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Housing Policy & Planning

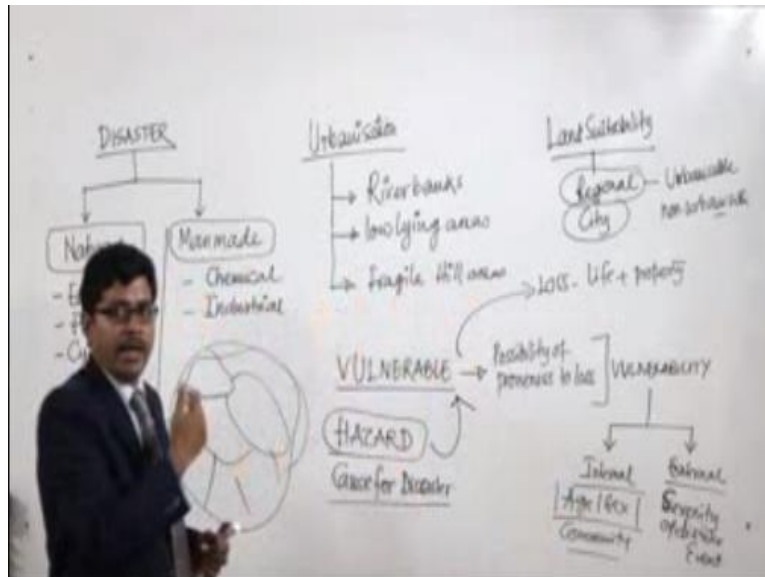
**Lec – 36
Disaster Resistant Housing**

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Hello welcome to lecture 36 so far we have covered the policy and the planning element of the housing at the city level and at the local level we discussed most of the housing typologies one by one, how we can take this strategy at the city level starting from the formal housing strategy to informal to various types of housing typology. In today's lecture we will discuss another very important element which is very important to take care and integrate within the housing strategy at every level it can be taken at the city level, regional level or even at the project level we have to take care.

And that is much more important related to human life and its security and safety. So disaster resistant housing that is the topic for today's lecture. Now I hope you have heard this term disasters.

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Disaster probably in some of the recent events like earthquake, flood or any land slide or any events you have seen, you might have seen that because of the disasters there are human casualty, loss of property and huge loss of resources nationally and regionally. So because of that the first, why so much casualties are there like let us take an example of the major disaster like say, recently the Nepal earthquake, the earthquake in the contour or vogue or any area where the earthquake comes, the cyclones which comes and the coastal region of India the land slide or the flood happen in Uttarakhand in 2013.

So all these there are disasters and also take the disaster like say the chemical, the gas disaster in Bhopal the city of Bhopal or the plague outbreak in the city of Surat in 90s. So any of the disaster even if it is a kind of a manmade or the natural disaster you will find that the first thing why people get so casualty because of their structure where they live. Other than the disaster situation wherever they are living this structure is safe and secured.

But during the disaster situation the building becomes vulnerable to them. So this is one of the reason, that is why we need to discuss the methods and how we can take the strategy to strengthen the security of the safety of the planning, the context and the building both at the, for

the housing projects. So before that let us discuss what are the types of disaster, basically there are two types of disaster we follow.

One is natural and second is manmade, so out of natural disaster we consider the earthquake, flood, cyclones then draught, land slide, and within the manmade disaster there are chemical disaster, industrial disaster, and kind of similarly any other disaster which is created by manmade. One of the thought behind this kind of differentiation of natural and manmade disaster is if you find that for the manmade disasters, the disaster it is cost due to some events.

For example, earthquake which could be the, if created due to the event of the super imposition of the tectonic plates, you know the tectonic plates in a earth surface there are various tectonic plates. So because of the movement of the tectonic plates and their conflicts, and their collisions the earthquake takes place, but people die out of the earthquake people does not die with due to the earthquake.

They die because of the structure below where they are living collapsed so it is how which makes him vulnerable to the disaster event. Similarly, the flood can be caused by heavy rainfall, now heavy rainfall can cause the flood for example you can take the example of the 2013 flood in Uttarakhand. So due to the huge rainfall for 2 to 3 days continuously the huge amount of water it came to the river banks and flooded the whole settlements.

Now one thought is that for earthquake, flood, cyclone, draught and land slide we have seen that because of the urbanization, because of the higher urbanization there are tendency to encroach or to make the settlements in the vulnerable areas. So if you make the urbanization in the vulnerable areas like mostly river banks, low lying areas, fragile hill areas etc. So if you make urbanized were settlements in all those vulnerable areas you are more prompt to get the casualty and the loss due to disaster event.

That is why some people, some scholar they say that all the natural disasters are not natural and there are also elements which is made by the people and the men of the men like making the urbanization in the vulnerable areas. So for all kinds of disasters it is not, there is a mix and there

is a combination of the manmade and the natural elements. So as a result of that we become more vulnerable.

Not let us discuss briefly the meaning of the vulnerable term. So because of the disaster like I tell you that after a earthquake event there are many houses in a particular place, but maybe out of all those houses one or two houses could be very strong and it is designed considering this safety codes and biolysis, biolos. So as a result of that those houses become strong and those are not creating any loss to the people who are living inside those houses.

On the other hand the people living in the other houses which is not that much strong, they become more prompt to that disaster event. So they becomes more vulnerable, so meaning of the vulnerable is that the possibility of promptness to loss. So vulnerability, so it is defined as vulnerability. So vulnerability depends on two factor one maybe your internal factor, one maybe external.

For example, you are physically weak, so if attained by a pathogen where does bacteria's comes, so you may be very much acceptable for the virus attack or bacteria attack. But if your immunity system is stronger enough you can withstand that attack by the pathogens. So that becomes your internal factors, so vulnerability depends on two factor which is internal and another is external so one building may be that can with stand the earthquake event of say Richter scale 4 or 5.

But if there is earth quake of 6 peak range say 8 to 9 at Richter scale that building may coolabahs or may get to that even so if the external the kind of the external the amount or the volume of the danger sue to the external events increases the vulnerability so one part is internal which is inbuilt within you or the people it depends on the edge okay.

And the particular community and the profile how much they are sustainable to disaster and the external event depends on the servility of disaster event like so with this vulnerability we discussed another term that is hazard so hazard is the event or the cause for disaster okay a flux situation or a heavy rain fall can be a hazard or cause for the disasters so hazard leads to the

vulnerability and this leads to loss of life and property right so what we can do for this type of so in this situation.

Now disaster now let us aspect that the disaster is the disaster events or innovative we cannot like we cannot stop the earth quake it is such event that it is negative to come in any point of time in some of the areas but what we can do that we can definitely restrict organization in the vulnerability areas or we can promote the urbanization in those areas which is less vulnerability that is why in the overall planning context what we discussed earlier during our housing strategy we talked about the land suitability analyses.

So when you discuss the land suitability we not only discuss about the land cover all land use it is topography it is water availability nor the connectivity we also see we the suitability of the land for the human habitation if it is very further in the low lying areas we definitely we should not year that land for the further organization or further housing areas if it is in the river banks within the areas of the natural river bank areas we should not promote the verbalization there if it is there in the special here areas similar we can identify several hazards lands which we should execute from the further urban sable area.

So this land suitability could be done for as the regional level and all city level so at the regional level or the district level we air mark the pockets of the areas which is urban able and also no urban sable right so following that kind of zoning we can so week we end of in the areas where the possible housing and the further development can come up now this type of zoning in the city plane or the reversible will not be sufficient to take the address the reason satiation I tell you that we already discussed that dictator is illimitable and we have to accept the disaster events and we have to address so for any disaster we have our strategy is to.

Accept and the address now how do we address the disaster event there are 3 stage of addressing a disaster event so one is pre disaster another is during another is the post disaster basically of the pre disaster level by enlarge what we do is basically we take the planning intervention and prepare for during or for other stages okay so in a word we can say that it is the basically preparedness for phasing the disaster how we are prepared whether where prepared with the

adequate planning intervention as I discussed with the urban sable zone and the non urban sable zone those kind of action we have take or not apart from the zoning.

So in the planning mechanism we have discussed that we can make the zoning at different level regional and city level so this can be one action the second action could be we have to also bring development control in such a way so that development control we will ensure the safety and all kind of safety measures again the natural disaster and manmade disaster so in the development control we have to bring the a square codes and standards for designing the building contraction contracting every type of building including housing.

So the code are standards are available in India for safety the flood safety land slide and all kind of disasters situation so in the lecture note least of such standards and code will be available please go through all the standards and try to see that what are the provisions under those standards but definitely at the development control level you can ensure by taking under taking and the adequate undertaking declaration drawings particular forms the building plan proposal.

So that you can ensure that the building is designed and constructed following the hazard safety codes and the standards so at the planning revalue and making zoning at the building level you are ensuring the developing control and also you are enforcing it by using your mechanism the second part is the your action which is required during the disaster taken an example of an any disaster like cyclone or flood or any earthquake or any disaster that time you basically you have to act.

In a very prompt manner to give the to provide the relief and the operation in most of the in some of the cases you might have do work as evacuation could be another but evacuation is possible if your prepared is in terms of other stages robust in a for the example in Odessa cyclone which came into in 1999 it took lot of lives but the Orissa cyclone which came few years back which the name of that cyclone is silent that time very less casualty was their because the administration they were much more prepared than the earlier time they are much more prepared.

And because of their preparation and their preparation for the evacuation release an operation and most of the people were safe and it was possible so evacuation depends on your level of prepares in terms of your men power technical man power train man power the equipments through which you will give the relief and you will operate the connectivity like say transportation possibility the communication system during the disaster events we will lose your communication in terms of.

Your tele communication electricity system will be disrupted so every aspect you have to be prepared to take the action and after the this stage your action will be after the disaster your action will be basically reconstruction so in the reconstruction phase you have to reconstruct the building which are affected and infrastructure like roads and so building and infrastructure so up to some extent with affected building also you can retro feet that means you can retro feet some of the, the strengthening measure following the codes and standards that is possible in the building.

So deconstruction maybe possible with using building retrofitting so retrofitting is the science at the method by inducing the strengthening measures after the building is constructed it can be given after the disaster or it can be done either at the pre disaster situation also in this stage enforcing stage and also you have reconstruct the basic infrastructure so that the people can come to the normal flow of their life another thing you should remember in this situation that all these stages consider.

Two major elements of action so one is structural measure another is non structural, structural measures at the measures or actions an interventions which is related to the physical element of the building and the infrastructure so whatever we discuss like the zoning control mechanism building construction the enforcement and the development control all these are structural measurement okay, retrofitting reconstruction of the building and the infrastructure but think about the situation after the disaster.

Then immediately within few moments or few minutes people become house less so they get a mental shock mental trauma so what we can do for that kind of trauma so they need some kind of counseling or mental rehabilitation or sometimes we have to do some kind of awareness camp even before the disasters so that people become much more aware about the preparedness and the during and post disaster events and they are role during the disaster so those kind of activities which does not related to building and the infrastructure directly but which improves the understanding.

About the disaster and which increases the role and the responsibility of the people pre during and post disaster situation those kind of measures are called as non structural measures are called as non structural measures so basically the outcome of the structural measures are physical which can be tangible you can see that some building has be retrofitted some new infrastructure has been done some new bund has been constructed some new connectivity has been done some building has been constructed as a cyclone shelter or emerging shelter so those are .

Physical measure or the final outcome but the outcome of the non structural measure where are the physical sometimes it is mental it could be spiritual or physiological right it could be cultural for making awareness camp and against the natural disaster the kind of language you have to use for different line way zone different geographic zone will be naturally different so those are the variations of the social and cultural aspect and those are part of non structural measure so it is impact will may not be measurable by physical scale.

It will measurable In terms of they are understanding and the prepared days of the people now these are overall theoretical frame work now let us see what are the legal frame work associated with that now with the disaster and it is related effect now for the disaster in 2005 government of India they have come up with disaster management act at under this act every state government they have to frame disaster management authority not only that the authority is not sufficient.

The authority is at the state level this will lead to the disaster management and districts cities and rural areas so this kind of hierarchy framework like disaster management authority is also framed at the central level so the central disaster management authority state level disaster management authority and district level city level will read about.

The management sales will work integration to alleviate or to minimize the effect of the disaster and specifically related to housing and settlements and the infrastructure which is related so this legal framework is that as if the act some of the state government there have already framed that disaster management authority some of the district authority also have the disaster management sales but at city level.

We need lot of proactive trend manpower disaster management sales which will not only the act against the natural disaster but a city is prom to several other stresses like risk water logy sudden rainfall of 2hours 3 hours water logging is there then there could be outbreak of the disease so for all those of the risk and the events you need a kind of a action groups or action risk or action group or people at the city level whose work will be to take action during any risk area during any disaster area and to integrate some of the intervention during.

The planning stage now here the planning comes that aspect this disaster management act and rules and regulations framed under that after that they have told that every city has to framed their city plan integrating disaster management aspect so this group can be very much trade and they can give their input during the plan preparation stage during the preparation of the housing strategy altogether so based on the legal and considering the theoretical framework what we have discussed we can integrate these all city development plan and also housing.

Strategy in fact it should be integrate not only the housing strategy and it should be integrating in all the respective sectoral plans like mobility sector plan sanitation sectoral plan then waste management sectoral plan because the disaster management is linked and integrated link through related to each and every sectoral plan so today we discussed the factors the element of the disaster management and how it is related to housing we told that for any disaster event it is related to housing because of the condition of the house it faces.

So many causality and property loss and we have told that they are manmade and natural disasters and the to get the loss or to get causality is called vulnerability, vulnerability depends on the internal factors as well as external factors the disaster defines called hedges and the effect of that would be is become the loss and we can accept the we have to accept the disaster.

So that we have to address the disaster in three phases basically pre disaster face during disaster phase and post disaster phase in pre disaster phase we make the planning we make the development control enforcement and preparation for the next stages during the disaster we make the evacuation refit and operation in post disaster we can make the reconstruction and the infrastructural redevelopment and also the we also discussed that there are two theoretical or two elements structural and non structural. Structural elements considers physical element and non structural elements considers the social cultural and spiritual elements.

And also discussed that there all legal mandates say 2005 disaster management act has come it mandates to frame the disaster management authority at central state and city level at the city level we need some trend man power to take the action during any refit time or any disaster events and those part of the process or vulnerability which may be differ from city to city place to place those has to be integrate in the city plan like city development plan and housing strategy so that whenever we take the action new take the housing develop.

The city we consider all those point according to the develop so with these we conclude to the discussion in next discussion we discuss another very important part though not in very details will discuss how housing projects are formulated and during this formulation of these projects how the element of the real estate is involved it terms of like financing in terms of the multi stakeholder active participation in the housing development those part will be discussed in the next lecture.

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