

June_19_Small_Hall_004

Alright, so welcome to Advances in Multihazard Risk and Resilience.

With what we give you a bit of sugar, it's pretty late in the afternoon, it's been a long couple of days and so yeah just to keep the energy up. We've got a quite a packed schedule and I thought we'd first start with a little bit of an icebreaker.

So can everybody put up their hand who's ever experienced a disaster? So any type of disaster. Okay and now with your other hand, can you please grab out your phone, keep your hand up. Now obviously getting out that phone is already sort of problematic because you might drop your phone or do something like that but you see if you've got the phone.

Can you then go to Menti and scan the QR code and already you're seeing how multiple hazards can actually work. So of course you have your hand up and now the next one, have you experienced two disasters at the same time before?

So nobody's dropped their phone so I'm very very happy. You now put down your hands. So I can see that a lot of people have never experienced two disasters at the same time before or maybe you think that you haven't just had two disasters at the same time before.

But of course it may not be the case and so we've got three people here today who are going to explain about multi hazard and then also about resilience. And just a second question, if yes which two or more disasters happened?

So if you answered yes to it I'd like to know which disasters they were and then maybe the people who answered no you may see like disaster combination and potentially then you might change your answer.

Me for instance I thought that I hadn't experienced two disasters at the same time and then I worked out that during COVID essentially I was in an earthquake and yeah and those two disasters of course happened at the same time.

So often disasters when we think about disasters we think about hazards quite often but of course there's also all the risk interactions it's all this type of thing and so the three speakers today will be moving through from multi hazard and hazards right through to socioeconomic resilience and it's always important to remember that multi risk aspect.

So without further ado I will so most of them we see here with COVID and earthquake sorry. Typhoon landslide together, snow pandemic and there are a lot of different different disasters that can occur.

All right. So I'm going to head across to Philip Ward who is going to present about the reflections from this third international conference from last week in Amsterdam which was a conference which we had about 250 people at so I'll head across to Philip to explain.

Thank you very much, James. Yeah, good afternoon also from me. Thank you for making your way to this session. For those coming in, there are some suites for you to take on the way in to keep up the energy levels.

My name's Philly Bordes. I'm a professor of global risk, multi -hazard risk, at the Frey University, the Frey University in the Netherlands, and also a senior disaster risk management specialist at Deltares.

And it's my privilege and honor to lead the Myriad EU project. For those, probably most don't know what it is, but that's an EU funded project on the topic of multi -hazard, multi -risk assessment and management.

It's a four year project where we're really trying to, in practice, with stakeholders in our case studies, try to find how we can actually bring this concept into practice in decision making contexts.

And last week in Amsterdam, we held a conference, as James said, the Inferno International Conference on Natural Hazard and Risk Change in World. And I just want to share some reflections from that conference.

conference which may be relevant to some of the work that we're doing here and talking about this week. The conference was organized by myriad EU in collaboration with risk cam and natural hazards and risks in a changing world.

But first before talking about the conference, we talked a little bit about some of those examples of these combinations of disasters. And I think one that really draws it out for me is this eruption of Hungatunga in December a couple of years ago now.

Here we see an image of the ash, the eruption causing all of this ash. Actually one of the most intense volcanic eruptions in history in terms of the ash deposition, which led to direct impacts on Hungatunga.

So the deposition of ash led to the collapse of buildings, the health of the city, the natural disasters. issues for people and also really affected in an extreme way the agriculture to the food production on the island.

were more distant cascading triggering impacts. The eruption itself caused a tsunami, and the tsunami had impacts, disaster impacts all the way across the Pacific Ocean, as far away as Santa Cruz in California, where flooding took place.

Not only that, the same things were experienced along the coast of Peru, parts of Japan, so quite far afield. So this shows how some of these hazards can really interact with each other. But as what James is saying, it goes further than the hazards, right?

It's really systemic interlinkages. And I think one that really comes out for me here is the example that after the Tonga eruption, well, there was the need for humanitarian aid, bringing in water supplies, food, et cetera, into the country.

This was during the COVID pandemic. And until that time, Tonga had been free of COVID. But the foreign aid workers coming in to help brought in the first cases of COVID, which then has everywhere rapidly spread and caused a large number of...

fatalities, illness and so forth. So really this shows these systemic ways in which these disasters can really influence each other. And it's those kinds of things that we were talking about last week with 260 people, scientists, practitioners, decision makers in Amsterdam.

down. So let me just show some images from that. It was really nice. We had introductory talks by the UN DRA who were really talking about the need to consider this in all of that kind of DRA work that we're doing.

Also in the context of the global agendas. We had the European Commission. talking about how this has been brought into the day -to -day disaster recovery work of the Commission. And I think the highlight for me is that we had over half of the attendees who were early career researchers who are really the driving force of the new.

knowledge on this and I think need that as a community if you're actually going to make better decisions to consider in all of this. So I just want to share some of the key findings with you. There were many, so I'm not going to share them all.

One of those key findings was the importance of terminology. So as I work in this field more and more, I realized that there's lots of terms, multi -hazard, multi -risk, multi -vulnerability, cascade and systemic, I don't know, there's thousands of them, and they're used in quite different ways by different people, different fields, different organizations.

It can actually be quite difficult sometimes to know what we are all talking about, just to understand each other's language. I think there's been some great work on the hazard information profiles by UNDRR, which is actually trying to address this, and Virginia will tell us about this later, so I won't talk about that.

A product which was talked about is to try to help overcome this, is the disaster risk gateway. This is a wiki platform where anybody can go online, it has, as you can see here, definitions of multi-hazard risk, but it also has tools which can be used to actually, to calculate, to understand that risk.

And the idea is that anybody can go on this, this, and I like it, to wiki, share their own tools. So it's the idea, it becomes really a community platform for sharing tools and knowledge with each other.

Some other scientific advances that came out at conference was really the need to look at all of this multitude of connections, like the ones I was talking about, so between actors, regions, sectors, hazards, exposure, vulnerability.

really think about all of these interconnections, including those cascading In fact, like the ones with COVID, example that I talked about earlier. But I think he, and I've heard this mentioned in a lot of the sessions this week, is really to understand these dynamics of vulnerability, right?

I think we tend to consider, at least in many of the assessments we do, as a vulnerability being static, or that we may see that if we develop in the long term in the future, there may be a decline in vulnerability, right?

That might be one of your ambitions. But of course, there's many dynamics on a smaller time frame and also spatially. So, following a disaster, a community may become temporarily more vulnerable. After taking a DRM measure, this will change the vulnerability to other hazards, right?

So, either we reduce it or increase it. it if you take a maladaptive option. And I don't think we really have a very good understanding of this in our risk assessments yet. We talked a lot about the importance of nature-based solutions and the fact that they offer a large potential, but there's not so much research on how we can actually maximise to manage many advantages.

So how can we actually overcome some of the governance and financial barriers to those? And the World Bank has put on some excellent presentations, sessions this week on this topic. We talked about risk forensics, really trying to dig into events to find out how we can understand what took place there and how can we learn for future events.

We talked about the fact that I think this was a positive signal that a lot of the model development we're seeing, which in the past has been quite statistical, theoretical in this field, is now becoming more applied.

So I think that's the development that we would like to stimulate to go further. We talked a lot about AI, who doesn't these days? It's a bit of a buzzword. But we also talked, we also looked at examples, not just using AI as a black box, but also using this explainable.

to try to understand what it is we're finding, which was a very interesting development. We talked a lot about the need to form coherent scientific communities, learning from each other on this topic.

And we actually think that that's happening quite well. This is an example of it. Last week was an example. But we did notice that despite the proliferation of many software tools, trying to address multi-hazard risks, make scenarios, which sometimes seem to be doing the same thing.

So also on this issue, we should try to collaborate more, even more as a community. And then, well, it sounds easy, but it is not. But also embracing complexity, right? So we often try to reduce things to their simplest forms.

But actually by doing that, we sometimes get things into silos and you don't see those linkages between problems. once anyway. So we need these real ways of looking and understanding these systemic kinds of risks.

We talked about science communications and Gentile Kearshwood from UNDRR I think this was nice. Anne-Marie Dolde, she said that when she explains her work, she always

uses the grand pair of hands. So would what she is telling about her work, how would she explain it if she was talking to her grandparents?

And we had some very nice examples I think of excellent science communication in this field, like the climate stripes, right? A visual way of expressing changes in temperature over the past century. This is an example from the IPCC which is showing us how future generations will experience hotter conditions in the future.

So not just saying it will become two degrees warmer in the future or something like this, but really saying what does that mean in terms of the number of heat waves you will experience if you were born in the 1950s compared to the 1980s, 2020s and so forth.

And this is really a much more powerful way I think I've put across some of these messages. Another one was the need to really work even more on the science policy interface and also to link better between the agendas and the climate.

related to disaster risk management, climate change, adaptation, sustainable development and so forth. We often hear the term, this arena and other events, break in silos, but our representative from the European Commission, he said something that was quite interesting I thought.

He said, silos are there for a reason, you know. You need silos if you're going to develop your individual disciplines and really get to the root of some of those questions. If you break down a silo, he gave a nice analogy of making a cake, right?

So if you just throw some flour, some eggs, some water into a bowl and just chuck it in the oven, well you're probably not going to get a very good cake out of it, right? So maybe it's not all about breaking silos, but bridging silos and bringing people together into the same room as we do.

we do here, it is a wonderful forum to talk about this and really understand these. these aspects. That said, please join us tomorrow for our session break in the silos. talk about this important issue for the whole thing.

Very welcome to join us. We talked, I'm going to go through this quickly because time is short, but we talked about the need to broaden the horizons and sort of the scientific work. So including things like conflict, health, the humanitarian perspective, financial governance and regulatory barriers, distributed justice, and all the side approach, inclusivity, and much, much, much more.

It was very productive two days which we take through into this meeting today. And my final message and the key find that I took is that for me, the future is bright because we had over 130 excellent early career researchers.

I have to say, I'm not to say that they were, they really astonished me how amazing the talks were. And this is exactly the people who I hope are attending this conference or will in the future. so that we can really start to reduce the risks together.

Thank you.

Thank you Philip. So we've seen what the future is really, really bright. And, but there are also tools now that we can start using as well. And I will just get out your phones again please. And I've just got another question.

Have you heard of HIPPS? Thank you. So, okay, some people have heard of Shakira, that's good. Okay, so no yes, so it's a mixed bag. All right. So not so many people have heard of hips, okay? Then have you used the hips if you answered yes?

Okay. Okay, well the next speaker is going to explain about the hips. So I'll hand across to Virginia Murray from the UK Health Security Agency and she's going to explain all about the hips.

Hello everybody. People at the back, please come down. If you want a sweetie, come down. Come and join us. There's a little problem with beach balls. I can't throw far enough. So first of all, huge thanks to James, but vast thanks to Philip and Branca.

It was really very encouraging of them to invite me to be able to come here to this Understanding Risk Forum, because to me, they are incredible fora, and I love the London one and the Venice one. I don't know if others have been to other ones, but I'm here really to talk about the hips and they're not the ones on your body.

So the Sendai framework, you all know that? Anybody not know the Sendai framework? Or perhaps you don't admit it? Okay, all right. Okay, you know that the Sendai framework has its seven global targets.

I'm sorry it's slightly blurred, but it's the reducing mortality, affected people, and the economic loss, damage to infrastructure particularly, health and education. But also increasing every country's knowledge of what their risks are.

What are they going to be worried about? And what is the international cooperation we need? And in this room, and in this conference, we have 130 countries. Hey, isn't that great? But there's also this real global call for how can we get early warning more effectively.

When the Sendai framework went live and the first report came through in 2018, it became apparent that a lot of countries were really having difficulty understanding what this paragraph of the Sendai framework meant.

To strengthen technical and scientific capacity to assess disaster risks, vulnerabilities, and exposure to all hazards. All hazards were not clear, even though a huge amount of work had been done by it.

I was given the great privilege by UNDRR and the International Science Council to be invited to chair a working group and John Schneider should be in the room. He was part of it. But if he's not, we'll tell him we'll be in my leica.

But what we did was to look at all the different sets of hazards that we could find in the world, all the different systems as I'll show you, and try and pull that together into one report which came out in July 2020.

What does that date mean to you? COVID, yes? We got it out of COVID, gosh, amazing, and I'm a doctor, help. And then we got the hazard information profiles out, again in October 2021 in the still in the midst of COVID.

How did we do it? Because of great friends. And I hope all of you will feel really engaged and want to do more in the future. Through UNDRR, we probably linked over 40 different UN agencies or organizations to ask them what were they concerned about, what did they have definitions of, and how could we work with them?

But it was our incredible International Science Council, global partners which come through all their unions, the International Science Council being a global voice for science, and the Industrial Science Partners, including the Insurance Development Forum, Mr.

Stewart said thank you very much for all the support. But we couldn't do it without the communities. So it was the International Federation of the Red Cross, Red Crescent, who represented them. But then we had volunteers, many.

And then we had huge outreach. And what we had was a process to try and look at every single hazard definition we could find, both in the scientific and the UN systems. We did surveys, we did consultations, and we agreed what the criteria were.

We ended up with 302 hazards. I do not know why 302, but it's memorable even to me. And what we have is this really clear message that we have hydromet hazards. And that's what we've been talking about so much today.

Extra terrestrials, you really haven't talked much about it so far as I can see. And of course, you've done a lot of talking about geological hazards. And that's vital. And we have one of our reviewers in the audience.

Thank you, Maleka, lovely to meet you from Canada today. But the environmental hazards, sea level rise, coral bleaching, so many of our wonderful small island developing states are really having trouble with it.

Chemical hazards. I'm a toxicologist amongst other things, and that was something that was really important. And biological hazards, do you know people said HIV, AIDS? That's a health problem. And we said it's a global disaster.

And COVID helped to reinforce that we could have global disasters in health. And we certainly impacted all of you, and I suspect many sadly of your friends and family and colleagues. But we were allowed to include all the technological hazards, from radiation to cybersecurity to buildings to waste.

Oh, think about the health care waste. That was something during COVID, but transport and all the other things that relate there. And because of completeness. not because it's part of Sendai. We were allowed to include the societal hazards of conflict.

of things like explosive remnants of war, a financial shock, things like that. that really matter to us, including violence. So we were amazed when we looked at this and UNDRR and other colleagues looked at our report, thinking, linking it to Sendai's SDGs and the Paris Agreement, and said they provided a common set of hazard definitions for monitoring and reviewing implementation.

So incredible, and when the Sendai framework was reviewed, we were called groundbreaking. You can see the excitement is still there. What we know is we need everybody to use this list. So the numbers of you who aren't aware of it, please take time to look at it.

You should all have been given this as you walked in. This will take you as a direct link into it, because we need to use this list actively to engage policymakers, scientists, in evidence-based national risk assessments, disaster risk reduction, risk-informed sustainable development, and other actions that are aimed at managing risks of emergency and disasters.

And address those multi-hazard risks. Ah! And now we're updating them, and they've asked me to be chair again, how dangerous of them. So we're aiming for the global platform, which will be in June 2025 for disaster risk reduction held in Geneva.

Think about coming, think about engaging. And so it's been advertised on ISDR, it's been advertised on UNDR, and the whole purpose is that we look at multi-hazard early warning. Absolutely key, and we need your help.

Early warning is something that Antonio Guterres called for on the 23rd of March, 2022. I had the great privilege of speaking on behalf of the HIPPS and Health. And we know there's a huge executive plan of action.

We know that DRR, UNDRR is leading on disaster risk and knowledge, that WMO is leading on detection, observation monitoring analysis, ITU, International Telecommunications Union, Union is leading on warning, dissemination, and communication, and IFRC preparedness to respond.

Help us to do it better, tell us what we've missed, and you've got a beach wall to catch.

Thank you very much, Virginia. So as you can see, there are a huge amount of hazards. And hazards, of course, very much interact with society, interact with our built environment. So we're going to go to the mentee again.

And I have another couple of questions for you. What has been the worst unequal disaster in recent years in your country? So an unequal disaster is one that affects socioeconomic groups very differently.

But for you, in your country that you live in, what has been the worst unequal disaster? So we've got floods, COVID, heat, high winds, urban flood, conflict. So conflict, Virginia mentioned about conflict.

It's one that we often forget about. There's often conflict occurring, not just the conflict that we think of, of wars and this type of thing, but also conflict between social groups, conflict in terms of crime.

And so these types of things can affect you in your local environment. Okay, thank you. And then, oh no, I've done it again. There we go. And what do you think are the main drivers of socioeconomic resilience to disasters?

Now, I hope that you can put multiple options in here. If not, then just pick the one that you think is the main driver, but otherwise put all the ones that you think are the main drivers of socioeconomic resilience to disasters.

So we've got inequality, economic development, early warning systems. Okay, so a lot, no savings in financial inclusion, but yeah, disaster mitigation infrastructure. So there's a lot of drivers of socioeconomic resilience to disasters.

And now I'm gonna hand across to my colleague Bramco, who works at the World Bank, and he's going to explain about socioeconomic resilience to disasters. All right. There we go.

Good afternoon everyone, I am Bram Kargajafino from GFDRR, the World Bank. And in this occasion, I would like to speak about research we recently completed about socioeconomic resilience to natural disasters in 127 countries.

Because of course, when we speak about hazard, when we speak about risk, it's not only about the asset, it's not only about the physical thing, but also about us, about the people, about our neighbors.

How are they experiencing it? How are they recovering from it? And whether we can help them better to deal with disasters. And at the World Bank, we start from the premise that most risk analysis, especially done more from a physical perspective, is important and definitely as a starting point.

But when we talk about people, we need to go beyond the risk to assets. Because these risk to assets do not take into account who is affected. For example, it's \$1 ,000 lost the same between a poor person and also a richer person.

Perhaps the number is the same, like the face value is the same, but then how their life will change will completely different. And this might not be captured if you look on the address to assets. And what is also important is the temporal dimension.

How would people recover? Would it take them one month to recover? Or would they not be able to go to work if their assets are destroyed? I think most of us in this room are fortunate enough if our house is, for example, damaged by a flood or earthquake, we can still earn income.

But for most of the poorest segment of the population, their house is where they make the money. So when their houses are destroyed, then they cannot also generate income. So how they recover is equally important when we talk about socioeconomic resilience.

A little bit of the methodology, we extend the physical risk model. So the top part or the top row of the framework to look into how people would experience disaster, how they would recover from disaster.

By translating this into their income losses, the money they need to spend to recover, to rebuild their assets, and eventually to what we call the well -being loss. Because again, \$1 ,000 of loss is not the same between the poor and the rich part of the population.

And this is where we introduce the term socioeconomic resilience. The intuition is very simple. So take again the \$1 ,000 loss, right? And then if your house is insured, for instance, then all the damages are covered, or 90% of the damages are covered.

Then your well-being loss is only \$100. So your resilience is 10. You are very resilient. But take if your house, you also have, for example, cows which you use to make income, or chickens which you also use to generate eggs for your livelihoods.

And their damage is \$1,000, but then you cannot generate income for one year. Eventually the well-being loss is more than \$1,000. It will be small. So this simple definition of socioeconomic resilience is what we use in our analysis.

So we translate RISD to assets globally from CDR1 report recently published last November, combine it in our methodology with household survey data, country economic data, early warning systems, assets vulnerability and so on and so forth.

To come up with what we call the RISD to well-being. And eventually by defining this, we get the socioeconomic resilience, which shows how much, again, how much can you really cope with disasters. And as you can already figure out from the map, before coming to that, so the intuition behind it is again super simple.

You have RISD to assets on the left and RISD to well-being on the right. And take two countries that has the highest RISD to assets in terms of presentation to GDP, whereas Haiti and Tajikistan. Haiti is currently in a very dire situation, whereas Tajikistan has social safety nets, government response and so on and so forth.

When we translate this into well-being loss, the future is very different. For Haiti, the well-being loss is more than 5% of their GDP, whereas for Tajikistan, it is just less than 3%. Despite at the beginning, have the same RISD to assets from the physical RISD model.

And then if you look into socioeconomic resilience, we clearly see there is a relation between economic development, GDP per capita and resilience. However, if you look deeper, for instance, those countries with GDP less than, or GDP per capita less than \$5,000, we see quite a lot of variation.

And it is interesting that many people choose economic development as the driver of resilience, which we agree, but there are so many other factors that actually contribute to socioeconomic resilience.

I will just take two examples in this case. One is more on the economic side and one is more on the hazard side. Starting from the hazard side, we look into how improvement in forecast accuracy in the past 30 years, which translates to better early warning system, has resulted in reduction in asset loss, but also in reduction in welfare loss.

And especially for the welfare loss, we found that over these 30 years, improvement in just forecast accuracy itself has a void welfare loss of up to \$800 billion. And then if everything was perfect, if early warning was perfect, we estimated that it would be additional \$12 billion of globally reduction in welfare loss per year.

It is also important to speak more about the economic aspect of it. Here we look into post -decesary support, especially in developing country context. It is a very important tool to build resilience.

You hand out cash after or just before the disaster if you have good forecast. And you can clearly see if you look at the socio -economic resilience on the left, with post -decesary support or PDS, the socio -economic resilience will definitely rise.

But what is also interesting to see is how long post -decesary support can help, can reduce people's recovery time. Take for example, and this is what we call by time to recover. So in some countries, it takes an average household five years to rebuild their homes or 10 years to rebuild their homes.

But then with the post -decesary support, this can be reduced to, for instance, just two and a half year. So really to build resilience is more about just the physical assets, but also all the instruments you have, more the economic side, more the social side to build one country's, the population's resilience.

So to conclude, asset loss is definitely an important starting point that we should also evaluate better, especially when it comes to multi-hazard context. But we need to combine these more with socio-economic data to be able to understand who is affected, how are they affected, and what are their welfare implications.

And overall economic development, better disaster risk mitigation infrastructure is indeed a driver of resilience, but it is not all. If you only, if your savings are in forms of chickens and cows like in rural areas, if they are super exposed to disasters and when they are hit, you cannot use them to recover your assets.

But like us, most of us, our savings are in bank. When we are hit by disasters, we can easily use it to recover from disasters. Just one example. And beyond this global study, we also have several country-level applications.

Where we look into specific policy instruments that the government are interested. Because the global level study is more for advocacy purpose, but we also more in-depth for policy analysis and dialogues with countries.

That concludes my presentation. Thank you. you

So thank you very much, Bramco. Hopefully you've seen now a little bit about how the World Bank is dealing with a part of socio-connectual resilience. We've had three amazing speakers, but now the reason why I'm actually chairing this session is I used to play professional volleyball.

And so, yep, so if you've got a question, we're gonna throw a volleyball out to you. So feel free to ask a question, and then we'll go from there. Any way you have a question for one of the panelists?

Thank you so much. Well, I have a question for Fidip. I mean, among the many challenges you identified, I mean, during the highlights you have given, one, I mean, I think is really close to what I think it is.

It's like, I mean, having, I mean, study cases that are usable, I would say, to test, for example, the modeling parts that is becoming necessarily very complex. You've been showing the complexity of the systemic analysis.

We have maybe good ideas on how to model things, maybe. But I mean, very rarely we have very good data, I mean, for validation of those. I mean those ideas and models especially when we come to the multi -hazard.

the multi -race component because the data collection is not designed, I would say, in the multi -hazard, the multi -race sense, if you wish. Do you have, are you initiating something in that? Do you have ideas of how we can move the community to go towards that?

Thank you very much for the question, Roberto. So I think you're completely right, right? So I think that this field of trying to examine multi -hazard and multi -risk is still very young. And I think oftentimes maybe underestimate the complexity of that because what does multi -hazard, multi -risk actually mean, right?

So when does a multi -hazard finish? Is it when the earth stops moving? Or is it when people have recovered? And what does that actually mean when people have recovered? So that's all very complex. So I think on the one hand, you're right.

So some of the things that people are trying to develop, which is great, some of these more continental to global data sets trying to actually collect multi -hazard events. I think that's wonderful and needed.

But the other avenue that we're looking at in the Miri IDU project, for example, is within our case studies. And I think this is what you were getting at. We're not really starting at OK, here. region let's do a multi -risk assessment but actually we start by looking at what is this future sustainability challenge being faced by this region in discussion with a whole range of stakeholders there, then trying to develop a joint vision of where we would like to get to to achieve this vision and then really working backwards actually.

So, okay, given that what kind of sectors need to be involved in development and what hazards and what chains of hazards does one need to consider? Because I think if you start by just trying to say let's put all hazards into a bucket and see how to address them, I don't think it works.

So I think you need to have that perspective.

I think

Thank you very much and big fan of the hazard profile, so thanks a lot. However, when I read the documents I get quite... easily concerned about the scale of the analysis that's required. And I don't know if you've come across the recent JRC report on the European Drought Risk Atlas, where they do a quite interesting job of unpacking a cascading risk of droughts on four or five sectors, and you see the amount of analysis that goes for one hazard in maybe four or five sectors.

this to your 302 hazards like a bit of a reflection on prioritizations of awards, so Trevor significant

That's why I'm working very closely with Philip, the World Bank and many others with all our incredible steering group to try and understand how we look at this. I mean to me one of the things that I learned at the Royal Society last week was the issues around flash droughts.

Not floods, flash droughts. Okay, I'm glad it's new for you too. But the point is we're trying to listen to everyone to find out what we're missing and how we can pull this together and where we can try and build some of the evidence that will help early warning for all that incredible UN program I showed along with the World Bank work on looking at vulnerabilities and the economic losses is to try and use these as a common language so that we can speak to each other more easily and to try and understand how we can do this multi hazard context that we've been asked to do by UNDRR and the International Science Council requires all of you, I'm sorry to say, to try and volunteer to help.

We could do with your support because I think we'll never get to the bottom of it. We do have amazing technical teams, some of whom are here. I mean I just met a Canadian colleague as I mentioned before who's reviewing the landslides for us.

Hurray! I'm so thrilled that Canada is looking at some of our landslide issues. You know, have we got it right? Are there things that we're missing? Can we improve it? Can we make it easier for you? Your governments, your emergency planners, your communities to actually use these hazard information profiles and interpret them in how they need to know.

So it's really trying to work with you. So this is a call for everyone to get engaged and to do have a look at the system and get in touch. Thank you.

So we've also got a lot of questions coming in up here as well. So we're collecting all the questions no matter what, and we'll obviously within the session tomorrow be dealing with all these questions no matter what.

But if you've put a question up there as well, put up your hand and then you'll be able to answer.

Yes, a little teacup.

James, this is a bad idea.

Wow.

John Schneider. I appreciate the discussion here, and I guess I wanted to reflect a little bit on the process of defining the hips. One thing I learned in trying to help that process was that what one defines as a hazard versus say a vulnerability or even an exposure depends on where you are and who you are and what.

So a hazard to me, say as an earthquake seismologist, okay the earthquake is a hazard, a tsunami might be a consequence, it might be a cascading hazard. An impact on infrastructure is maybe something we look at in terms of risk, but an infrastructure engineer looks at say damage to the infrastructure as the hazard and doesn't care whether it's an earthquake or flood or you know I may be oversimplifying, but I think it's useful to not get overly carried away about how we, I suppose how we categorize or how we order things.

I finally gave up on trying to be overly structured there, but to recognize that it needs to be fluid and we need to think about hazard, vulnerability and exposure in terms of what is the question you're asking and how your, so one person's input is another person's output and so forth and so forth.

So I wonder if you guys could comment on that. I know Virginia's thought about it, but if you have thoughts on that, that would be appreciated.

Yeah, so from my perspective, the hazard information profiles are especially, I agree with some of your point, but then also on the other hand, the hazard information profiles are useful, for instance, even within one setting, sometimes they are different understanding.

So even within the same country or the same agency, there are sometimes differences in how they understand the different terminologies. Let alone different agencies or let alone different countries, like you mentioned.

And the hazard information profiles can be useful when trying to harmonize the definition across these different heads eventually. Especially in at least most of the, some of the world bank, the countries that the world bank operate.

The government agencies look up into what the UN are saying or what, if their common definitions being provided by the UN. And this kind of framework really helps to make the conversation faster rather than letting the discussion go too deep into what should be the specific definition of hazards.

So I do see the value though. I, on the other hand, if there are already an established definition within an agency or within one context, then perhaps the hazard information profile is a bit difficult to be integrated into.

But it can also be a learning tool for them because they sometimes have the definition inaccurate and the hazard information profiles can be used to, again, kind of a handbook for them to better structure their thinking.

Thank you, Philip.

Yeah, no, I think I agree with everything that was said. And I also recognize your point very much, John. But I agree. I think it helps to give structure. What I also like about the hips themselves is, I think, I mean, they are giving these, trying to take these definitions from the existing frameworks in literature and also What I very much appreciate is that they also bring in many of the alternative definitions where indeed they are used differently in some of the different contexts.

Because I think this is also something we saw in myriad EU. We tried to have a definition of the different terms used, the multi -compound complex and so forth. But we're also not trying to be prescriptive because sometimes different sectors have been used in these terms very differently for 10, 20, 30 years.

We're trying to actually have clear definitions of how we use them and also to set out how different sectors use them. So at least you can understand, okay, I'm saying this, but that person means this.

You can talk to each other, right? Not trying to make everybody say exactly the same thing. That's how I see some of the different things. these process.

And then you will throw the ball to somebody else who puts the hand up as well. I'll attempt to throw, I'm not very good at it, I'm very accurate so I'll have to.

Okay, great. So my question was around the multi-hazard early warning system side of things and there was another question up there on that so maybe we'll try and combine them. So realistically what is multi-hazard early warning systems?

Are we actually aiming for that? Do we have any practical examples of that actually working? With the early warnings for all initiative, how can we influence them to be going towards more multi-hazard early warning systems?

And then also are we planning for multiple single hazard early warning systems, multi-hazard early warning systems or multi-risk early warning systems? And for each of those, where do we go from here where I don't see a lot of people?

any multi-hazard early warning systems.

dream of a question, thank you. Not more definitions in my life. I think the most important thing is the World Meteorological Organization has a group looking at cataloging hazardous events. Is Yuishi here?

Not at the moment. Professor Yuishi Ono and I are on the group to try and make sure that we understand the hydromete weather systems. And they have put in a particular request to see what, partly because of the problems of a tsunami versus storm surge, what does it mean to people?

Also to how we communicate the strength of the wind, but knowing that there's going to be things like cholera coming up behind. It's trying to see if we can plan for this more effectively and put it into some system that we'll find for WMO, some way of trying to handle a lot of these.

So they've led the way a lot of the way. And I think it's going to be very exciting to see how we do it. But the early warning systems are going through, obviously, a lot of discussing. Cush and John Harding is here.

I haven't actually seen him today, but he is doing so much work with crews and some of the other networks. So I think it's slightly hold on because we don't have to get this all through until 2027. Oh, that's a day or two away, not many.

Okay, we've got another question up there, and again, you can throw the ball to somebody else for the next question. Actually, that was my exact same question, so.

Okay.

there so if anybody would like to ask one of the ones down there, okay, we're thrown across and another hand up, we're gonna get through this. Come on.

Can I just react to the question that was asked? Because I'm from WMO. So very happy to be here and thank you for this great question. And you mentioned how can we influence them for the early warnings for all.

But I would say we are all part of this initiative. So on the opening day, we had a session on early warning systems and one of the final outcomes was it's early warnings for all, it's early warnings with all and early warnings by all.

So I think we are all in this together. But in your question, I think we need both. We need single hazard systems which can work independently because sometimes the lead time is just too short or another system is not working.

So we need the redundancy. But we also need multi -hazard early warning systems to address the cascading impacts. And of course within these systems, we all work towards the impact -based warnings or even impact warnings.

So hopefully one day we have multi -risk early warning systems as well.

And so the green wall, I think, somewhere. There we go. You have a question?

Thanks a lot.

I have a question for Bramka. It's a very nice study on the country level. But I'm wondering whether there is a plan to make it more disaggregated. For example, if you talk about income disaggregated, maybe the low income people in the Netherlands, maybe it's different impact that the low income people, for example, in developing countries.

But also, for example, gender disaggregated. But I know it's very difficult because half of the countries doesn't record gender disaggregated data. But I could imagine, for example, saving in Egypt for men and women is also different.

Or how the forecast is received by men and women in Bangladesh because of literacy. So maybe if there is a plan in the future. My name is Fanny from Dutch Research Institute Netherlands, Deltares.

Yeah, thank you. We definitely do have planned to extend it to different segments of the population. And in our country applications, we do apply it that way. So, for example, recently we completed a study in Timor -Leste and that one, because in the global application, we just divide the population essentially into five agents from the bottom 20%, the next 20% until the reaches 20%.

But then essentially with household survey data, we can differentiate the population in any ways. And sometimes for post -decesar support, the information that the government needs is what kind of households do they need to target in their post -decesar support.

And this kind of micro simulation model analysis can be used to identify households without no education or is it female -headed households or is it households with three children and so on and so forth.

Because, of course, ideally we would like to know, we would like to target the poorest, but then information about income or consumption is not always available, so the government cannot really rely on income or consumption.

But if it is about education or number of family members or types of houses, these variables are available in the household survey data and can be used, can be plugged into our framework to see across these different typologies of households, which ones are the ones who are in need the most essentially.

essentially.

Yes, Daniel. Thanks.

So my, my main thing essentially a follow up to that question was around trying to disaggregate down to a city level or community level on those, on those studies. So if you've got any experience of doing it, maybe a hand up if you want to do it in Cape Town we'd love to get the support.

And then also just trying to look at the, that's of cascading and multi, multi hazard assessment as well to try and understand that level of vulnerability given, you know, what I was explaining yesterday is that if we, if we have a heat wave we very often would have a, have fires as another risk that would then follow on the back of that.

So understanding those, those cascading impacts at a city level would be extremely helpful.

What is limiting for city level analysis is definitely only about the household survey because in most cases, the household surface representative only at subnational level but not all the way to city level.

We do have, I think, one or two applications that is not city but perhaps greater city level or two cities that are next to each other where we have sufficient household information, household data available.

But even now that I remember we have one application in Bangladesh where we extended further to look not only how they recover but also multi -dimensional, again, multi -thing, multi -dimensional poverty measures like how long would they lose access to water, to electricity, to health care by combining household survey data with census data.

So some of that is much limited but the framework is there and the application is there. Can I? Sorry.

Just a quick follow up if I can, I've still got the volleyball. Using proxy data, so I think there's obviously census data and there's household survey data, but you've got expenditure data that credit card providers have and the like.

Have you tried to access some of that private data to undertake those surveys? Just a thought. And I'll pass the volleyball on now.

Yeah, not yet. We know this data. In some cases this data exists, but so far not yet. But we would be interested to explore further on that. Thank you.

We've got time for one last question and then the sort of the multiple beach ball risks will be over for you.

So yeah, up the back there.

Sorry. So this is maybe a methodological question, but in a way, following up people ask questions. As I think we know, there are people who are still, still suffering from disasters that we don't know.

And I think we thought vulnerability analysis will reveal who they are, why. But I think, I don't know, maybe this is, if we don't know, it may be epistemological question. If we don't know, we can't know.

But there are. So I don't know what you're thinking on that area, especially the talking about multi-hazard and people or individuals and communities who are in the middle of political boundaries or middle of the world.

And just, you know, every day people are still struggling. And I don't know if this is the limit to understand, but really the whole picture of disasters. Any comments? Thank you.

Thank you.

I mean, it's an excellent question, actually, and a huge challenge, how to know the unknowns indeed. And I don't have the answer, I'm afraid. But I think it's definitely something that, as a community, we need to think about some of these ways in which we can, I mean, we talk about all these kinds of proxy data that are available out there, right?

And if we can try to harness some of these to see if we can indeed try to identify the unknown, I think that would be extremely important and something really, really important to think about. So thank you for bringing in this point.

I'd like to thank the three speakers today. So if you can give them a round of applause. And I think everybody in this room has obviously gone through multiple risks, multiple hazards today. And I'd just like to thank you as well for being in the audience.

And in terms of building a sort of a community of practice, I think I've seen that over the last, you know, I think Philip said that really, really well. The future is really, really bright and we just need to sort of work it all out together.

So thank you very much. And thanks for attending the session.