Disaster Recovery and Build Back Better
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Lecture – 02
Risk Perception and Disaster Risk Preparedness – Part 1

Hello everyone, we will discuss, welcome to this lecture series on disaster recovery and build back better. In this lecture, we will focus on risk perception and disaster risk preparedness, I will tell you that why we need. Also to focus on risk preparedness, not only in mitigation and also I will tell you what is the critical role of risk perception when we are trying to promote preparedness.

So, I am Subhajoti Samaddar, from DPRI; Disaster Prevention Research Institute, Kyoto University, Japan.

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We already know that we have many hazards including natural hazards okay, like flood or kind of volcano but also we have many other hazards which are not directly related to disasters but let us look at in a broader perspective, we could have smoking or GMO.

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And then we have some risk, like if you smoke, you are endangering yourself with a lung cancer, or if there is a flood, poor people is affected, vulnerable people would be affected. Also, we could have earthquake and tsunami impacts and triggered Natick, kind of questions like Fukushima, a nuclear power accident so, we have all this risk right, this is accepted.

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Now, looking at disaster risk, particularly in Asia that is for sure that Asia is one of the hotspot, it is one of the most disaster-prone region in the world. No other region is that much affected by disaster; natural disasters particularly, well you consider earthquake, you consider volcanic eruption, flood; Asia is the most vulnerable, most disaster-prone region in the world.

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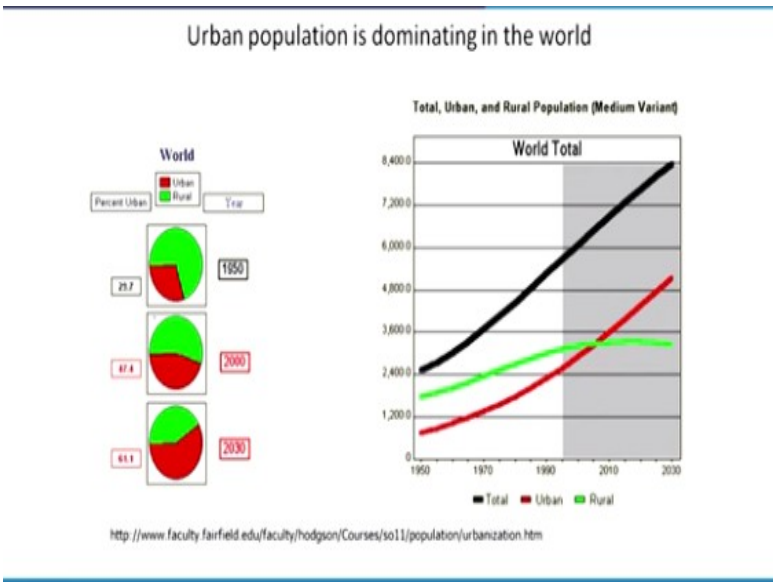

One more thing is that urban population; urban population in the world is dominating. In 1950, it was only 29.7% of total population was urban population, only 29.7. In 2030, it is considered that it will grow as 61.1% that means more and more people are living in urban areas and they are exposed to various kind of disasters.

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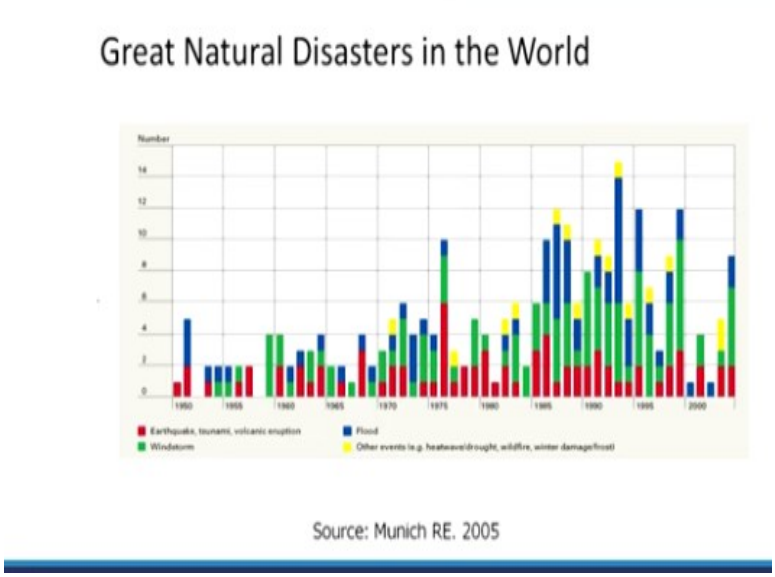

You can see this graph also that is showing that how earthquake, flood, windstorm is increasing from 1950 to 2000. That is for sure that flood is increasing and windstorm is also increasing has increasing red, earthquake is relatively similar but great natural disaster in the world are really increasing.

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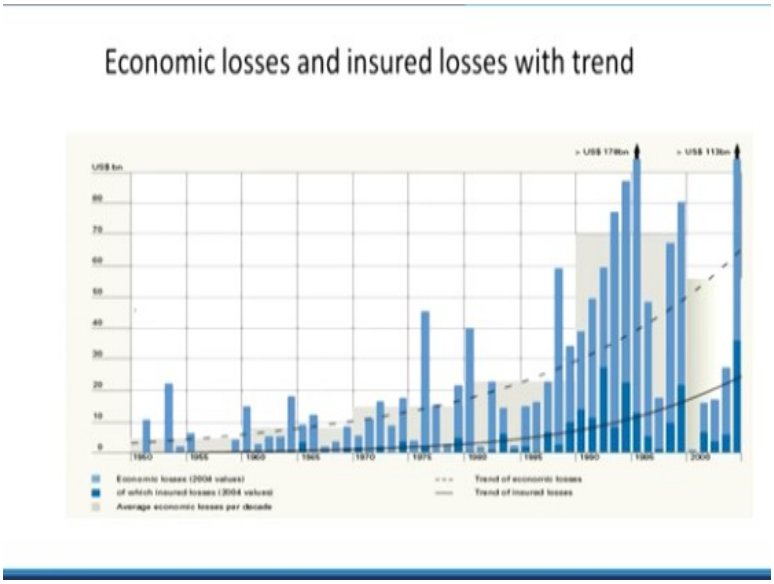

Also, not only the disasters are increasing, but economic loss and social impacts due to disasters are increasing, here is one you can look at economic losses or insured losses with trend from 1950's to 2000 that is for sure that it is increasing.

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So, what is the trend now? Large catastrophic disaster is more likely to occur, large catastrophic disaster; big disasters like 2011 Japan one which surely is going to increase but that was very extreme. Number of disaster for which some international aid is executed, in 60s and 90s, international aid 1 : 3; 3 times more, economic losses due to disaster in 60's and 90's; 1:9.

Insured loss increased at in higher rate in 60s and 90s; 1:16. That is amazing figures right, so what is happening then, what is actually happening in the real-life? what are the impacts of

disaster, what are these facts, this is a small data I have given you, I can give you a lot more data, but for the considering the time, we may focus on small data, but that data is telling us few points, pretty clearly.

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One is more and more people and buildings and settlements are now being exposed to hazards. More urbanized area we are having more and more populations are living there, concentrated in one pocket and more and more people are at risk, that is for sure, more and more people are exposed. People's capacity, their characteristics, their features, the building characteristics, settlement characteristics, the way it is happening, the unhappiness that unplanned development across the globe particularly in developing countries. Also, in particularly in Asia is, of course, making people more vulnerable than before that is for sure.

But the most important finding is that structural measures; engineering measures are important, but not enough that is for sure, you can build dikes, bridges, dams but you can make a lot of things like that structural measures, but they are very necessary for infrastructure development to protect and mitigate disasters. But that is not enough; the one great example is 2011 Japan or 1995 Kobe earthquake, also in India, we have giving so much effort, like a country which is so prepare like Japan investing so much on infrastructure development. But still it is sure that by structural measures, you cannot simply make communities resilient, nature is more powerful than you. So, if you are ever exploiting the nature, if you are exploit, if you are living where you should not live, then structural measures is not enough.

What do we need to do then? we need to make people, increase people's risk awareness, we need to promote preparedness, small thing that if there is a big disaster, is the tsunami you have to evacuate, no other option, people who are living near the coastal side, they have to evacuate when there is a disaster, but people always do not like that.

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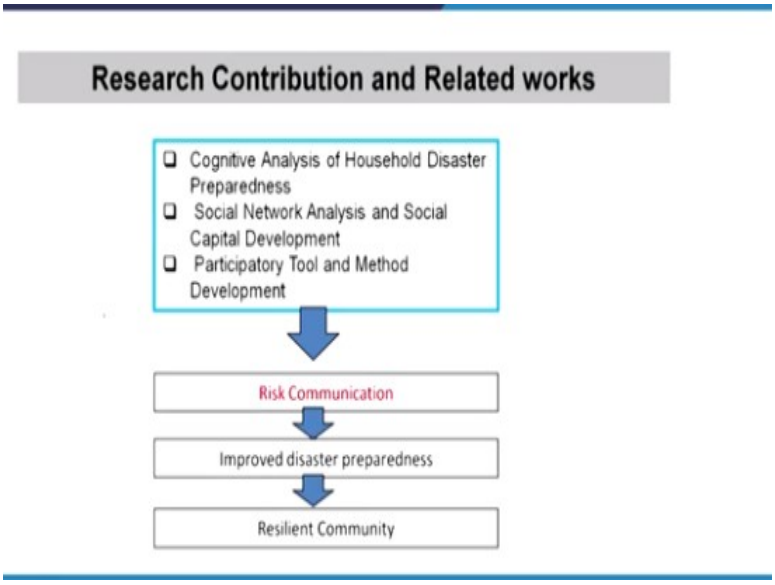

So, what is happening is that we need to focus on preparedness, to promote preparedness and risk governance to the people. So, in order to do that, we have many kind of small countermeasures, not a very big issue like we can promote, we can motivate people to buy flood insurance or we can ask people to evacuate during emergency.

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Or maybe just simple technologies like rainwater harvesting for better water resource management. Or maybe a eco-friendly house, energy-saving house so, these small measures

by the individuals or maybe simply consider that for accident, we need to put helmets. but this is a great challenge, when you are asking one person; one household, they said okay, I can do this solar power energy-saving house in my; I can put solar panel. But my effort is too little, if only I do it, it would not promote the preparedness in this community, because my effort is too little, why should I do it and that is true; that is true.

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So, what we need to do is then we need to promote more and more, we need to encourage people more and more people should do it, only one people is putting helmet it is not enough right, so putting a lot; small, small, small, small , small things can be a very big, very big effort, a gigantic effort.

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So, we can have many more such small things right, we have many more such like insurance, like rainwater harvesting, we have many more such small technologies. Now, we need to promote, we need to encourage people to adopt and install these small technologies, a small thing but a big challenge.

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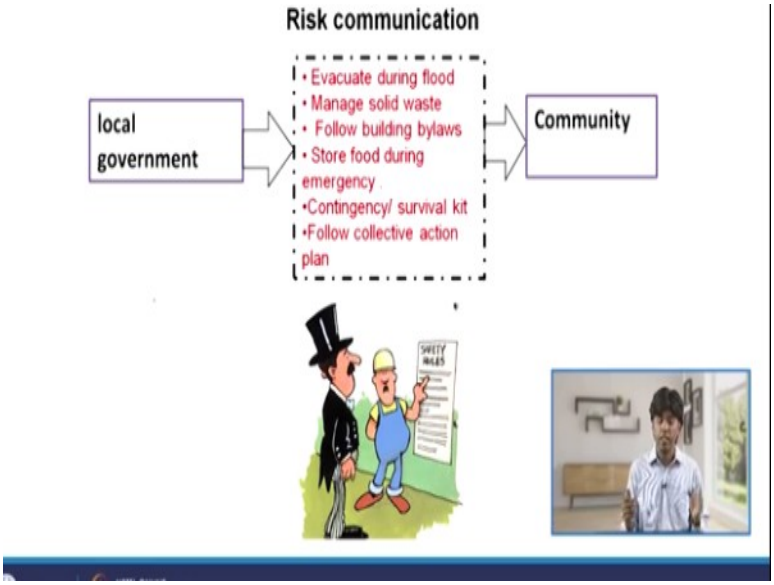

So, what do we do for the local government? let us say, municipal authority, they ask people to follow something like you have to evacuate during certain time or you have to manage your solid waste, you have to follow building bye-laws, you have to store food during emergency, or you have to keep survival kit, or contingency kit like that. Now, this process that a local government is telling something to the people at risk to reduce their risk and to install and adopt some disaster preparedness technology.

We know this is called a simple risk communication process, right but it is not always easy, the conventional risk preparedness mechanism or system, they think that only providing information to the people is enough, if I ask people to evacuate during emergency that is enough but that is not always enough. People from the field, from various research across the globe is showing that after putting a lot of money, running a lot of projects, spending a lot of time, the inclination; the tendency of the people to prepare against disaster is elusive, it is really low.

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Why; why people are not preparing? Here is a good example; what do you think as risky, people may not think is risky. Like this one, I told maybe many times that this other person on the other side of the boat is considered that he is not at risk because this boat is sinking but he is in other side, he is not going to die.

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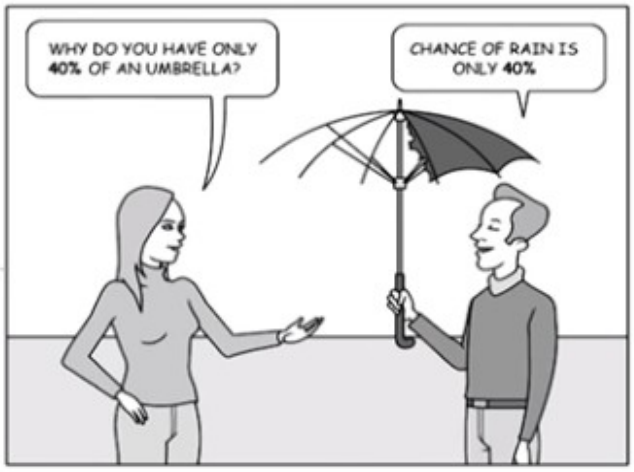

Or maybe another person whom this lady is asking that why 40% of your umbrella is covered, he said I received an emergency message is saying that there is a chance of 40% rain. So, he interpreted the message of early warning this way, so that way people interpret, way people perceive them is varies, right. Not only that people have a different orientations about preparedness. People think okay, I know about disaster, I know my area very well so, when the flood will come, tsunami will come, I can easily escape, do not underestimate me. Actually, people overestimate their knowledge that they know all, or people estimate that

they are prepared enough that even flood will can earthquake will happen I will be safe because I am not that vulnerable, I am prepared enough, my house is good, my house is three storied, no flood can affect me.

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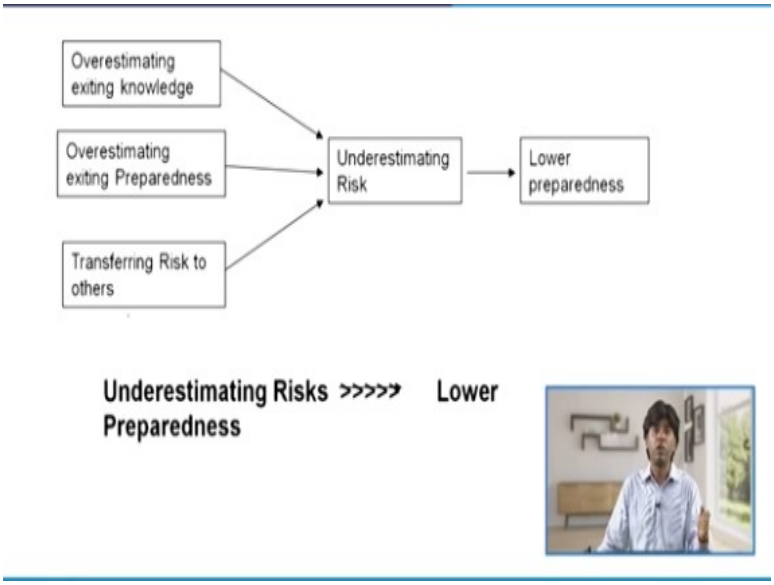

Or maybe people think that okay, it is also the responsibility of others like, people often blame the municipal authority for getting flood, they said that flood is an the issue of the local government, it is not my duty to protect myself against flood risk. It is the duty or responsibility of the local government to protect me. So these factors, there could be many other factors that actually reduce people's risk awareness or low-risk perception, and eventually, reduce the preparedness.

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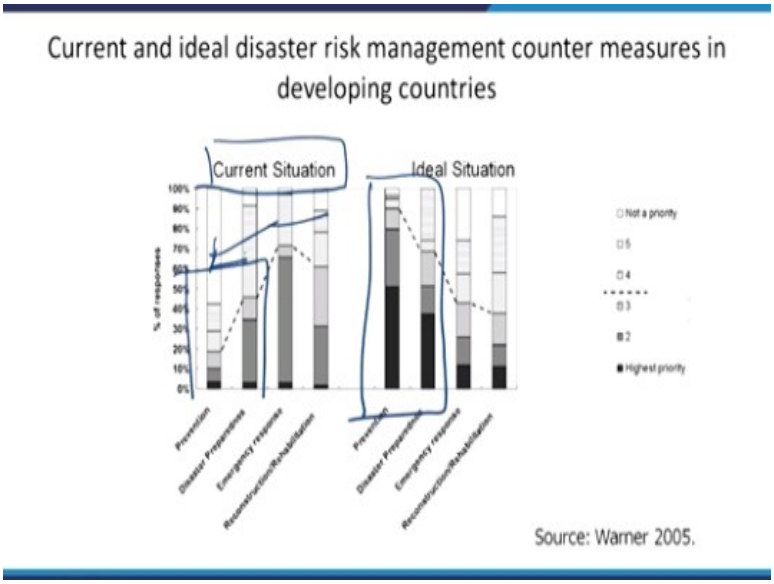

Here are some data we can see that, actually, ideally we should have more money should be invested on prevention and preparedness. But if you look into the current situation, it is totally opposite, we are spending more money in emergency response and very less money in prevention and preparedness, right. So, we need something to do and we are not doing it.

So, disaster preparedness which we are promoting it is not enough, people are more, we are spending more money on disaster relief, people are not ready to spend money on preparedness so, government is also failing to spend money on preparedness, people are not motivated to do it. Not only that, proactive risk financing is less used in developing countries, it is showing that we have very, very less during the pre-disaster financing, the local government or the national government in developing countries are spending very little money.

Whereas, during the emergency, we are spending a lot more money. So, disaster preparedness which is so necessary to increase communities, resiliency is not happening; it is so difficult, so challenging to encourage people to prepare against disaster. So, these risk communications like local government to the community, how we can manage this one?

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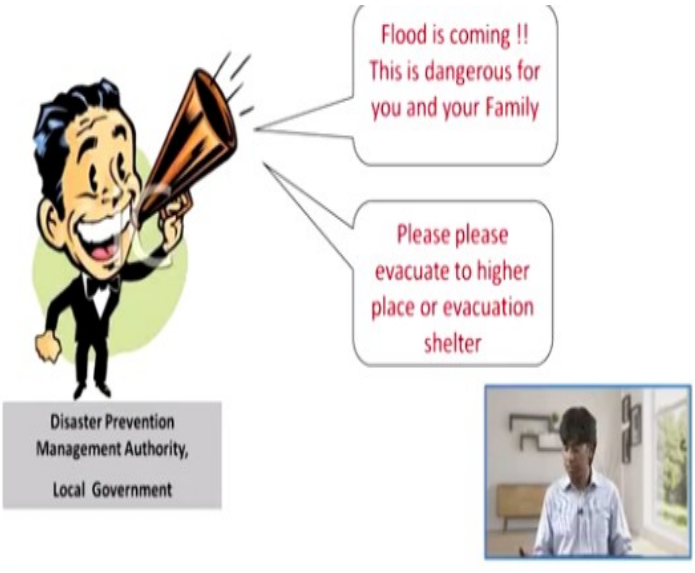

Let us imagine that a flood is coming and local government is trying to say to the people that flood is coming so, you are at risk so, your family is at risk so, please, please, please evacuate, do not take the risk, but please evacuate to a safer place that we told you.

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And, this message was given to the people through newspaper, through mass media like TV, radio, internet. But this person does not care, he is not listening, he is at risk, he is enjoying the flood while reading newspaper, he does not care. So, is it not really challenging? this is very common scenario this is not a very extraordinary scenario, this is very common scenario that people are not doing it when we are telling them; telling them to prepare, telling them to evacuate.

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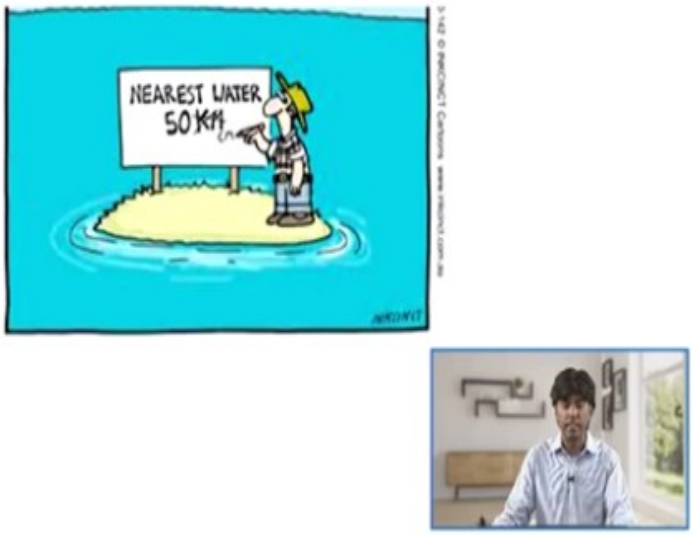

Then, by the time this person realized, it is no more the 50 kilometre, it is 50 centimetre, he is inundated, his area is inundated. So the big challenge is that, what people think what is risky their knowledge, sometimes sudden, sometimes they agree that okay we are at risk but many times they do not agree is very uncertain. Also, if they find that, I am really at risk what can be done? Sometimes, it is very agreed, people agreed that okay, if I evacuate I can protect

myself from flood, I can mitigate, reduce the disaster risk. But sometimes people challenge the mitigation measures or preparedness measures itself, will it work; will it work for me so, knowledge is what is risk and how it can be solved that is the consent is always challenged.

So, in case of risk perception, always there is the question; who, what is risky, what extent is risky, why risky, right?. Similarly, preparedness; what is priority of work, what should I do, what is effective, will it work, evacuation will work to protect myself to reduce my risk, who will do it, if I am saying that okay I will put rainwater harvesting, is it my responsibility to put rainwater harvesting or the government will do it. And when would it be done, who will takes this responsibility and temporal questions.

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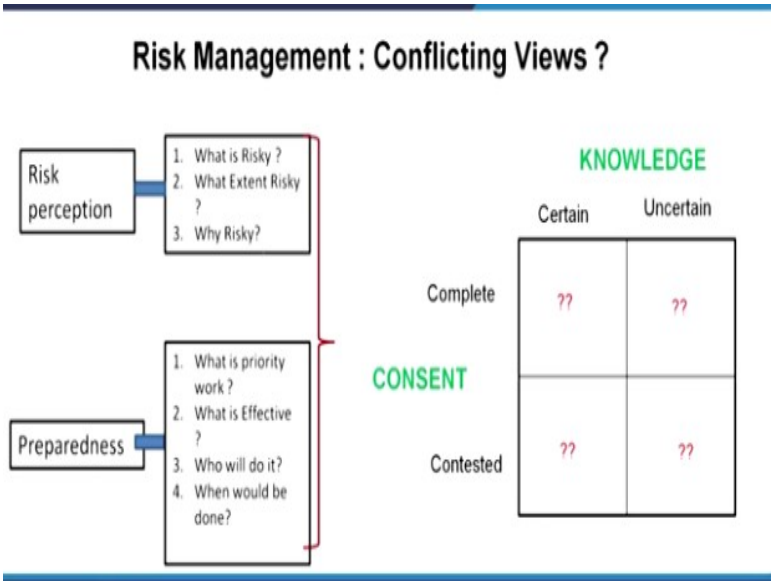

So, these are very common questions when we are trying to promote disaster preparedness.

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Here is a very important data, then what is risk? Why people are not believing risk? there is a Britain Royal Society; they publish a White book on risk assessment in 1982 and in 1983, it was revised again.

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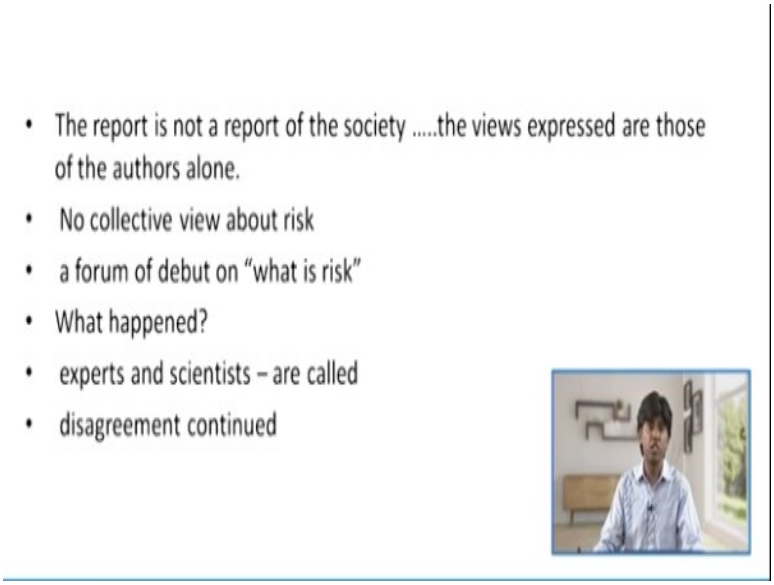

They actually asking many famous acknowledged internationally acclaimed professors, scientists to estimate and tell them what is risky, to talk about a risky but very funny thing is that when these society is publishing this white paper, they are saying then you know disclaimer they are not saying that this report is not a report of the society, the views expressed are those of the authors alone.

So, I am not taking the responsibility here; society is telling, no collective view about risk, so it is not about to tell you that this is what is risk, a forum of debate, this is just only a forum

of debate. What happened, why after calling so many international researchers, professors, they are saying that this is what we are not going to take the responsibility. So, this is a disclaimer, why it is so?

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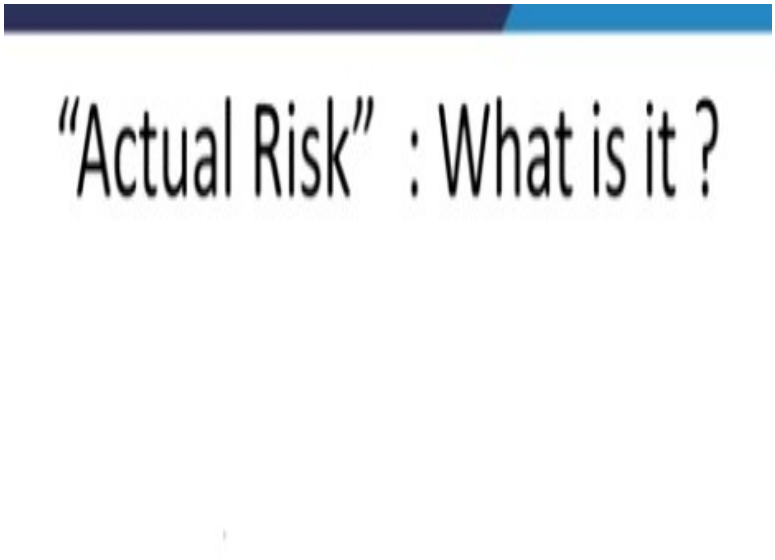

Experts and scientists are called and but disagreement continued about risk. So, actual risk we as scientists saying that we there is actually an actual risk, what is that? So, we are saying that there are 2 kind of risk; one is objective risk that is scientific risk; another one is the perceived risk.

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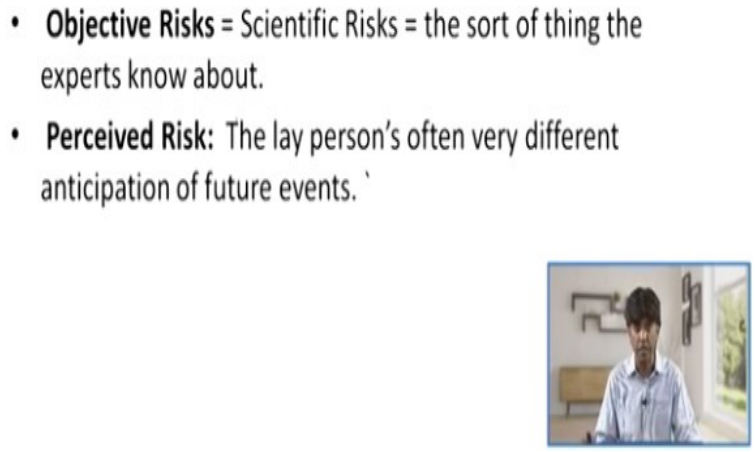

Objective risk that kind of it comes from the scientific estimations, it follows scientific rules and regulations and laws. Perceived risk; the way laypeople, the common people, they perceive about the anticipate about the future event that is perceived risk.

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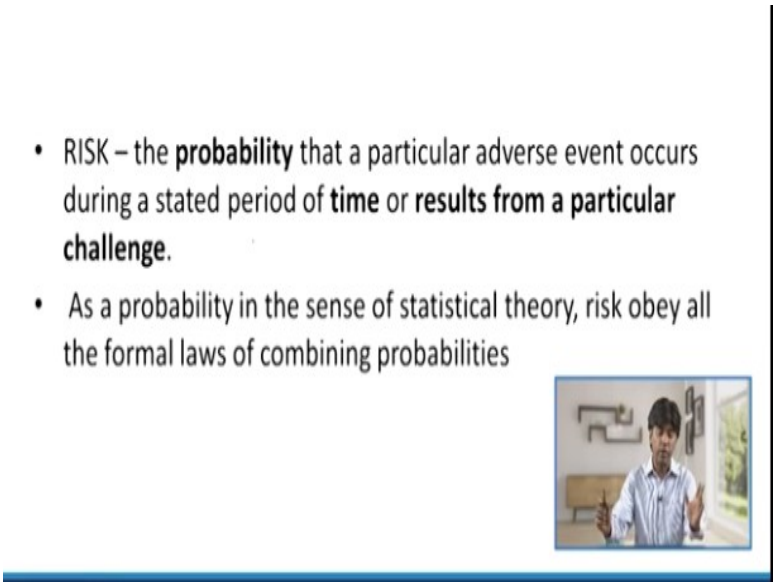

Now, risk in general, we know the probability of a particular adverse event to occur during a particular period of time. So there is a probability question in a particular time question, and it would challenge the existing situation, and so it is a consequence and is the event probability.

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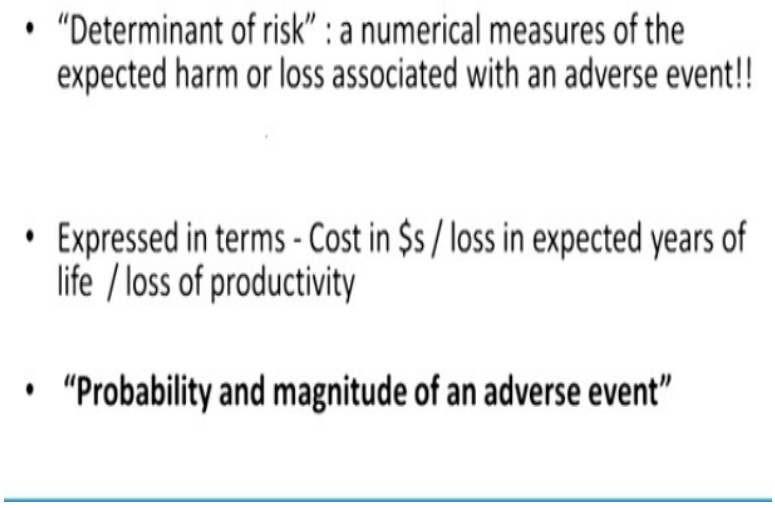

So, determinant of risk; how we determine a risk? Generally, we determine any kind of risk by numerical measures, like expressed in chance of that much cost in dollar or in rupees, loss is expected to due to a flood, a loss of productivity has been lost, that much of amount due to earthquake so, these always we express in numerical figure; 5 billion, 20 billion, 200 billion, or, 50 people died, 100 people died like that.

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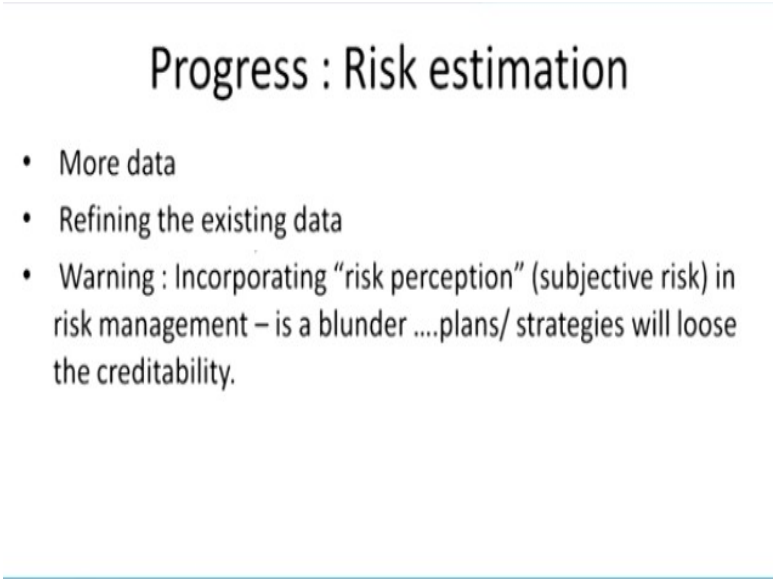

So, probability and magnitude often adverse event. Now, risk estimation progress; if we want to progress more if you want to refine our estimation, one thing is very clear that we need data, without data we cannot do it so, more data where you have, the more fine-tuned, more cutting-edge estimations we can make. So, but they are making it very simple, the scientists are saying that you need data but remember that risk perception that is subjective risk, what laypeople think.

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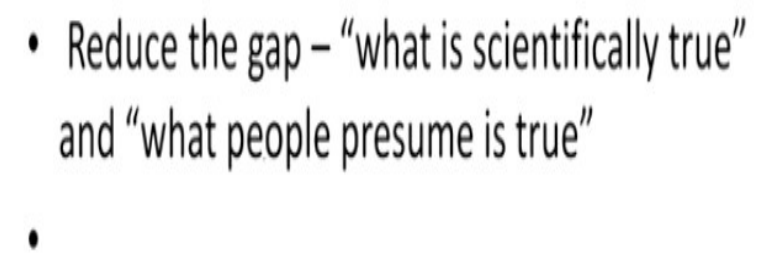

Please do not incorporate that element in disaster risk management, is it really so? Let us look, reducing the gap; they are saying that it is very important for the risk manager that what scientifically true, and what people think we should reduce that gap, we should tell people that what is scientifically true and why it is true, what they think is not right.

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For example here, if you are smoking you are at risk, you believe or not you may be doing it because you want to be macho, or your body needs nicotine, but once you were smoking you are at risk that is very clear. Or maybe if you want to be a flamboyant hero like this guy you are at risk, if you are doing it at high or any place, you are at risk, you believe it or not, is simply up to your perceptions, but scientifically we can tell that this is your problem.

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Or if you are driving and not putting seatbelt, this is your problem. Now the question, is it a fun or danger? Scaring? Whose is it fun for the young people, also for the old people, is it danger for the young people or for the old people. So, young kids and old seniors, so the probability; the person's perceptions of the probability; fun or danger, which one?

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Now, the question comes, can we really measure risk, can risk be measured?

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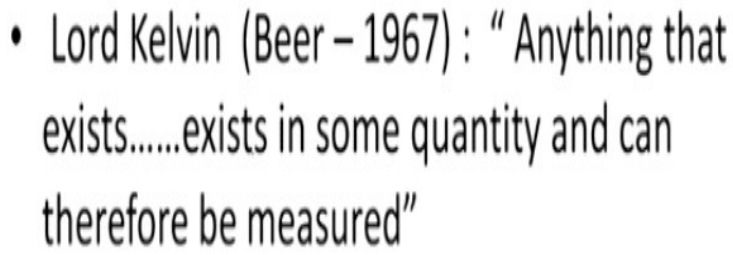

There is a person Lord Kelvin, he is saying that anything that exists; exists in some quantity and can, therefore, be measured, if there are 5 people, we can say 5 people so, it exists so, anything that exists, that exists in some quantity, a glass of water; yes we can tell it.

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Distinction should be made -

- Real / actual / objective/ measurable risk – obeys the formal law of statistical !!
- Subjective risk – perceived by non-experts !! There is nothing called "cultural risks"!!

So, distinction should be made between real, actual, objective measurable risk, which follow the scientific rules, scientific law of statistics. So, statistically we can say how much risk is there, another one is the subjective one that perceived by non-expert, there is nothing called cultural risk, it is your problem man, but there is a scientific.

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Britain Department of Transport

- Safety / Danger of the road = casualty record
- The consequence of real accidents

Now, Britain Department of Transport, they are saying that yes we can measure the risk, it is very simple, we can measure it based on casualty record, how many people are dying in a particular time and a particular road. The consequence of real accidents, these are simple parameters to tell people how much risk is there. Also, this is actual danger because if you want to be flamboyant, you can be, no problem but that is the consequence.

And if you do it, if you do not believe it, this is your personal problem but, scientifically we know that this road is danger, you should not do this so, you are at risk.

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Safe and unsafe road; according to them is very clear like, if there is no accident left-hand side then this road is safe, and if this road is unsafe, because we can see that there is an accident okay.

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So, really; can we really measure the risk? so that is a big question, these questions that whether we can really measure, can we really distinguish between objective risk and perceived risk that challenge will continue. In our next series, we will discuss on this aspect that how, when, what extent we can distinguish between objective risk and subjective risk and can we really do it, so and what and how extent it will affect the preparedness.

Thank you very much.