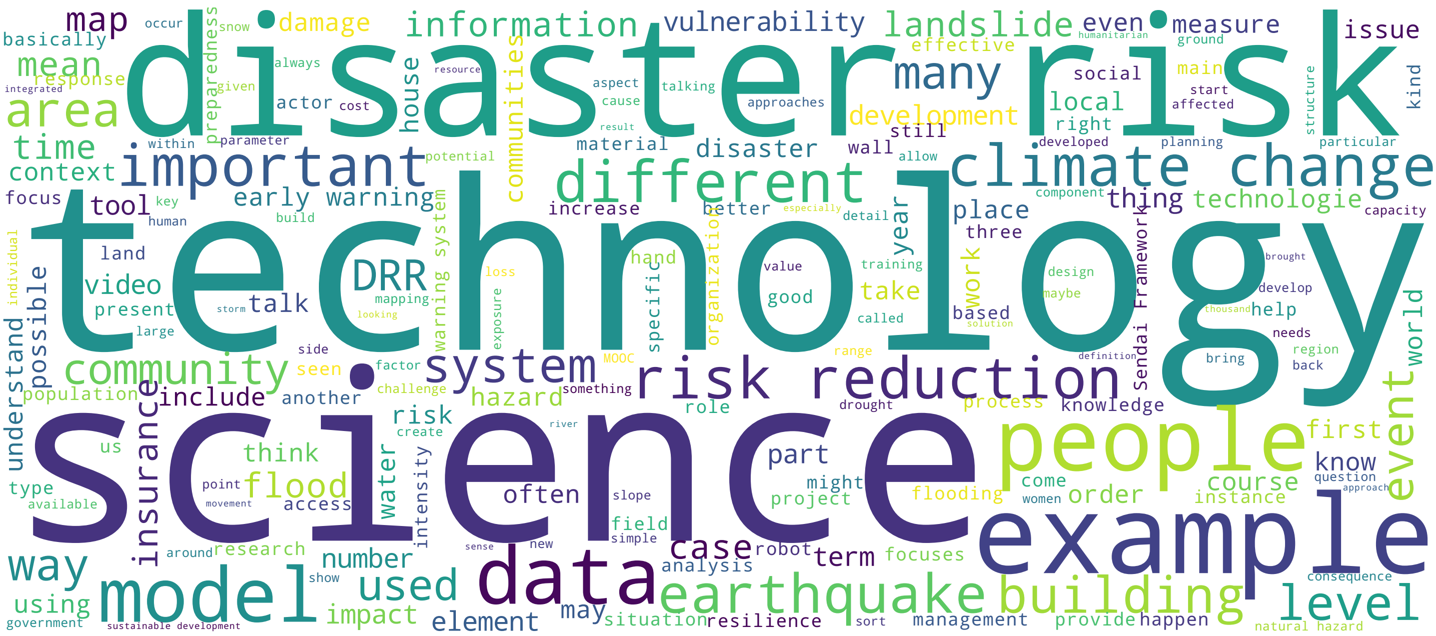

# Science and Technology for Disaster Risk Reduction

## A Resilient Future: Science and Technology for Disaster Risk Reduction

Interview with Former (2016-2017) UNISDR Secretary General Dr. Glasser

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We are at the United Nations in Geneva, to interview Dr. Robert Glasser, Special Representative of the UN Secretary-General for Disaster Risk Reduction. Dr. Glasser is heading the United Nations Office for Disaster Risk Reduction, UNISDR. UNISDR is the focal point in the UN system coordinating disaster reduction activities, and ensuring synergies with regional organizations in the field of socio-economic development and humanitarian action. So UNISDR is a UN organization that focuses on supporting the reduction of disaster risk. And it uses, as its foundation, an international agreement called the Sendai Framework for Disaster Risk [Reduction], which countries signed in 2015, So with that as the basis, the scope of work involved in implementing the Sendai Framework to reduce disaster risk is enormous. It ranges from early warning and preparedness, and even work within disasters, to incorporating risk reduction measures as part of core economic planning and investment. It focuses on large-scale sudden-onset disasters, protracted disasters, slow-onset disasters. It focuses on large-scale, national scale, sub-national scale, and it focuses on multiple hazards, like pandemics, or radiological nuclear reactor meltdowns, or climate change, earthquakes, and so on.

Notes

Summary

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So it is such a broad agenda and in every single one of those areas there are significant needs for science and technology. To give you a few examples: climate change. Climate change is projected as actually already having an impact on extreme weather events, a major hazard, particularly in developing countries but in wealthy countries as well. We need to understand better how climate is going to change, what patterns it will take, what impacts the release of $CO_2$, of greenhouse gas emissions, will have on tipping points in the climate system. We need to understand what impact global warming will have on the frequency and severity, or patterns of El Niño, La Niña events, which are the key source of weather variability around the world. So if you just focus on climate change, understanding those dynamics are an enormous challenge for science as we've seen. If you look at other levels of detail, if you focus on, say, the impacts of extreme weather, like drought, then there are a whole range of other issues about "Okay, well how is drought changing?" We understand modeling at a global level, what about a regional level? What about a sub-regional level?

Notes

Summary

1m 13s


We can talk about science in terms of "Okay, these places are now going to experience more droughts more often." How do people adapt to that? Are there different varieties of crops? Are there water harvesting techniques? What sorts of technologies and approaches can be brought to bear? And science to be underpinning them, to be brought to bear, to help people cope with those things. If we look at sea level ri-- I mean you can go through every single hazard that you can imagine, many of which are exacerbated by climate change-- including the emergence of new disease, or re-emergence of old disease, or pandemics-- and there are a range of scientific and technological challenges that need to be addressed. The Paris Agreement on Climate Change, the SDG, Agenda 2030 agreement and the Sendai Framework-- all of them have explicit roles for science and technology. If you look at the SDGs, there's a section on technology and science and technology, a unique section. Also within many of the development goals, the Sustainable Development Goals-- whether it's energy, ecosystems, anywhere, climate change-- you see that.

Notes

Summary

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Similarly the COP, of course the whole IPCC process is fundamentally integrated with science in terms of some of the isssues we discussed a moment ago: modeling climate at sub-regional scale, the impacts on ecosystems and human settlements, these sorts of issues. And with Sendai as well there's actually a specific objective on technological cooperation and the role of science is really key. There's a reference to the need as part of this agreement to bring together the science and technology community to develop innovative solutions to address these issues. So number one, science and technology underpins all three. A practical-- this is maybe more at a level of detail-- but a practical integration between the three is that the SDGs, there's a process under way now to develop indicators for each of those goals. And for the Sendai agreement, there's a similar inter-governmental process to development indicators. And ISDR is ensuring that we don't duplicate, that the indicators we're developing for disaster risk can plug in to those that are linked to climate change or the SDGs, particular SDGs. So there's a lot of effort under way-- at least within the UN system-- to make the process, to integrate that as much as possible.

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Summary

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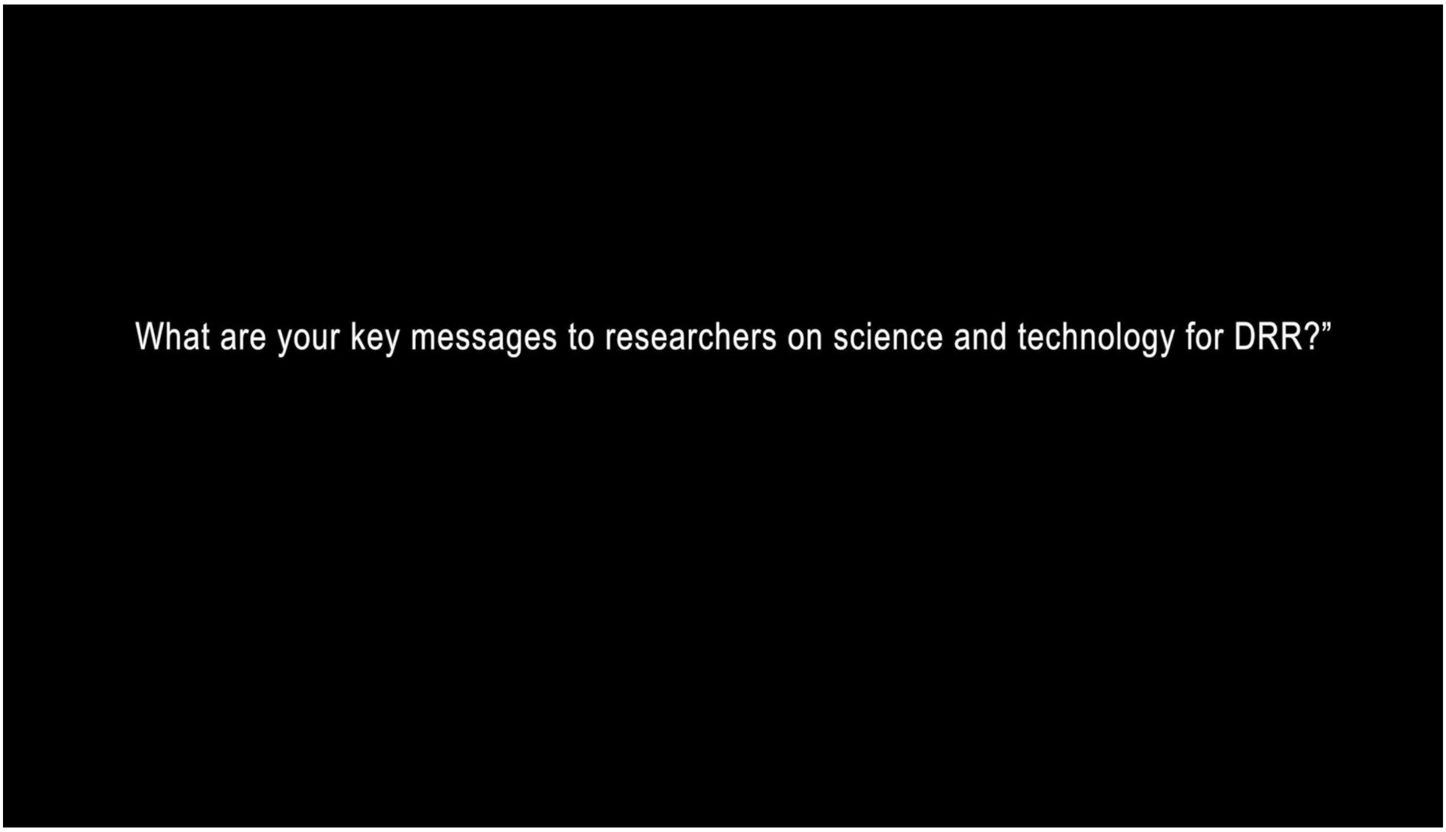


If I look at Sendai, I would have to say that if there is one fundamental risk treatment to reduce disaster risk it is to reduce greenhouse gases as quickly as possible. Just because climate change will have such an existential impact on everything else, even conflict. We've seen in the case of the Middle East, an unprecedented period of drought, which of course you can't necessarily link any one event to climate change, but it's what you'd expect from climate change. It triggered a mass migration of hundreds of thousands of people into cities. It wasn't the cause of the Syrian crisis, but it was certainly a contributing cause of even conflict. So for me, that absolutely has to be integrated and so when we talk about disaster risk reduction, we're very much talking about climate change mitigation as a risk treatment, and mitigation, addressing loss and damage, adaptation to climate change. And all of those have fundamental science and technology issues associated with them. What are your key messages to researchers on science and technology for DRR?

Notes

Summary

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The first message is that what they're doing, the development of science and technology on this issue is *really* important and urgent because when we talk about disaster risk, it's a nice, cold-sounding term, but it means hundreds of thousands of deaths. It means increases in poverty. It means huge economic losses. Over 350 billion a year, which is money that could be spent on teaching and medicines, and economic development. The second message is that this is not an issue that you solve in a silo. Disaster risk, it's multi-hazard risk and it's social science, it's physical sci-- it's physicists, it's geologists, it's psychologists, it's political scientists. The only solutions that are going to work are going to be multidisciplinary, interdisciplinary. I was in California-- I'm Australian but was in California recently-- northern California having lunch in a restaurant, and suddenly all the cell phones went off at once. And when we looked, everyone stopped and read their phone. My phone said, "Tornado heading your way. Take cover immediately." And there was a lot of talking and then everyone just went back to eating. I got up and went outside and looked, and I could see the cloud was moving in the other direction, the storm cloud.

Notes

Summary

6m 12s


But the reason everyone ignored that was because there had never been a tornado in that place before, at least in people's memories, so they just assumed it must be a mistake. In this case, it was okay, but the lesson they learned was number one, you can ignore warning even of the highest technology, the most efficient sort of warning you could imagine; and number two, probably next time they'll do the same thing, and next time they mightn't be lucky. So it just highlighted for me that that element of the psychology, and the training and the awareness raising has to go hand in hand with technologies and other solutions involving technology and science, in order for it to be effective. And if one is missing then you might as well not even have the other because it won't work.

Notes

Summary

7m 44s

# Acknowledgments

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Notes

Summary

8m 32s

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Glasser, for his highly valuable participation in this MOOC.

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Summary

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