June_19_Small_Hall_001

Good morning. Welcome, everyone, to our session on lessons learned from Ground Zero. We'll be sharing insights from various different earthquake disasters across geographies, including Japan, Rocco, I think we might also have a few insights that we're sharing from the Afghanistan earthquake that happened a couple of years ago, 2022.

And of course, the most recent devastating disaster, earthquake disaster in Turkey. I'm joined today. I'm Sabine Kast. I'm a senior principal at Miramoto International. And I'm joined here today with various steamed speakers that I'm very pleased to introduce you to, including Professor Akira Wada, who is joining us online and will be our first speaker today.

Dr. Akira Wada is a Doctor of Engineering and Professor Emeritus from Tokyo Institute of Technology. Professor Wada's area of interest includes seismic engineering, seismic isolation, vibration control structures and space structures.

A very, very interesting fact is that Professor Akira Wada was part of the research team that invented the buckling restraint brace, one of the most formidable innovations in improving the structural safety of buildings.

Professor Wada is highly recognized for his contributions in seismic engineering and has received several notable awards for his work with collaborators, including the prize from the Architectural Institute of Japan in 1995 and in 2003 and the IIG grand prize in 2019, amongst many other awards.

Professor Wada is the president of the Japan Society of Seismic Isolation. The chairman of Japan's Academic Network for Disaster Reduction and an academician of the Japanese Academy of Engineering. It will be very exciting to learn from Dr.

Akira's experience, reducing risk around the world and witnessing many earthquake disasters. We're also joined by Dr. Kit Miyamoto. Kit Miyamoto is the CEO of Miyamoto International. He received his PhD from the Tokyo Institute of Technology and also is a seismic safety commissioner for the state of California.

Probably, not probably, it's also a fact, the longest running seismic safety commissioner for the state of California surpassing many different administrations. We're also joined by Dr. Kimira Maguro.

Dr. Maguro is a dean and professor of the Interfaculty Institute in Information Studies at the University of Tokyo. Dr. Maguro is also an alumni of the University of Tokyo where he completed his PhD in 1991 and since then has made significant contributions, including being a founding member of UTOCUR's International Center for Disaster Medication Engineering and then later serving as the director of International Center for Urban Safety Engineering, which forms part of the Institute of Industrial Science of UTOCUR.

Professor Maguro has a wide range of research fields from engineering, including urban safety from structural and non -structural measures to comprehensive disaster risk mitigation, including social systems and policy.

Professor Maguro has developed several new models whereby the behaviors of buildings can be simulated and analyzed, but is also a specialist in policymaking, as mentioned earlier, for disaster management and has proposed many important social systems and policies, both pre and post -disaster.

His contributions in academia and practice extend well beyond Japan, Professor Mogura has helped establish several research organizations in developing countries, many of which are very famous, such as Enset in Nepal, to support these countries in reducing risk.

It's going to be very, very exciting to learn from Dr. Mogura about lessons learned from some of the, well, from three large earthquake disasters in Japan. And last but not least, we have the incredible pleasure of being joined by Mr.

Mustafa Essin today from AFAD. AFAD is the Turkish Disaster Risk Management Agency, and Mr. Essin is the head of the development department and has been very deeply engaged in, of course, the response efforts to the most recent earthquake, as well as now, so the early recovery recovery efforts.

And we'll be learning lessons learned from ground zero. So without further ado, we would like to start the session with Professor Wadham, and I will be, I'll be helped by Kit to bring him online.

May I start?

Professor Wada, please share your slides.

Yes.

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Yeah, Professor, please go ahead.

It's okay. Thank you very much. Very kind introduction. Sabine and Kit. I'd like to make a very small short presentation. Dactyry is damage. More than 20 years ago, Professor Vitermo Bertelo presentation, he said ductility is damage.

Structural engineers like ductility, but people don't like damage.

Professor, one second please. We are having some technical challenges. And so hopefully we'll get those resolved shortly.

Would you see? Thank you. Thank you. Thank you. Thank you.

Is it okay? Yes, we can see you now. Yes, may I start? May, yes, absolutely. Thank you.

Thank you very much, Sabin and Kit. My name is Akira Wada and a very kind introduction. Thank you very much. More than 20 years ago Professor Peter Moverdeau, University of California, Berkeley, presented in Italy, he said ductility is damage.

Structural engineers like ductility, but people don't like damage. Thank you. This is a seven -story apartment building after Kobe earthquake. You can find many cracks on both ends of the beam. The column will be OK, and the beam column joint has some shape cracks.

This result expected structural engineers, researchers, and government people. But after Kobe earthquake, people don't like to leave this damaged building. They demolish this apartment. I did this test more than 20 years ago.

You can find many cracks on the end of the beam, many cracks, fractional cracks, structural engineers like this. But people don't like damage. Professor Steve Main, he is a student of Peter von Bertelow.

He showed me this slide. When the car maker designed the cars, designed to protect life in extreme events, some kind of car accident. But damage is expected. People's life will be OK, but the car will have damage.

They have to buy new cars after an accident. But there are so many buildings designed by a ductile frame in the big city. After the earthquake, people cannot leave damaged buildings. Many buildings have to be demolished.

The city life will be killed by this earthquake. Last year, February, in Turkey, there are many buildings. The same cracks. In one city, no one stays in a big city. It is very difficult. Next, we have to use seismic isolated or damping structures.

I recommend it strongly. Thank you very much.

Thank you, Professor Wadai. Very sobering presentation. Very true that probably the biggest lesson learned after an earthquake is that the building code doesn't really protect property. The international building code is designed to save lives.

And society expects better. Society expects if you have a building, if you purchased an apartment in a newly constructed building that the international building code or the building codes will protect your property and not just your lives.

However, these buildings are designed to sustain damage, not end to protect lives, but a lot of property damage and a lot of economic loss is expected after an earthquake. Thank you so much, Professor Wadai.

Next, we will hear from Dr. Kip Miamoto on lessons learned in Morocco, Afghanistan, and recently in Turkey. Over the last year and a half, Dr. Kip Miamoto has spent a lot of time in those countries supporting the response and then also the early recovery efforts.

So we greatly look forward to hearing from his experiences on the ground.

Sounds good? Okay, it's actually Afghanistan, not Morocco. All right, but actually there's a similar kind of things going on so I can kind of touch the Morocco situation also at the same time. I just a little bit about our company.

We're a global engine, humane tank company located in about 30 different locations. As you can see, we're in the Soko area of red zone. And we worked on about 120 different disasters in the past several decades.

So not only we just visit the sites, but also many cases we stay there to work on recovery and reconstruction effort. 2020 Afghanistan earthquake, this is a remote area. It's actually southern eastern border of Afghanistan to the Pakistan.

And it's a high mountain area. It's a politically very unstable percent because that's where the Taliban, it's the originate from. So it's a, it's not easy place to operate. But this event caused the 100 ,000 people homeless and killed a thousand people and destroyed tens of thousands actually housing constructions.

So there we did an assessment from both remote and also on the ground. First we just looked at remote assessment use and satellite images and we estimate about about 17% of our building structure, which is mainly residential construction, is damaged heavily or collapsed.

About 50% of it is damaged, but still repairable. That's how we identified that. And the 30% is still okay. So from this, we actually focus on the, how can get back to people back to home as fast as possible?

That's actually really important aspect of it. So we, this particular case, we focus on the repairable structures. You know, talking about the 50% of building stock, residential stocks can be occupied really quickly if that thing is repaired.

So here's the typical construction look like. It's amazing construction. It's a clay construction and it's a vernacular. That's just how this area developed the construction system like that. And one thing we noticed as we go through, so our assessment is not only just remote, but also on the ground.

And first we do remote assessment use and sell image, then we get into the more details by the on the ground. And so verify that, you know, how it's happened to it. But we noticed that actually many of this clay construction performed really well.

And at this very high intensity earthquakes. And that's something we want to kind of get into details of why it's happened. So how we can actually use this, their knowledge and proceed technology developed over the millions to able to, with the size make in a hazard and how we can actually use it now.

Now this is the, so there's walls, these compound wall structure has a very high walls by five meter high. And that was acting as a bearing wall, which means supporting this roof structure. And the problem is on the roof structure collapse, that's how people died.

It's got a really heavy clay overlay on the roof because of the insulation they put over the years. And, but if they built right, this particular case like that, it's essentially bearing of the roof beam is embedded into the wall.

So it's actually when the wall is back and forth, it's act as almost like a friction damping devices, by the way. So we saw a lot of evidence of that, the stable mechanism of this particular construction.

So we actually brought this expert from France to really see what type of clay they have. And he was really amazed at how, this is what he called sigates, by the way. So he makes a whole bunch of little clay sample like that and see how long that I guess clay can hang, in a sense.

So that's what he's testing. He was very excited by the fact is this particular specimen had almost 20 centimeters, can go down to it. So it was pretty amazing. And also that he noticed that there's a lot of smaller aggregates or stones naturally embedded into this clay.

That's cause a lot of cohesiveness to it. So findings here is the, if it's downright, if the construction is using that really traditional approach from the waterproofness of the clay system to how to mix the clay, how to harvest the clay, and how to actually roof, purrly or roof beams embedded into the walls, it's performed really well.

It's actually that we did a lot of what we call non -linear time history analysis to see the actual robustness of the system. It's actually the very stable up to about 0 .5G, which is very high acceleration, by the way.

It's a very stable mechanism. It's the rocking mechanism of the back and forth. That's how absorb energy. So based on the discoveries, we come up to key technical messages, something very simple, such as make the roof thickness thin, such as make sure that the water proof is there in both wall and foundations, and with a major training system like that.

From adults to the kids, everyone. I think one was a, this is a very successful program. I think a lot to do with the, we respect the cultural norm of this particular area, respect and understand how people build things.

Because one of the UN agencies actually, they had a different idea. They brought in large concrete boxes in the middle of nowhere to make people live. Well, they had the three issues. One is that they're really expensive.

So it's not like people can replicate the system because there's no access to get the concrete, or rebar bed, go up there in such a remote area. And two is the, it's destroyed a kind of a social structure.

As you saw the first picture, people live in a huge compound system, which is like a 10 ,000, 10 ,000 square feet, about 1 ,000 to 2 ,000 square meter compound. That's where the multi -family is living there.

Women's actually, their privacy is very, very important. It can't be seen by the public. So be in a compound wall like that. It's actually women can live. But where this one agency did, they built a whole bunch of individual houses.

So what women cannot live there. So even just today, we saw that actually that women population live in some of the mountains with a tent, you know, surrounded by it. So it's very important to understand that not only technical solutions, what's right or what's wrong, but also understanding of the cultural, this norm.

You know, I think that's very important things we found. And this is a very similar thing we saw in a sense, the Morocco too. They do have a lot of the similar type of construction system, but mainly used in the rocks.

So just try to really extract the knowledge of the local and what works, what didn't and try to use that. Now Turkey, so last year, this market was 7 .8 and 7 .5. That's one of the largest earthquake I've ever seen.

And you're talking about affecting a huge area, some of it between 500 kilometers long to about 200 kilometers wide, just large area, affecting almost 40 million people. This is in fact, probably at the biggest, I mean one of the worst disasters I've seen for past 30 years, you know, just incredible disaster.

This is a picture from Hattai. Impact, 40 million people affected. We lost about 50 ,000 people. And 4 million people displaced. And almost 10% of the GDP is affected. In affected area, about 1 .7 million buildings, which we analyzed based on satellite image.

And based on the, from on the ground assessment, to satellite image combination of it, we noticed about 35 ,000 buildings, which is 2% where buildings collapse. But 200 ,000 buildings, and they're usually mid -rise buildings, by the way, some of them between three to eight -story buildings.

And I have the, some of them between 10 to 20, sometimes, you know, 50 families, units live there. 200 ,000 buildings is damaged. And 500 ,000 buildings are lightly or moderate damage. So you're talking about almost half of buildings that is affected, affected 7 million people here.

So it's a very, very significant damage. So why this happened? Number one, Turkish does have a, probably one of the best building code in the world, as far as the seismic concern. Okay? But the building code changed in 1998.

So anything built prior to that, there's no seismic consideration. For example, here in Japan, it was the mid -1980s, right? The change that seismic code, something like that. So that time, so anything before that was dangerous.

In the US case, similar thing, about 1980 or so. Anything built before dangerous. So that's one thing we know, that all that building stock doesn't do well. On top of that, there's no license system for contractors or engineers or no inspection is required by the engineers.

So this is the something issue for the actually privately owned buildings. And public owned buildings, they do require those things. The performance is completely different by the way, which I'm going to show you.

Here's a typical building. People live and many things I see something like this, smooth aggregate or smooth rebar. Those little tiny things, it makes a huge impact in the earthquake engineering, little things like that.

All the buildings, this is what we call a soft story. If you see like this, before what, 1988, what did I say, 1990, I think I'm going to look like this. You know? How about that? What Turkey did right is public buildings.

This is one of the hospital's pictures. Now Turkey adapt law. Any hospitals over 100 beds has to have seismic isolation devices. Kind of like a professor what he's talking about. Seismic isolation devices, essentially you put the roller underneath of buildings.

So it's, you know, if the building sits on the ground, the ground shakes and building shakes, right? But if you put roller underneath of it, ground shakes building is in the same spot. That's the concept.

So there are over about, it's about dozen hospital structures in the absent area. They did not only did not get damaged, but also it was able to perform to accept the patients after the earthquake. They were able to do that.

That's pretty amazing. Here's one video somewhere. So this is the isolation phase where the little ground piece up in there. You can see building moving on top. This is really amazing actually. Mounting 7 .8 and 7 .6 back to back.

These structures were able to occupy, able to perform the functionality after this major major earthquake. So there's technologies available. These kind of things can be done. Now, one more thing I want to kind of mention here is the, how the response structure of the Turkish government did, the Lebat Afad.

It's probably one of the most robust response I have ever seen. I got there, let's say it was like two days after the earthquake. And every city I go, there is the huge tents deployed for the families, well organized.

And every village, every town I went, there's an urban search and rescue team organized. I'm talking about within two days here. It's a really amazing actually. And also the assessment, they deployed the tens of thousands of engineers on the field in the initial days to do damage assessment of each individual houses or homes or buildings.

So they had a QR code to that. So they assessed pretty much all the damage structures within about three to four weeks time. That's something I have never seen anything like that in my life. And also they activate the commercial private sector contractors to help to remove debris for the urban search and rescue team and remove dangerous buildings, which they're doing that like day three.

And all the roads, everything was open. Like when I was there, everything was open after two days actually. So the public infrastructure performed really well. The airport in Hatay, which is a huge damage there, what damaged but opened about four days?

Four days, guys. It's pretty amazing things they did. So as far as the response is concerned, it was probably one of the best practices I've ever seen. I think that reason is I believe that Turkey has been essentially preparing for the Istanbul earthquake for so long, a ton of 20 million people.

So that preparedness really helps. So yeah, preparedness really helps. And one of the really most successful projects in Istanbul a while back was ISMAP program. It's initially financed by the World Bank working with the Istanbul government.

At the time, I was embedded into the part of the Istanbul government to provide the technical assistance to the engineers there. And that time, that particular program, we strengthened about 2 ,000 schools and hospitals and administration buildings, an extremely robust program.

So that changed the building code of training with contractors and engineers. That really did the impact, actually, what happened in Turkey today. So we've done a lot of, after that, our activity is focused on the moderate damage, because trucker scrap is really focused on the so -called heavy damage and collapsed structures, there's 200 ,000 of them.

So we assessed and have a communication campaign with minimum residences. I think next step here is the, they're built in a lot of buildings right now, but the focus on that medium damage one, I think is very, very important because people love to come back to what they are come from, you know.

So that's something that I think started happening there. That's it for me. Okay. Professor. May I grow? Yes.

Thank you so much, Kit. That was, so next I would like to... invite... Next I'd like to invite Magura Sensei to share lessons learned from Japan's greatest earthquake disasters.

Hi, good morning. I'm Kimido Meguro from the University of Tokyo. So, when we look over the last about 100 years, we have several big natural hazards, disasters. A man, okay, this shows the biggest natural hazards in the last 100 years in Japan.

The one is the past one and the bottom one are expecting one. The Kobe earthquake and the Great East Japan earthquake did us a huge, but when I compare using the ratio to the GDP, their ratio was around 3 to 4%.

But when you look at the Great Counter earthquake, the damage was over 40% of the total GDP at that time. Terrible. And this shows the damages in different parameters, number of houses and number of people who were killed.

And many people are using these numbers and explain the impact of the Great Counter -Earth disaster to the country. But I don't think this is enough. The most important part of this event is, or was, this earthquake changed the country.

At the time of the earthquake occurrence, the Taisho era, Japan was aiming to the democratic country. But because of this earthquake, many people believed that the quick reconstruction, recovery of the capital city Tokyo was quite important and strong leadership and control are required.

And then this country changed. Due to only 18 years or 22 years, many events, many accidents happened. All are done by the government. The government are thinking that this is quite important for this country.

But when we look over these events, for example, after 18 years, the Pacific War started. And 22 years, World War II ended. More than 3 million of the people were killed, including many civilians. And then, just before these wars, Japanese people spent all of their energy, efforts to the war.

Therefore, the National Land was not taken care. That's why after the war, World War II, by the annual typhoons, many people were killed. Maybe check the number, average number of the people who were killed by the natural hazards, was para -year from 1945 to 15 years, 2 .4 thousand people were killed every year.

And after 30 years, 300. And another 30 years, 150. This is the average number. The latest 30 years, because of the Kobe event and the Great East Japan Art Geek event, 900 plus is added. And this red area, after the World War II getting the financial support from the US and the World Bank, Japanese government tried to best construct infrastructures.

And especially from 1995 to 1973, that period is called high economic growth period. Every year, economic growth percent is more than 10 percent for nearly 20 years. GDP becomes 6 plus times, your income again becomes 6 times.

Because of this, we could reduce a lot the damage. But at the same time, the concentration of the construction of the infrastructure. When we construct infrastructure during a very short time, it means many structures are getting old at once.

This is the current big problem. Okay. The next one, Kobe earthquake. Kobe earthquake, due to the strong ground motion, 105 ,000 structures have collapsed. 145 structures are partially collapsed. 390 ,000 structures are slightly damaged.

And this shows the direct cause. About 83 .3% of the fatalities are killed by the collapse of the structures. And when you calculate 100 minus 83 .3, you can have 19 .6%. Over 90% of these 19, 16 .7 people, that is 15 .4, they are found in a vulnerable area.

But most of them, yes, they were killed by the fires, but they are trapped under the damaged structures. Therefore, they could not evacuate. If the structures are okay, they did not have to wait for a fire coming.

And this one, quite important data obtained by the medical examiners in the Kyougou prefecture. Please look at the top part. More than 90% of the people were killed within the first 14 minutes, according to the medical doctor.

This is just five minutes, because they would like to make the number, run number. Occurrence time of the earthquake was 546, 6, 9, 12, 24. Very, very short time. 92% of the people were killed. Therefore, even we had a very nice search and rescue team, it was impossible to save the people.

This is the most important lesson that we should study. This is not the Japanese case, but similar. The next one is the Great East Japan earthquake. The Great East Japan earthquake, it's hazard, I mean, external force are quite large, big.

You can see over 3G, ground motion, attack area. And the bottom one, and the right hand side one, tsunami height over 40 meters. But the structure damage was so minor. And also the number of people who were killed by the tsunami.

This is also the world highest survival ratio. Event. At the time of the occurrence of the earthquake, that was 2 46 p .m. March 11, 2011, we checked how many people are located in a tsunami inundation area.

It means later tsunami will attack. And finally, we could obtain that at the time of the occurrence of the earthquake in the inundation area. 620 ,000 people are there. Among this number, how many people are killed?

18 ,000 plus. This is the 3% of the total population in affected area. I mean, tsunami inundation area. This score is the world highest. And when we check all the municipalities, that is in the inundation area, the highest area is 12 .8% Likuzen Takada city.

And including whole area of municipality, the Onagawa -cho, that is the highest, 9 .46. But when we check the past in Meiji, Sanlik earthquake and Showa, and this time, because of the structural and the no -structural damages, the people could reduce a lot drastically the damage, but most media people could not inform this kind of data.

All right, this is the final slide. Japanese people, researchers have worked hard to deepen their knowledge and put in place technology and institutional systems, including legal systems, and how steadily reduce the damage caused by similar earthquake or tsunami hazard in the past.

In the process, same as in other research fields, the efficiency of the research progress was improved by subdividing the research fields and deepening the research in each field. However, this is an important point.

However, on the other hand, the issues that existed between the subdivided research fields were left behind and the communication among the fields was insufficient. And these problems become apparent in this article -ken -tunamididestors.

And many of the issues that emerged from this disaster could not be solved by combining the results of conventional earthquake engineering and a small number of subdivided research fields. And it became clear that research is needed to combine the results of many related fields.

Recovery activities are still in the process, especially in Fukushima prefecture, where the nuclear power accident happened. The problem behind this are lack of awe and humble feeling and researches towards the nature and their blind belief on their scientific knowledge and technologies.

This is the most important thing that we should learn from the past Japanese disaster. Thank you very much.

Thank you so much, McGurr -Sensei. I think one of the interesting pieces there is that obviously every life counts. And so urban search and rescue after disasters quintessential for obviously supporting those that have been injured, but also saving lives that can be still saved.

However, it's not possible to save a huge amount of lives. And in that sense, if you want to save lives, the only thing that really is able to do that is disastrous reduction. And I think that's also shown in 1995 after the Corbett earthquake, there was a medical evaluation that was done and it was found that most people died within, so 80 plus percent of people died within the first 10 minutes.

And so urban search and rescue teams can't really reach people within 10 minutes. And so allocating funds and continuing to promote disastrous reduction in all the countries that you work with is quintessential to saving lives.

Thank you so much, McGurr -Sensei, again. And now we're quite excited to learn from Mr. Essin directly about Turkey being on the ground, being engaged in Turkey's Afat Agency, so being really deeply engaged in the response and recovery efforts.

We've prepared a few questions for Mr. Essin. So I'll ask the first question, would you like to join as well? My colleague from the World Bank to support some of the translation. You've got it there, okay, fantastic.

So we've got a first question, we've got a few questions, and they will also, of course, turn it over to you to ask questions. So Mr. Essin, Afat's response to the earthquake was really rapid and robust.

It's probably one of the best practices that we've seen in the world in terms of rapid and robust responses. How was this achieved?

Good morning, welcome. My name is Mustafa Esin. I am from Turkey, AFAD, Strategy Heads of Department. I will try to keep the six -星 earthquake chronologically.

I'll try to quickly summarize what happened during this Kahraman Manas earthquakes in Turkey.

On 6th of February, on 17th of October, the Kahraman Marash Pazarcık, at 7 .7, on the same day, on the same day, on the same day, on 13th of October, at 13 .24, the Kahraman Marash Elbistan, at 7 .6, came to the DEPREME Meylan on the same day.

Last year actually three major earthquake occurred on the same day. The first one is the Kahraman Marash Pazarjik earthquake which has 7 .7 magnitude and Ghazan

Tepdislahi earthquake which has 6 .5 magnitude and the last one the Kahraman Marash Albistan earthquake happened on the afternoon has 7 .6 magnitude.

"...b créné de lad implemented in 1931 你要 palace of le coat around this to talk toiew together to make

Just 20 minutes after the first earthquake, search and rescue teams from the other provinces were dispatched to the region. The coordination was ensured according to the Turkey disaster response plan, and all institutions gathered at the Afad Disaster Management Center.

After the earthquake in 0417, 45 minutes later, the Aafet level was declared as 4 in 05 - 02.

45 minutes later after the earthquake disaster level 4 was declared.

He said he summoned troops from their high ray troops from outside.

Uh...

He reached Turkey for the first time in 12 hours.

At 5 am the call for international aid was made and at 11 am the first international aid has arrived in Turkey.

After one hour of the earthquake, the Afat teams were taken out as the first Afat in the Ottoman Empire.

One hour later, the first earthquake, Afat teams extract the first survivor from the Osmaniye Bilge apartment.

Reid was the 편 є Soon -Bakantı.

After the earthquake crisis, the crisis management office was set up, which includes the vice president, the three ministers and many other local officials, which were assigned with these duties and different complementarity duties, responsibilities in the region.

Leaving 31 ,000 minded home tenants and reaching 20 ,000 Trends, gemacht a total of 142 ,000ens upon the destruction よし and confirmed worker safety quota,

Within the scope of the first earthquake response activities, 35 ,000 search and rescue staff, including 11 ,000 international staff and 142 ,000 security personnel were deployed into the EQ region. A total of 650 staff took apart in response and recovery of 1000.

A total of 650 ,000 staff took part in the response and recovery activities in the earthquake zone.

After the accident, 39 ,000 buildings were destroyed, 200 ,000 buildings were damaged. In the 21st year, 124 buildings were destroyed, 39 ,000 buildings were destroyed, 26 ,000 buildings were destroyed, and the search was carried out.

After the earthquake, 39 ,000 buildings were destroyed and 200 ,000 buildings were severely damaged. In 11 provinces and 124 districts, search and rescue operations were carried out within the 26 ,000 debris.

In the vital zone 20 thousands of vehicles, such as a Panzer methodology or Produced Squadron 777, üzer можно worldly freedom and impartial moral, unusual capabilities and particularly unique device stability and use k extension Sir, and which is over...?

20 ,000 vehicles and construction equipment, 141 helicopters, 182 aircraft and 23 ships were deployed to the EQ region. Sanitary evacuation, staff transfer, material transfer and fire -extrusion activities were carried out by the aircraft and in total 17 ,000 flights were carried out in this context.

In order to seal off our first day of officenormals, we started creating 山 matURC In 350 server called INTER get6500 they licence as aeneq originally called K stands for climatic

On the first day of the earthquake, the installation of the tents for the shelter of our earthquake survivor has started. In 250 cities, 2 .5 million people were provided shelter in 650 ,000 tents.

to questions.

Thank you. So we'll move on to the next question. Unfortunately, I think we're running a little out of time. So we'll ask the second question, and then maybe we'll open up just for one or two questions from the audience.

So the other question that we were very curious to ask Mr. Essin is there was such extensive damage to private buildings, but the public buildings performed very well. So what is the reason for such a massive discrepancy?

What are the lessons learned from that?

More frequent testing standards, the KAMU buildings generally go through more frequent testing, and follow higher testing standards. In construction, more detailed controls and testing are applied.

Actually, there are several factors behind the performance of the public buildings. The first one is related with the stricture inspections and the standards. Public buildings in

Turkey generally undergo stricture building inspections and are subject to higher building standards.

More rigorous checks and inspections are applied during the construction.

Professor Miyamata showed it in the slide. In the building of Malatya, there were earthquake and the hospital was not affected.

For example, as shown by Mr. Miyamoto during his slide, as you can see, Malatya Hospital has had the seismic isolator.

Thank you, Miyamoto. The material quality of the building materials used in the KAMU buildings generally has higher quality standards. This building will increase the durability of the building.

And also, construction materials used in the public buildings generally have higher quality standards, which increase the earthquake -resistant resistance of the buildings.

さい the style, the design of city buildings, mostly new designs are made on this architecture project and these designs exc estiverent tool beside a print design and grab access to the latestwards techniques.

In terms of the engineering and the design, the design of the public buildings is usually done by experienced engineers and experts. These experts are knowledgeable about the earthquake resilience building designs and the use of most up -to -date engineering techniques.

Professor Miamat was in the 98th position of the Department of Defense, but in the 99th position, the Department of Defense was modernized in Turkey. And then, the buildings are more secure and the availability of all the buildings is preserved.

Again, as stated by Mr. Miyamoto's presentation, the change in the earthquake caught in the Turkey at the late of the 19th has allowed the government to ensure, make sure that most of the new buildings are resilient to the new earthquakes.

We support majorinese 拍 feltize chanterelle rec Botanick Project rather than uterine. Thanally, it is always possible to residents to haveclearseng Imagine.

Public projects are often supported by the larger budgets and resources, which makes it possible to build more durable and safe structures.

In a way it is very difficult to implement this system, the above

And also public buildings, you know, must comply more with strictly and with legal obligations such as earthquake codes and these applications increase the resilience of the buildings.

In particular, they have increased Installments in their mouths, because of the lack of support of blockchain directors expiring fake lemonade care and Français sponsored Foundation aimed at

And lastly, the old buildings may have undergone strengthening for retrofitings works to comply with the earthquake regulation and also this situation increased the resilience of the buildings.

Thank you so much. Yet the Turkey earthquake is a real example of how disaster risk reduction works in the public sector. And I think McGraw -Sensei always says we need to start looking at disaster risk reduction as a value add and not a cost.

And the Turkey earthquake is a prime example because those cities would have been even more destroyed and although the public functions, hospitals wouldn't have functioned without these critical disaster risk reduction and resilience efforts that took place in the years before.

So I would like to open it up for questions from the audience. Unfortunately, we do not have much time, so potentially we can take one or two questions. So if you have a burning question to any of the panelists, I'd like to turn it over to you.

Is there anyone that has that burning question?

Good morning. Thanks for the panel for the interesting discussion Fred Pedrozo word bank a quick question to me amoto Son and what the sensei I think there's a clear presentation between like both spectrums of like Not having a plastic structure and base isolation, right?

I think like backstone example is a great example Like how can it work with plasticity? And an elasticity for you to have like more reliable infrastructures where what a sensei is saying that that's not very much Welcome approaching in Japan.

You want something more steep? Of course working base isolation any comments from your end in terms of where will be you know like Working for with those two ends of the spectrum in terms of technology for for developing countries.

So the question is, like I talked about base isolation, right? Put the buildings over the roller, which means the building itself will stay elastic. Essentially, the way we design buildings is kind of like a rubber band.

If you stretch too much, it doesn't come back to a neutral spot, it kind of snaps. Well, it's better example, I'm sorry, very example like a spring. You know, spring, you know, it's a stretch a little bit, you come back to a neutral spot.

If you stretch too much, it doesn't come back. Now where we engine buildings, it's like the stretch way out doesn't come back. For example, in the US, we allow to have the high -rise construction, I'm talking about 50 storey or 70 storey buildings, to stretch so much, doesn't come back to a neutral spot.

Shake, stretch, doesn't come back to a neutral spot. Allow to have 1 .5% of a total height to be displaced permanently. Think about that. Would I like to live here? No, really. I mean, just technology we use in structural engineering is something we developed in the 1970s, the 80s, never changed for the past 50 years.

It's to me a little bit ridiculous to me, quite frankly. I mean, we have technology exist, not to do that. It probably costs more. It probably at maybe construction costs 2%, 5% more if you use that type of technology, not to stretch too much.

But sometimes, especially if the earthquake is not happening, we all think we don't want to pay for 2% to 5% more. I'm talking about we here, right? That's a problem. So Japan has 10 ,000 seismic ice buildings here.

But look how many earthquakes they have here, right? That's why people are keenly aware of the risk. That's why they don't mind to pay for 2% to 5% more. So we have to change our mentality, I do think.

But technology is available, can down very cost effectively.

Thank you so much.

Thank you. My name is Abdullayam from Somalia. One of the mayors in Somalia. So, as you may know, Somalia has been war, conflict, violence, climate issues, displacement. So, I would like to know more about, at the municipal level, building relationships because we have been facing flooding last year that have lost many lives in our cities.

So, I need to know more about the existing building regulations. There are still existing building codes in our country. And now we are experiencing that. The country is recovering, many people are building long stories that we believe in the future will face a lot of problems without having such building codes and building regulations.

So, we need to identify at the municipal level which way we can follow. So, we believe that we are already ground zero in our areas. Thank you.

Many countries have their own seismic code or structure standard. But when we check the quality of the structures, many structures are not constructed following the code. So the important point is how to let the people follow the seismic code.

In general speaking, there are three ways. First, penalty type. If you do not follow, I will give you big penalty. The second incentive system. If you follow, I can give you some. The third one is close the information and the letter people.

If you do this, this is a beneficiary for you. The first one, penalty. It is quite difficult to be implemented in the area that do not have the strong governance. Even people do not follow, nothing happens.

When I give some money to the person, you can easily pass. Such a situation, penalty type, cannot be functional. In such area, the incentive type of the one is much better, I mean to be implemented. And also, you have better open information.

And the educated people. And if you follow this, you can get a big benefit later. And also, if it is possible, you have better have some system, construction permission system, such as electric construction permit system.

Then, even a number of the engineers are very limited. The efficiency can be increased. And also, all the data, plan drawing everything, including the name, who designed this one, who gave the permission, all these are archived.

Then, when some problem happens, we can trace. Who is the responsible person? But so far, if you do not have such a system, even the problem happens, nothing. And I come forward and give you this quin dare an o, Can you understand what I'd like to say to you?

Thank you, Sensei. So I think we're, one more question? Okay, yes, I think we might, we can squeeze one more question in. Thank you so.

Good morning. Thank you, the Turkish brothers from FAT. My name is Mahmud. I'm the commissioner of Somalia Disaster Management Agents. As Amair says, Somalia has many hazards, like drought and flat, but also some natural.

Some men meet disasters, like explosions. So is that coordination more important than quick answer, or the quick answer is to help the people? So because FAT is more, we know that they are very effective.

And to learn more about this is better for us. Thank you.

Thank you. Yes, very key question around government coordination. How can you facilitate coordination? I thought it has been very effective in coordinating such a massive response. What other agents, what can we learn from that?

How can we adopt some of the practices in our own countries that are facing floods and other risks?

Thank you.

As I stated in our responses, Turkey has been working to prepare for earthquakes and other natural events, especially awaited big Marmara earthquake in the Istanbul. So with these preparation and drills and the continuous works in the framework of the Turkish Disponse Plan, it's actually allowed us to, you know, strengthen our preparedness and coordination.

So, you know, key message is in that respect, you know, create your own disaster risk management plan and, you know, just practice it just before, you know, any disasters happen with the drills and other kinds of the practices.

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We have actually a motto of zero minute, a zero minute motto in our disaster risk management plans. In the scope of that, you know, all of the state agencies know their duties from the moment when disaster occurs and immediately they start their operational activities on the field.

So it's also important to have leadership and coordination roles to be defined in this respect. So these roles have been carried out by our vice president and if necessary by the minister. Yeah.

Thank you.