such as psychosocial and intellectual impairments.

**Q:** Data is not efficient all over the world. What has been done and what we can do to improve it?

**A:** Effective data will help more persons with disabilities gain help especially through DRR. One of the things we've done at GSMA is to quantify the mobile disability gap using the Washington Group Questions - offering robust data on how much less likely a person with disabilities is to own or access a mobile phone than a person without. This helps us to size the disparity in access and use of mobile technology so that we can then start to identify how to solve the challenge & close the digital divide. <https://www.gsma.com/mobilefordevelopment/blog/understanding-the-mobile-disability-gap-in-refugee-contexts/>

**Q:** Could you please provide information if there is UNDP guide that contains all the information/ technology solutions for people`s issues?

**A:** Please check out the Disability Inclusive Development in UNDP (2018): it elaborates on the institutional and instrumental value of disability inclusive development and the twin frameworks within which we are galvanizing momentum: The Convention on the Rights of Persons with Disabilities and the Sustainable Development Goals, which are mutually inclusive. For the moment, UNDP has not yet developed a compendium of technologies for disability-inclusive planning, but events such as this one is helping us reflect on this possibility. There is an internal compendium of disability-inclusive project examples from UNDP which we can share widely on SparkBlue and Yammer after the event.

**Q:** In the refugee context where the host country does not allow refugees to get SIM for mobile as they are not the citizen of the country. In that case how can the mobile phone system be implemented in refugee context question?

**A:** This is a key focus of our programme working with our mobile operator members and humanitarian partners to advocate to Governments to ensure that refugee documentation is recognized to meet Know-Your-Customer requirements. Here's an example of the success we had in Uganda, where the Government now accepts refugee attestation documentation. <https://www.gsma.com/mobilefordevelopment/blog/uganda-a-progressive-regulatory-directive-eases-refugees-access-to-mobile-services/>

**Q:** People with disabilities are mostly having difficulty meeting everyday expenses, how can we help them for they do not have enough resources to do so?

**A:** States should ensure provision of social protection schemes that includes persons with disabilities.

**Q: To Dr. Charudatta Jadhav:** Is there a scenario where a person with disabilities cannot be reached during disaster because the mobile apps. Is not function at that moment? If so, what is the alternation to reach this person?

**A:** For the second question, whether the mobile connectivity is not available, when we are talking about a mobile application, we are not talking about an internet-based mobile application. We know they are there in remote areas today and that 80% of the population uses a mobile network. Number two, the connectivity to the mobile application for disaster management is a key aspect. The solution we propose is a partnership with the authorities who all work together. If my internet application is not available, within service providers we can still provide the emergency alerts and provide the guidance to him and the surrounding people. This is the core concept of this approach that we have taken in solving this problem.

**Q:** Remote Access is vital this days, How do we guarantee affordability?

**A:** I believe this is where the partnership is crucial with stimulus packages supporting persons with disabilities. There more partners having disability inclusive policies and budget that can expand their spending that is serves all including ALL persons with disabilities.

**Q: To Dr. Charudatta Jadhav:** what would you advise the owners of office buildings any additional considerations for the people with disabilities for using the features you described?

**A:** In a controlled environment or a building environment, the authorities should do the following. We have proposed an indoor positioning system which primarily assists any user to get directional assistance from one point to another point. We would like to extend this particular technology to solve the problem of emergency evacuation. The thing with the buildings like malls, airports, and railroad stations, is that they have to install or adopt an indoor positioning system where GPS doesn't work effectively. Then they use their core capabilities of an indoor positioning system to solve the problem of the emergency evacuation because we can track the user. Because it's mobile-based we know the person, the disability, and their limitations. The guided message can take him to the safety zone. The entire process can be adopted at the need of the person. This is basically the building authorities that need to adopt an indoor positioning system available in the facilities.

**Q:** There are different categories of disabilities and disasters as well. So, a single technology can not cover all forms of disabilities for different disasters. How can this be addressed?

**A:** There are assumptions that relevant stakeholders have answers and solution to all questions and needs of the public. It is important to include OPDs to share their lived experiences. It is only by including them that we are able to design innovative solution for different impairments. Also get the different impairments to test the solutions to ensure that it works. Human centered design can be a very useful



approach to understand specific contexts and design inclusive digital interventions suited to those contexts, with people with disabilities at the centre of the process, together with tech providers:

<https://www.gsma.com/mobilefordevelopment/region/africa/5-tips-for-inclusivity-in-human-centred-design/>

**Q: To all panelists:** If we now need to prioritize, what would be your topmost recommendations that need to be included into national and local DRR strategies / policies and practices for ensuring cutting-edge technologies for disability-inclusive early warning and preparedness, which can be realistically implemented in low resource countries and communities, especially considering the challenges?

**Joshco Wakaniyasi:** From my perspective, regarding the question on policies, it's important that we have collaboration. For people with disabilities and for women, in terms of their perspectives. Within the disability community there are different needs relating to gender. Even if you have the best technology to inform for disaster but the resources are not accessible to people with disabilities it almost defeats the purpose. In the Pacific region, this is often very true. People often move to families who are in other safety areas. If there's a flood, they go from where they are to a family on higher land. The support system should be available to all. Those affected by the disaster may not receive the location provided and then becomes a burden to the family so the engagement of the individual in the construction of policy and framework is key. The structures made available should always ensure they are person centered. Further, it's important that in ensuring resources available and providing back up support, there are some that do not believe in the systems. So there's also awareness, we need collaboration among supplier and recipients of information and target population.

**Armine Hayrapetyan:** The most important topic suggested by the Sendai Framework, the creation of databases for people with disabilities for understanding risk and all-inclusive society, all of the approaches that are important. Awareness raising campaigns in many countries that are low resources, or in remote regions. I mentioned inclusion, important for national and local level and public private partnerships for people with disabilities and these were my important topics to raise here.

**Jenny Casswell:** I would say the key things in terms of recommendations are ensuring better data and co-define challenges and solutions with people with disabilities. Solutions don't need to be high tech, we found the basic technologies could be hugely impactful. We need to design collaboratively for people who need them the most and use human centered design to do this. One small example is using instant voice recognition which can be a useful way for people with visual impairments to receive emergency alerts. I think these solutions depend largely on who gets to define the problems and solutions.

**Bimal Paudel:** Quickly, I want to focus on two things. Definitely local and national level planning should keep people with disabilities at the center. While designing strategies, special requirements, needs and rights of persons with disabilities should be considered in consultations with persons with disabilities.

**Q:** How can we help OPDs to be more engaged? and give them power to connect.

**A:** We need ensure the inclusion, the participation, the accessibility, nondiscrimination, respect for difference and diversity of all persons with disabilities.

**Q:** The cost of assistive technology is very high, and even getting higher with advancements.

**A:** Indeed, through our GSMA Assistive Tech Innovation Fund, affordability is one of a number of barriers that we're seeking to address:

<https://www.gsma.com/mobilefordevelopment/gsma-innovation-fund-for-assistive-tech/>

**Q:** This is From ASEAN Disability Forum - We would like to ask if there is existing DRR Best Practices you can share with everyone.

**A:** You can find a lot of useful resources related to DiDRR on:

<https://www.didrrn.net/>

**Q:** One specific solution we came up for people with disabilities (and elderly who needed support) in one of our community-based disaster preparedness trainings, and specifically during emergency evacuation was the following: as technology cannot be trusted 100 persons in all locations, the best option was to assign community members as 'focal points' for each person with disability. This is because community members have the best knowledge of who needs help, and where they would be located. With agreed roles and responsibilities, the confusion is then reduced as to who does what, and no persons with disabilities are left behind.

**A:** Let's bring these ideas and examples forward more visibly in UNDP. We'll launch a Yammer conversation on good practice examples. Please don't hesitate to share more information.

**Q:** How can we adhere to "Do no harm Policy" as well as responsible data management using technology and multi stakeholder approach?

**A:** For every context, situation, or technology application the answer for this question could be slightly different. Currently, UNDP does not have a clear and defined policy regarding data and data use. The UN has gone a little further by pulling together a [Report of the Secretary-General Roadmap for Digital Cooperation and United Nations Development Group \(UNDG\)](#) has published the [Data Privacy, Ethics and Protection Guidance Note on Big Data for Achievement of the 2030 Agenda](#).

**Q:** For any member of the panelist- how can we reduce these barriers: affordability, accessibility, usability, portability?

**A:** We need all the support we need from Persons with Disabilities groups, Government, International Funders and Private Organizations.

**Q:** We are a Person with Disabilities that have care about issues Disabilities in disaster. We start thinking how to innovate early warning system that knowing for people with blind and def disabilities. Can people help us?

A: Train emergency responders to communicate with Deaf and hard of hearing people and even with deaf blind develop a database of where these individuals live. You will need the support of respective OPDs to support emergency responders for this. Advocate the formation of personal networks for emergency safety. Best remedy – always involve deaf blind population to find out how to support them and identify from them how they use technology for early warning. If they can access websites and social then. Keep websites /social media platform for up to date and accessible to Deaf and hard of hearing and deaf blind on early warning.

For further details, including the recording of the event, please visit this [link](#).

\*\*\*\*\*END OF THE REPORT\*\*\*\*\*