Disaster Recovery and Build Back Better
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Lecture – 06
Culture, Climate Change Adaptation and Disaster Risk Reduction

Welcome to the course disaster recovery and build back better, today we are going to talk about culture, climate change adaptation and disaster risk reduction. And we see about the relationship between disasters and climate change. Much of the scientific literature often does not relate that these two are interrelated because disasters they often triggered with an event, but whereas the climate change, it has a long-run mechanism into it.

And it has the impact is more from a long-run instances like when you see about the recent phenomenon, the recent concerns they are relating that the climate change is, directly and indirectly, related to the disaster risk. So let us see how the discussion is going on.

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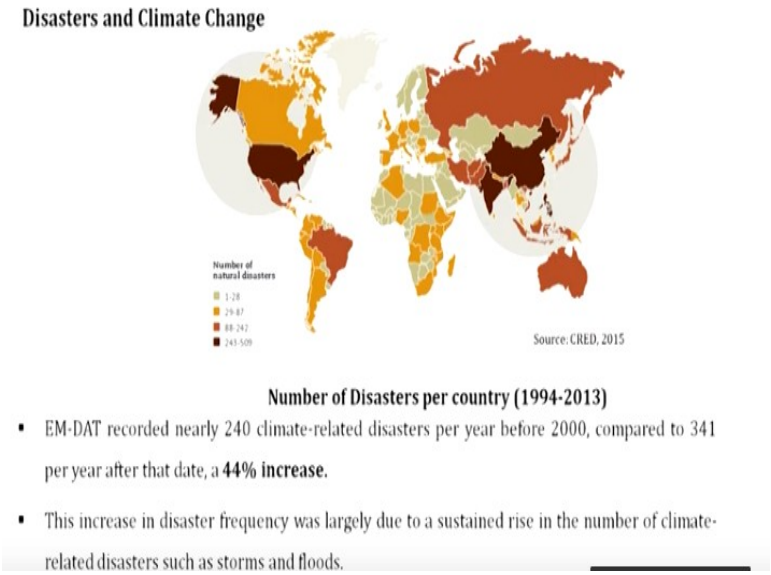

When we say about from the CRED report 2015, this is what the map you get the EM-DAT has recorded about 240 climate-related disasters per year before 2000. When compared to the 341 per year so that there is a 44% of increase and if you look at it when we see the number of natural disasters here, mostly in the Chinese you can see that China, India, Mexico the later on you can find part of Russian and African continents.

And also the northern part of the Canadian aspect. So you can see that these are the number of disasters and how they are very much prone.

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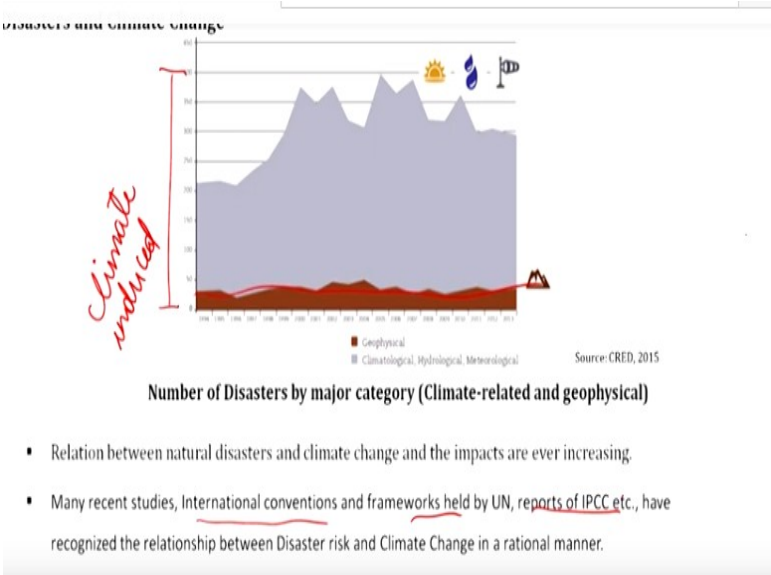

If you look at the classification of the disasters, It is just a geophysical disaster which we are talking about the earthquake or the tsunami or these are most of the landslides which are more related to the geophysical aspects of it, and they are very less. But whereas here it is going almost these are climatically whether it is a hydrological or meteorological aspects so this is where the climate-induced. So there have been various studies which actually address that climate-induced disaster is on higher end.

And there is a need that we need to integrate that climate change and the disaster risk and how we have to work in hand-in-hand to work with it. And that is where like many of the international conventions, frameworks held by United Nations, IPCC the Intergovernmental Panel on climate change have recognized that there is a relationship between disaster risk and climate change in a rational manner.

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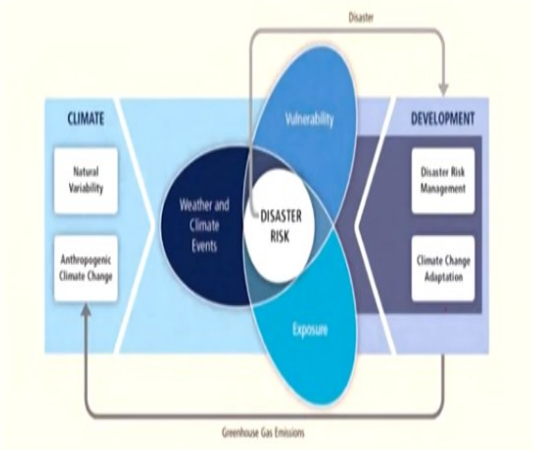

Linking CCA and DRR is one of the crucial steps to achieve sustainable development in the near future. Explaining

Similarly, the conceptual approach of the SREX report, where SREX which talks about putting the disaster risk in the center, and how the settlements are exposed and vulnerability component and also the long-run weather and climatic events put these settlements into vulnerable conditions, and how they are exposed, and on one side we have these greenhouse gas emissions which are on the continuous concerns.

And which is actually causing the anthropogenic climate change and also the natural variability. So which is subjected to the disaster risk and this is where the disaster and the development and this where they are interrelated, you know from Frederick Connie when he talks about the disasters and development are interrelated with each other, and that is where the development within which the disaster risk management and the climate change adaptation, how they can actually contributed to the disaster risk you know this is what the whole understanding. And the main important point here is linking the CCA climate change adaptation, and the disaster risk reduction is one of the important crucial steps to achieve the sustainable development.

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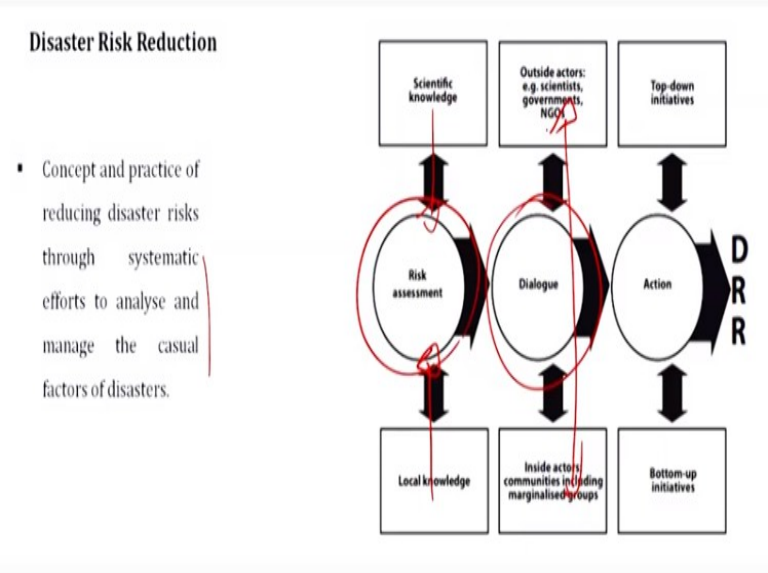

So this is one of the important indication that we need to integrate these two components. Disaster risk reduction and how it has been conceptualized when we have the concept and practice of reducing disaster risks through a systematic efforts to analyse and manage the casual factors of disasters. The first stage which talks about the risk assessment where the scientific knowledge also contributes in analysing the risk, and also the local knowledge also contributes in understanding the risk.

Whereas a dialogue when we talk about the communication part of it read inside actors outside actors actually they interface with each other, so that is where the NGOs the governments, the scientific community the policymakers and also the victims, the beneficiaries you know who are the inside actors the communities and the marginalized groups.

And then coming to the action which is again there should be an interface between the top-down initiatives on the bottom-up initiatives and how there is actually in holistically they contribute to the DRR (disaster risk reduction), so there have been a jargon in these terminologies of disaster risk reduction, disaster risk management.

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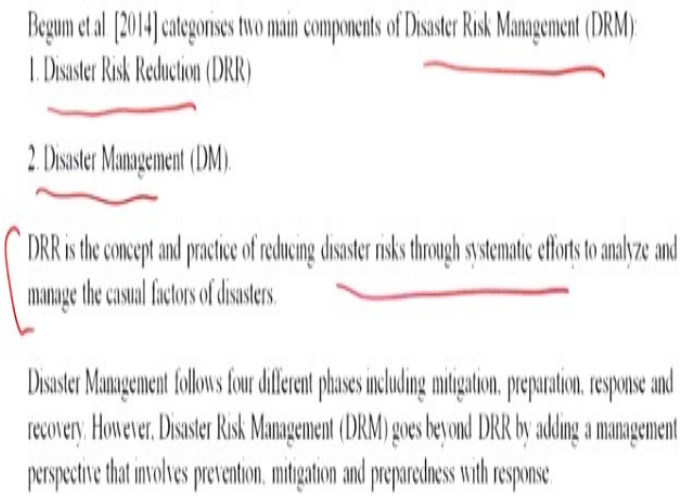

So Begum categorizes this into two main components one is DRM disaster risk management and within which the disaster risk reduction is one of the component, and the disaster management is another component. The DRR is a concept and practice of reducing disaster risks through a systematic efforts to analyse and manage the casual factors of disasters. Whereas the disaster management follows four different phases.

It talks about mitigation, preparedness, response, and recovery. So it goes that this DRM goes beyond the DRR by adding a management perspective which involves prevention, mitigation, preparedness, and with response. So this is how it has been understood by I mean different experts. For instance in India when we talk about climate change adaptation, there are national action plan on climate change which is from the Prime Ministers Council on climate change.

They are talking about Government of India have established the different national missions like for instance these eight national missions which talks about the solar mission, enhanced energy efficiency, sustainable habitat, water mission, national mission on sustaining Himalayan ecosystems, national mission on green India, sustainable agriculture and strategic knowledge for climate change.

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NAPCC [16] document the focus is on eight national missions i.e.
National Solar Mission;

National Mission on Enhanced Energy Efficiency;

National Mission on Sustainable Habitat;

National Water Mission;

National Mission on Sustaining Himalayan Eco system;

National Mission for Green India;

National Mission for Sustainable Agriculture;

National Mission on Strategic Knowledge for Climate Change.

So these are different missions which were established by the Government of India and in order to address the sustainable development goals and as well as the climate change on the green aspects of it.

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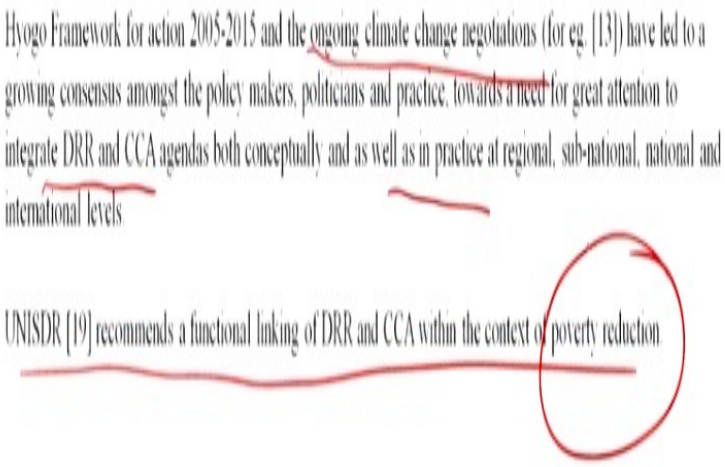

And in fact, the Hyogo framework for action which talks about for the ongoing climate change negotiations have also led to the growing consensus among the policymakers, politicians and practice that there is a great need to integrate DRR and CCA. Not only by conceptually but in terms of practice both regional level, sub-national level, national, and international level.

And UNISDR also recommends the functional linking of DRR and CCA Within the context of poverty reduction because we are ignoring that poverty has to because there is a bottom level situations how we can actually communicate to them, how we can increase, how can address this poverty groups, who are the marginalized groups who are often affected by the disasters. And who have a bigger impact on these climate change impacts.

We mentioned about these eight missions, but the important thing one we have to do is every mission is have their own objectives, every mission has their own action plans, every mission has set up to deliver certain things. But unfortunately they are all talking about habitat and Eco-sensitive habitats and how they are interrelating how these different missions are interrelated to each other, how they are coordinating with each other, how they are cooperating with each other. This is one thing which we have to understand, and this is a very little focus in on disaster risk reduction. Because their each mission is focused on the green emissions, on climate change, in but how they are able to see the disaster risk reduction as one of the integral component within it.

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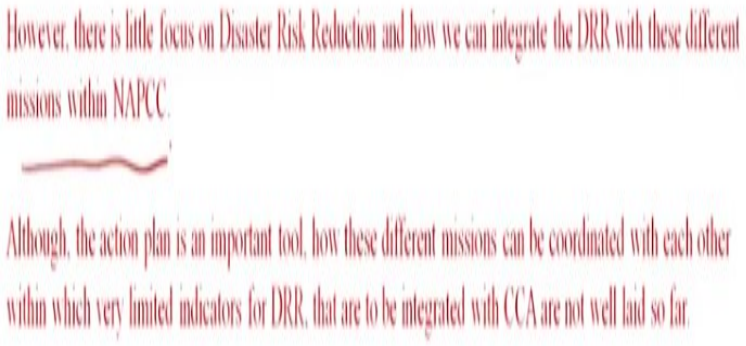

So this particular aspect has not been laid so far.

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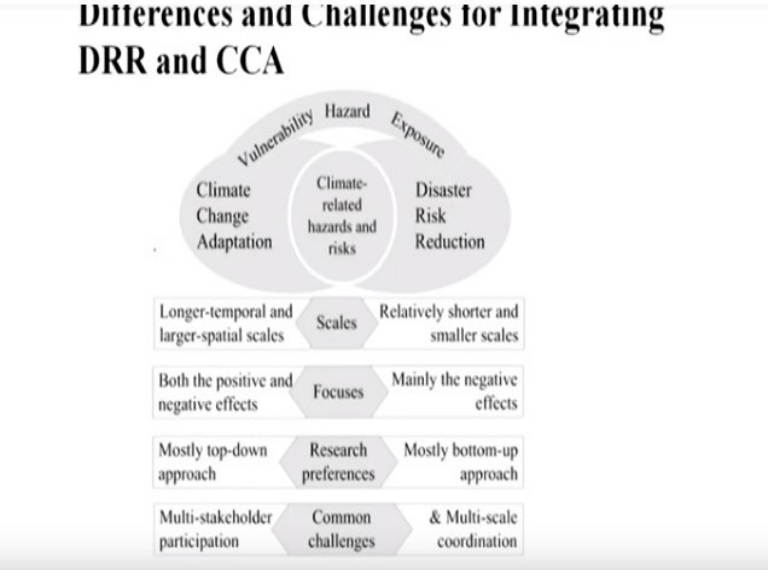

And before getting into any further discussion, I think we need to understand what are the major differences and challenges for integrating DRR and CCA. So one is you have John Berkman, and many other authors have listed out these are the fundamental differences and similarities you know how they are they have these challenges bringing them together.

One is the scales, because they two talk about different scales. The CCA talks about the more longer and temporal and larger spatial scales. Whereas disaster it talks more on the shorter and smaller scales you know it triggers by the event and it talks about the both positive and negative effects and whereas here the disaster is mostly focus on the negative impacts. The research preferences it is mostly on the top-down approach, but these are the preferences which mostly on the bottom-up approach.

Whereas the common challenges which has a multi-stakeholder participation and multi-scale coordination.

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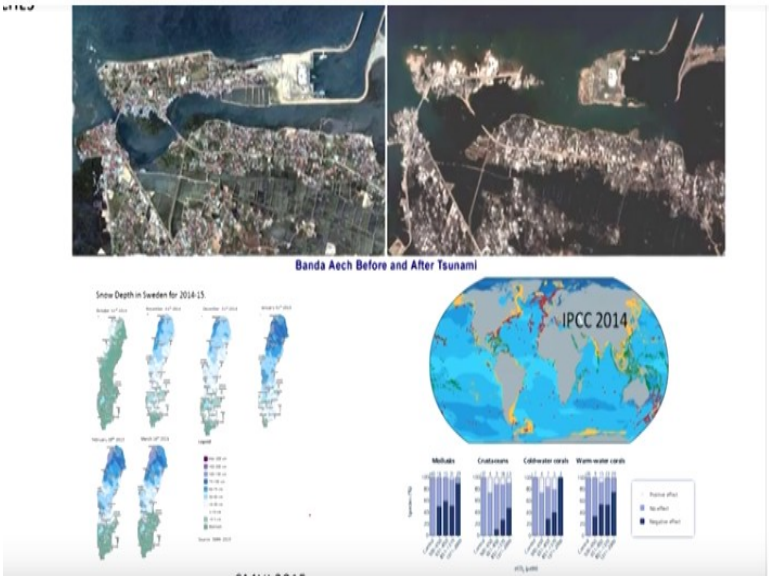

So for instance scale mismatches and if you look at any particular settlement like this is Banda Aech before tsunami and after tsunami, and it is being focused in that particular spatial level where it has an impact with the disaster with a little tsunami or an earthquake. But when you look at the weather impacts like this is from the Swedish methodological agency and where we can see the snow cover have started gradually reduced from year after year.

So earlier it was 8 months snow cover, now it is six months, now it is gradually reducing. So they have both positive and negative impacts. For instance, the farmers say yes, snow coverage less so we may get an extra crop but there will also other impacts; the temperature is increasing on it, and it has impacts on the health and as well as the communities the way they live.

So and similarly the climate change like what you can see is the coral reefs, which has a negative and positive impacts and no effect on the global level. So one data is talking about a global level impact on the coral reefs, and the other data talks about the snow cover impacts, and the other data talks about very limited to a spatial scale maybe the affected area. So this is where the DRR and climate change have a the data itself talks in a 2 different scales.

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Like for instance, we are also I want to bring you that when we talk about culture you know how this culture is related to climate change and disaster risk reduction. So I would like to bring one of the important contribution of Regina Mapua Lim where she talks about the Philippines cultural identity on traditional settlements in development, and she uses a framework of cultural environment for analysing these indigenous traditional settlements and their cultural identity, and their understanding towards the impacts of the climate change and as well as the day-to-day routine vulnerable situations.

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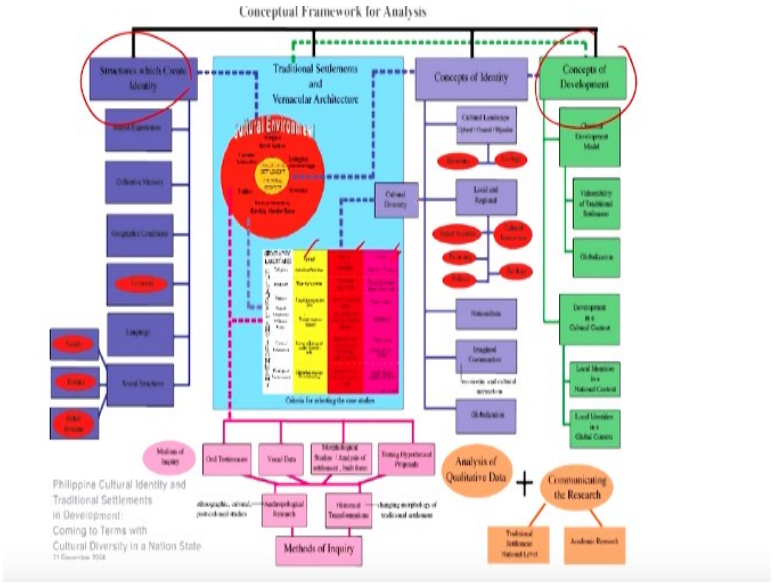

Like if you see the Philippines, you have the mountaineers culture on the top, and you have the mainstream culture The Tagalog mainstream culture, and you have the sea culture which is the

Coran islands. So about 7,000 islands that compromise the Philippines there are over 120 ethnolinguistic groups that continue to inhabit traditional settlements spread out over the Archipelago.

So these vernacular settlements are located in different terrains within ecosystems creating economies, or ways of living particular to culture place and people. So they have their own language, they have their own dialect, they have their own culture, they have food habits, they have their dressing senses, they have their communal understanding.

So what she did was she developed a kind of conceptual framework of analysis. So she actually looked at how what kind of structures that create the cultural identity, and that concepts of development and she worked in this cultural environment framework of how the mainstream cultures, alpine cultures, and the coastal cultures how they respond, what kind of systems they do have, and that is what she derives some very participatory approaches.

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Like for instance, and some of these rice harvesting culture, where these mountain people like they have these rice harvesting as one of the important livelihood source. And here even the pig is also one of the important food which they consume, and you can see that they also conduct lot of feast of with these pigs and also big jaws and you know they put the rice bundles and which are actually a symbolic representation of the ritual feasting.

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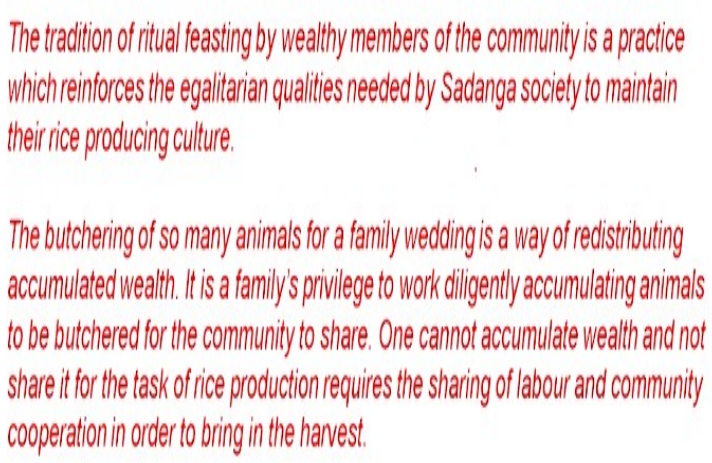

So, in fact, there are different hierarchies within the community, and that is where the tradition of the ritual feasting by wealthy members of the community which is a practice reinforces the egalitarian qualities needed by Sadanga society to maintain the rice production culture. Because the butchering of so many animals for a family wedding is a way of redistributing the accumulated wealth to the poor.

It is a family's privilege to work diligently accumulating animals to be butchered for the community to share and one cannot accumulate wealth and not share it for the task of rice production requires the sharing of labour and community cooperation in order to bring in the harvest. So here even the traditional feast it is talking about how it actually one is sharing his wealth, and that is how brings the labour and the community's cooperation. So that they have to come together for the harvest.

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The rituals are performed and the local gods appealed to for the protection of the rice crop. The Sadanga language is used to conduct these rituals and to negotiate the numerous peace pacts, which define the territorial boundaries and rights relative to their neighbours.

Water rights understandably have been the cause of tribal wars because it is a resource essential to the cultivation of rice, without which an entire settlement could be starved

Tribal wars have been fought because of water, how it is channelled and distributed

Now they also use the Sadanga language to conduct these rituals and to negotiate a numerous peace pacts which define the territorial boundaries and rights related to the neighbours. So these feasts also brings the neighbours together they also discuss various stocks, and they also talks about the water rights understandably have been the cause of tribal wars. Because it is a resource essential to the cultivation of rice, without an entire settlement could be starved.

So they also discuss about these water rights; how to share the water because when agriculture has become the main occupation, one has to look at water resourcing and distribution is an important task among the communities. So even these traditional patterns also formulate certain negotiations within the distribution of natural resources accumulate I mean sharing of the accumulated wealth, and bringing the community together like I will show you a small video of Regina's work watch it.

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Video Source: https://www.youtube.com/watch?v=3pDCY5X99fQ

So you can see that you know even the kind of grainers how they store and how the whole ritual process have been organized within the community and again across communities.

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Also talks about the common shared systems and how they shared land the elders plays an important role. **(Video End Time: 18:56)**.

And here it becomes you know the rice culture with all the rituals believes the inheritance patterns and all these associations with the land and territory continue to be part of their identity providing means in their lives. So each and every system how the community lived they are all becoming a kind of structures that have created an identity for this community and how they can sustain.

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The sacred Kayangan Lake located in the centre of Coron Island is hidden from view on sea level. The waters of this lake provide drinking water for the swiftlets (Leprozo, 2001 cited in Lim 2008)

Whereas similarly in the Coron island which is actually the fishing settlement, fishermen settlements.

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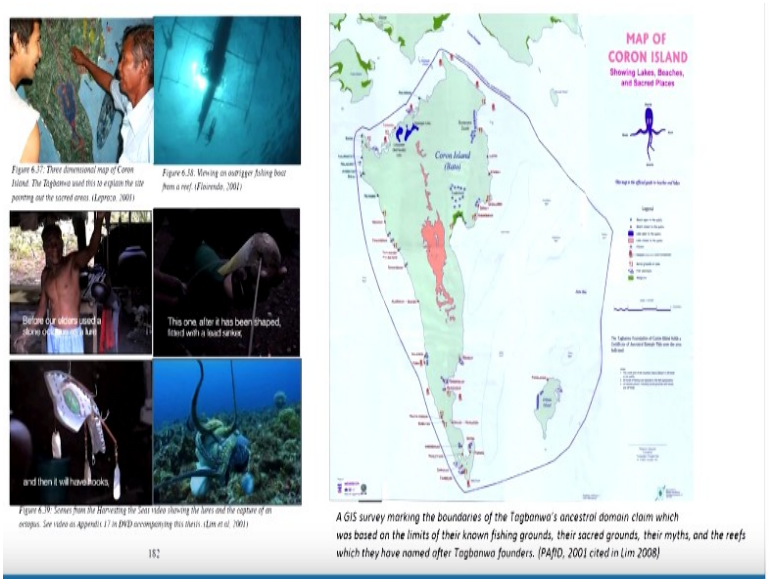

And how they can adopt the indigenous knowledge in understanding the fishing techniques and as well as understanding the nature or the ecosystems. Like Regina have actually a map given how the fishermen they understand the sacred places you know which are more important for the breeding purposes and where the community have defined the boundaries where they have defined the boundaries showing different lakes, beaches and the sacred places.

You know this is a kind of survey which have done how the communities have understood this.

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'The *panyaan* or sacred area is home to the giant octopus, my father taught me to avoid these places, it is a forbidden place. None of the indigenous Tagbanwa would go to these sacred places because they respect and recognize it (Fig. 6.25). When one goes to these places, the giant octopus holds on to the boat and sinks it till it drowns. When in sacred places one must remain quiet and sometimes ask permission for being there. Awoyok Lake, Cabugao and Calis have sacred places *panyaan* where there is a *manlalabyot*, a large octopus with seven or three large tentacles. Anyone can go to these places, the elders speak, 'Do not mind this person, he is from here (a Tagbanwa), do not harm him'. If a prayer is not intoned by the elders, a sickness will occur (Translated from the oral testimony of Roy Abella 2001 cited in Lim 2008).

https://www.youtube.com/watch?v=1TEVEcSXq5U

And there is also certain indigenous myths how they have also transferred some knowledge to the next generations that for example the Panyaan or the sacred area is a home to the giant octopus. Like one of the interviewers say that my father taught me to avoid these places it is a forbidden place, and none of the indigenous Tagbanwa would go to these sacred places because they mutually respect and recognize it.

When one goes to these places, the giant octopus holds onto the boat and sinks it till it drowns. So when in sacred places one must remain quiet and sometimes ask permission for being there like in Calis have sacred places Panyaan where there is a manlalabyot a large octopus with 7 or 3 large tentacles. So normally they have a myths which has been transferred from their forefathers and grandfathers where they say that you don not go to this place.

So they really respect that as a communal understanding, and that is how they say that you know there is a large octopus which might hold your boat and pull it down. So in fact when they ever happen to go to these places their elders speak do not mind this person he is from here do not harm him. If a prayer is not intoned by the elders, a sickness will occur. So this is all kind of intangible traditions where certain understanding of the lake, and the fishing, fish breedings and the nature of fish and how they have to respect these particular fishing grounds. So this all has to a part of the intangible traditions which pass from one generation to another generation. A small film of Regina's work will be again shown here.

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But here in the present conditions one has to understand that many migrated fishermen have understood that a lot of fish available here and they started migrating to these places and they had adopted different various advanced fishing techniques.

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When fresh fish became a prime trade commodity, this also brought in migrant fishermen with advanced fishing techniques. These techniques were not necessarily always environment friendly: the use of dynamite, fine nets that catch even very small fish fry, the pounding of the coral reefs to drive fish into the nets, all created problems of over-fishing and the destruction of the environment where the fish live and multiply. But bringing in the precious commodity was more important and immediate than environmental concerns particularly for migrant fishermen with nothing to tie them down permanently to a place.

With the fish gone, they move on. Tagbanwa myths were of no relevance to the fearless migrant fishermen termed *Bisaya* and *dayo* by the Tagbanwa.

In order to compete with the migrant fishermen, the Tagbanwa learned new fishing techniques that did not go against their beliefs.

And they are not necessarily environmentally friendly, but they might have used a dynamite, the fine nets that catch even a very small fish fry, and the pounding of the coral reefs to drive fish into the nets, all created problems of overfishing and the destruction of the environment when the fish live where the fish live and multiply. So these advanced techniques these newcomers into these islands they started using the fine nets.

So that each, and every net have a different proportion on how what kind of fish it catches and it can hold. But now they are not leaving any more fish, so that is actually bringing a lot of environmental concerns especially with these migrant fishermen, and because when they are coming in different place they are not tied to this place they are not their attachments are never tied to a particular place.

With the fish gone, they move on to another Island that is what so these Tagbanwa myths were no relevance to the fearless migrant, and in fact with these migrated fishermen coming into the picture even this Tagbanwa learned new fishing techniques that did not go against their beliefs. That is how it has an impact of one do not understand the cultural aspects and how different cultures understand their ecosystems on the environment.

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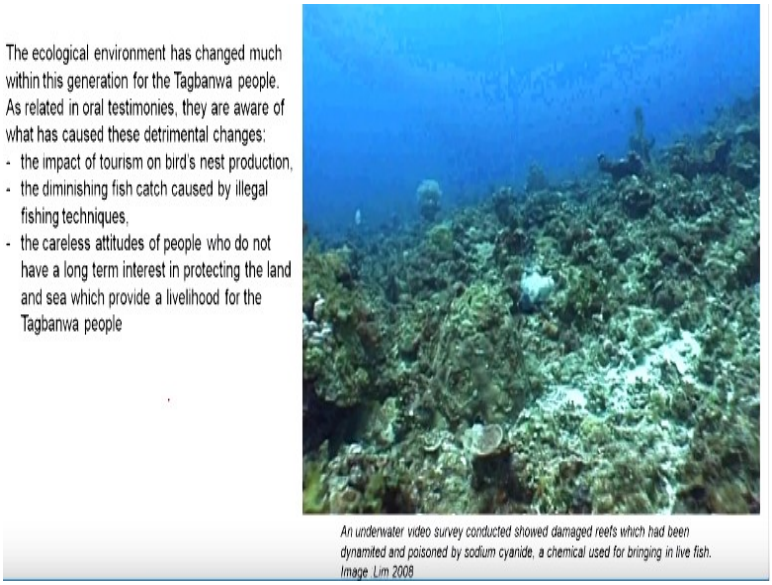

With this what you can see that how the coral reefs have been damaged and because of using the Dynamites and poisoned by sodium cyanide which used for bringing in live fish. So now one can see them, one can witness how it has an impact on the coral reefs you know one certain coral reef has been damaged and obviously it affects the marine system, the marine system is affected when aqua system is affected. It also affects the human systems, so there is a chain process, in fact, the impact of tourism on bird's nest production, the diminishing fish catch caused by illegal fishing techniques, and the careless attitudes of the people who do not have a long-term interest in protecting the land and sea which provide a livelihood of the Tagbanwa people.

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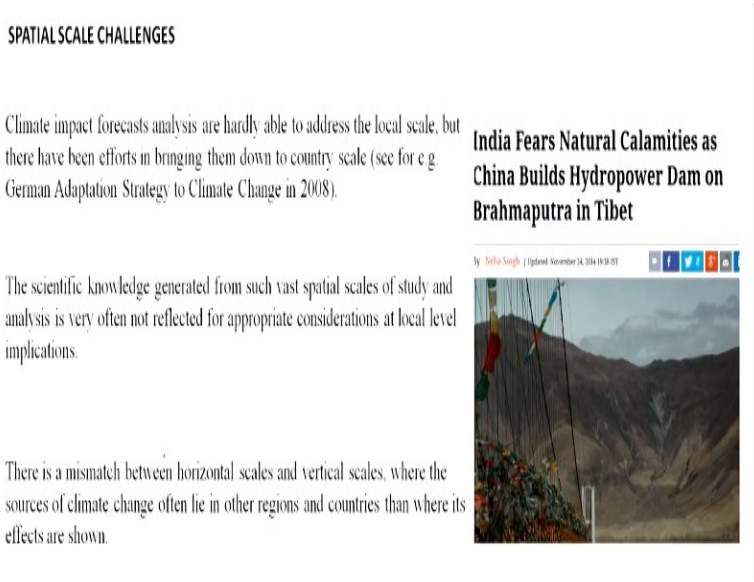

So these are some of the interesting facts that how local cultures understand the ecosystem and the environment, how these myths also protect the environment but when the foreign intrusions comes, how they get impacted, and one do not understand the other cultures interest and knowledge.

There is a spatial scale challenges when we talk about the climate change it talks about its very it talks up to much bigger scales, larger scales whereas the disaster it talks about much more to the pointed affected areas. So it is very difficult to bring them together, for instance, when we talk about a flood impact in somewhere in Bihar it may not necessarily that the impact the cause is from the same place it might have been the cause the root cause might be in some other country which is in China like for instance of China builds a hydropower dam on Brahmaputra in Tibet. It may have impact in the Indian subcontinent.

So it is the cause is falling under the different political interest and the mind so it is a challenges in addressing that as well. So there is also a mismatch between the horizontal scales and vertical scales where the sources of climate change often lie in other regions and countries then where it is affects are shown. So and also there is a scientific knowledge which has been generated from a very vast spatial scales of study and analysis is often not reflected for appropriate considerations at local level, this is the gap one can understand.

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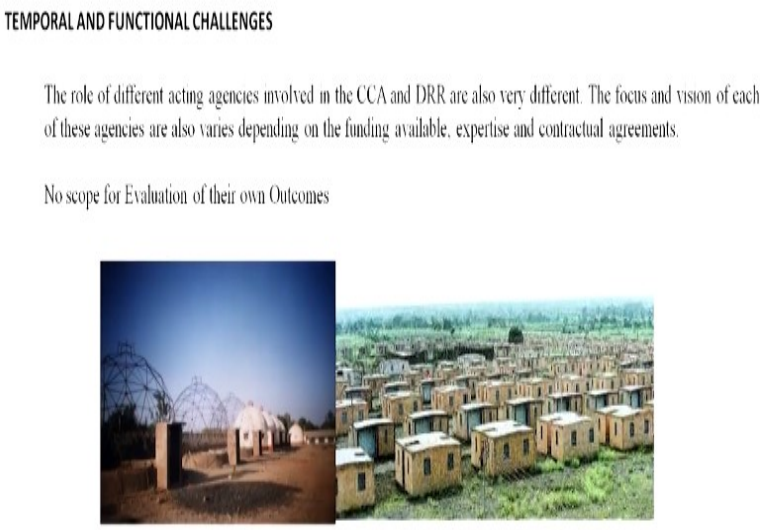

Also, the temporal and functional challenges; when we talk about the temporal and functional challenges, it is also about the role of different agencies whether it is an NGO or a government sector or quasi-government which whoever are coming so especially the NGOs who are coming the agencies to do the disaster recovery projects. They are here on a contract, they are here to do certain targeted work.

Whether it is a livelihood dimension, whether it is a shelter dimension, they finish that, and they move on, their visas are also expire, and they move on. So long run what happens, who will take care of it, so they do not have long-run commitments of how this place will get modified further, how people get adjusted to it like there is no proper evaluation. The Ministry is only evaluate how many houses they have provided but not on how they have been accommodated. How people have responded to it what are the temporal changes it occurred you know how to make it into a mainstream development procedures. So for instance in Latur and Gujarat we can see even some of the houses still or empty unoccupied.

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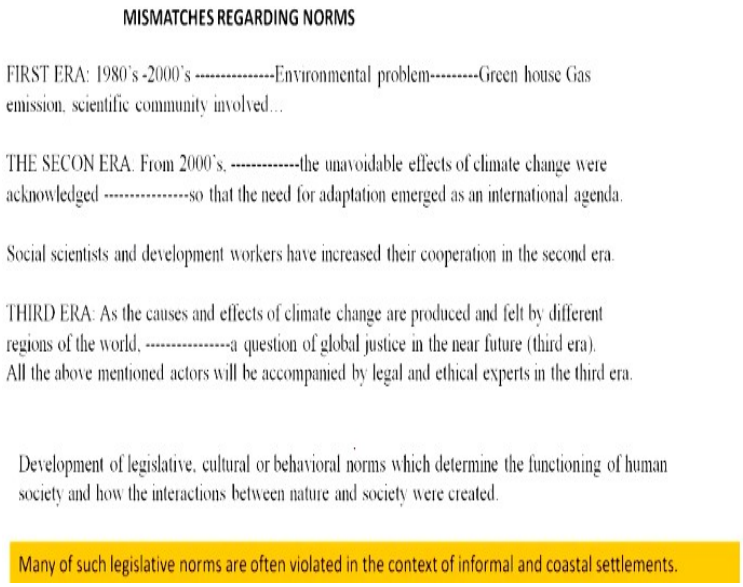

Where we have also the knowledge mismatches in the norms when we talk about the climate change, it was when it was discussed in the 80s which was the first era from 80s to 2002 it was mostly focused on the greenhouse gas emissions. Where the most of the scientific community are involved, it is an environmental problem.

Whereas in the second era from 2000s this has been seen by the International agenda, and also the social dimension come into the picture where the social scientists and the development workers have increased their cooperation in the second era.

In the third era it also looks from the you know this has been felt by other countries and other regions. So this is become a question of global justice in the near future that is where the legal dimension came in third era which is, and this is where we need to talk about develop of certain legislative cultural and behavioral norms which determine the functioning of human society and how the interactions between nature and society were created. So many of these legislative norms were often violated in the context of informal and coastal settlements. For example, the coastal regulation zone which was formed in 1991 and revised 19 times until the tsunami have struck. But then they were barely implemented.

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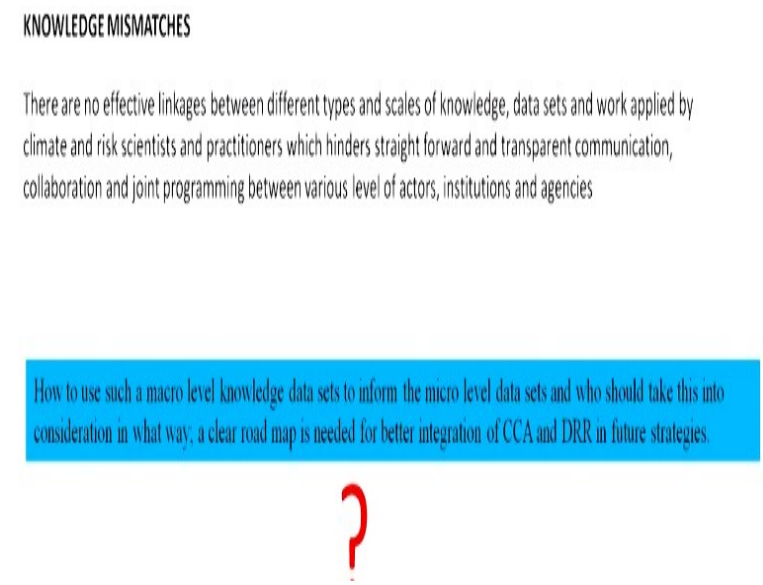

Also the knowledge mismatches when we talk about different scales, different data sets, different climate and risk scientist's practitioners which they do not bring the transparent communication and collaboration and joint programming between various levels of actor's, institutions, and agencies. So there is all this actually leads towards an important question of how to use this macro-level knowledge data sets to inform the micro-level data sets.

And who should take this into consideration, in what way a clear roadmap is needed for a better integration of CCA and DRR.

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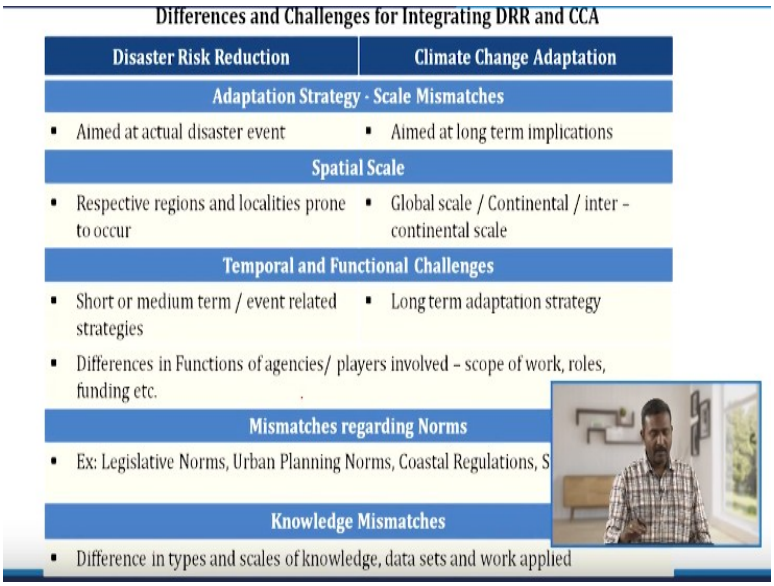

So to summarise whole aspect we see that differences and challenges we have disaster risk reduction and the climate change adaptation. This because it is aimed at the adaptation strategy which tells of scale mismatches because it is aimed at disaster event, it is a long term implications. A draught is not just only a matter of one month, it may come from years of years or together.

Whereas the spatial scales respective to regions and localities prone to occur, well it is a global scale sometimes is a continental and intercontinental impacts. Temporal and functional challenges; because this is more to do with the short and medium-term and mostly to the event related, and this has more of a prevention and also the long term adaptation strategies. Here the differences in function of agencies plays players involved and what is the scope of work roles and funding, because at the end of the day, funding is the most important part.

Mismatches regarding the norms: when we have the legislative norms, urban planning norms, coastal regulations how they enter do not relate to each other that is one aspect. Knowledge mismatches when we say the different types and scales of knowledge data sets and work applied.
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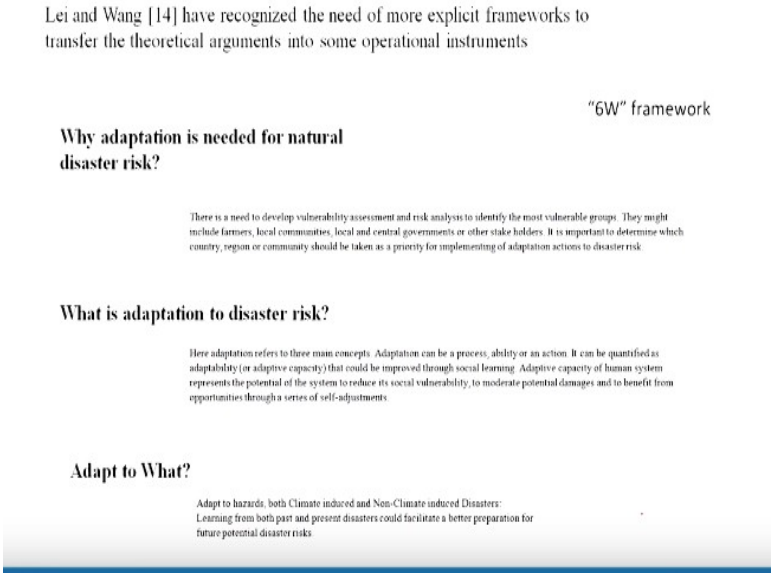

So for this Lei and Wang they actually come up with more explicit frameworks they call about "6w framework". So they talk about why adaptation is needed for natural disaster risk, what is adaptation to disaster risk, and adapt to what, who has to adapt?.

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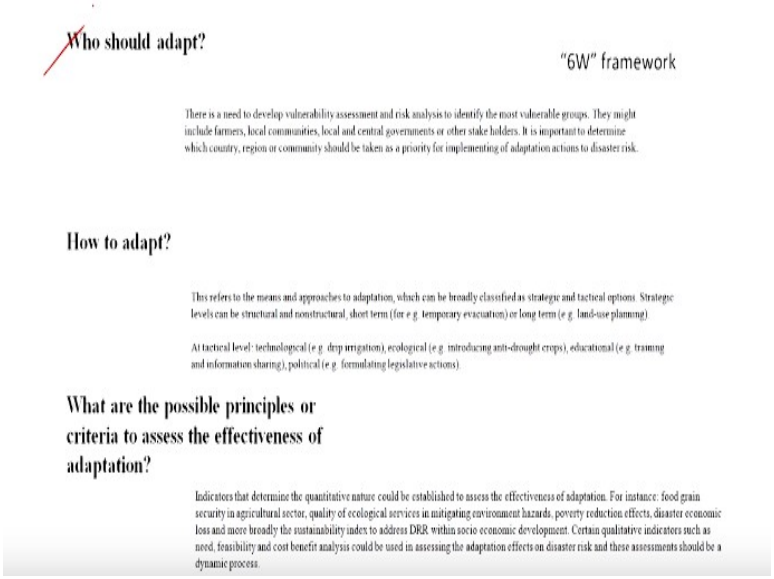

Who should adopt? How to adapt? What are the possible principles or criteria to assist effectiveness of adaptation?.

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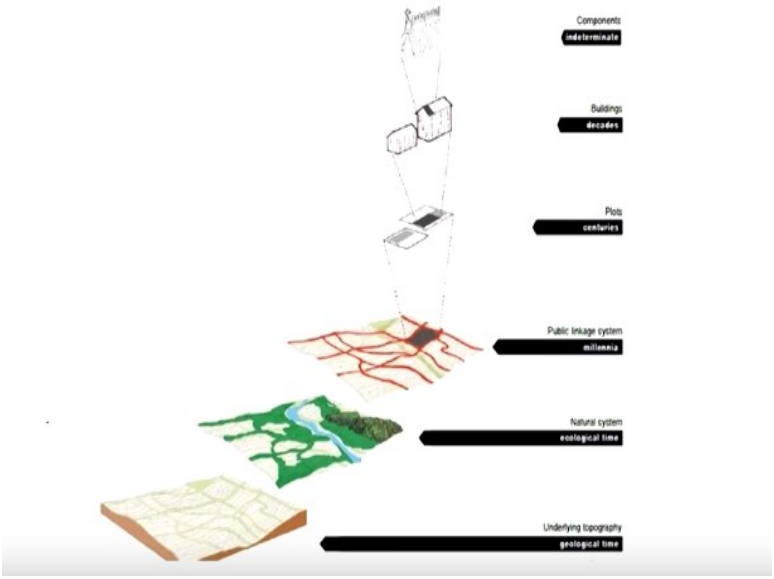

So there is a brief summary of this whole 6w framework has been listed out and now one of the important understanding from a built environment perspective what we can see is there is a scale mismatches. The spatial levels data so it is always if you look at the built environment we as a planners or architects we only look at the plots buildings and elements. We completely ignore the underlying topography and the natural systems ecosystems, and the public linkage systems so they all are interrelated to each other so one has to see the different sets of data how they can

come together, and how can macro-level information can be informed the micro-level information.

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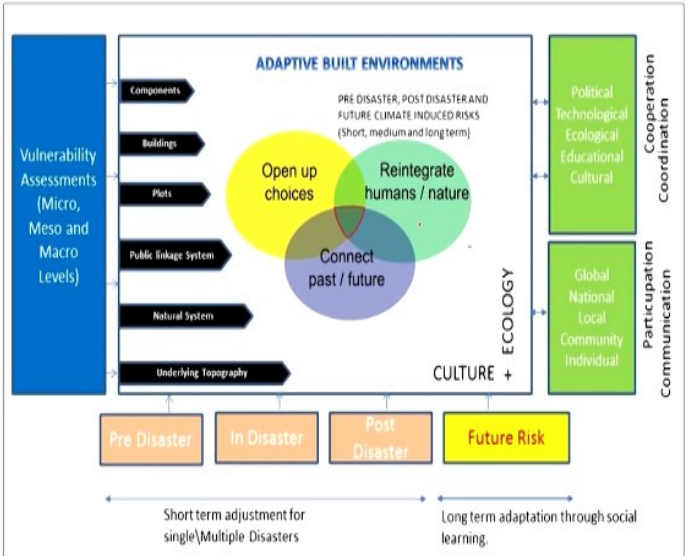

So it is where in my current ongoing study I developed this framework where we have the spatial dimension and which has also the vulnerability in impacting on these, and there is also the adaptation process both pre-disaster in disaster post-disaster and the future risk which has a short-term and medium-term of single and multiple disasters. And this has a long-term adaptation through social learning. And here we can see that how the nature and culture can come together.

And this also talks about how the adaptive built environments open up choices, connect past and future, and how it can reintegrate the humans in nature for which cooperation coordination between various agencies political, technological, ecological, educational and as well as the participation and communication across various segments the global actors in the National. So all these things has to come this is a very holistic framework which we worked on.

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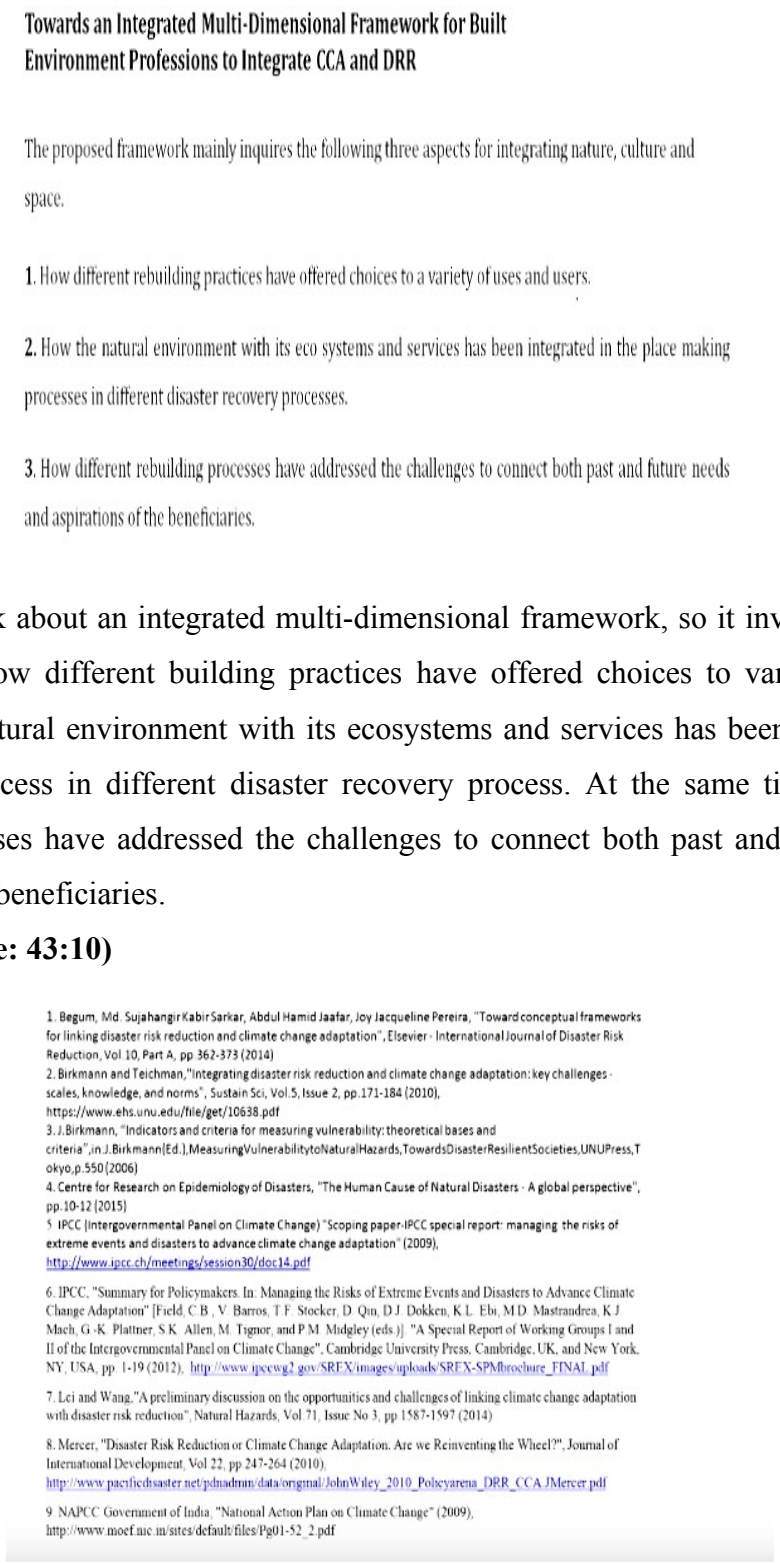

And when we talk about an integrated multi-dimensional framework, so it investigates on three aspects; one is how different building practices have offered choices to variety of users and users, how the natural environment with its ecosystems and services has been integrated in the place making process in different disaster recovery process. At the same time how different rebuilding processes have addressed the challenges to connect both past and future needs and aspirations of the beneficiaries.

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So there are few references listed out so one can actually go through that. Thank you.