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Housing Policy & Planning

Lecture – 18
Development controls

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Hello the last lecture we, discussed the urban and regional planning we took some example to understand how the land dues plans and the master plans are made and out of that master plans how few parameters like density place a very important role to quantify the development in a particular sector or block. So based on that discussion will today we will discuss about the very important part of a development in a master plan which we are calling as a development controls.

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So we will take you in the journey to understand how form a overall policy and then planning and following the planning how step by step we are going to a design of a particular housing project in a plot. So step by step we will go that journey, so before I come to the next part let me take a quick look that what are the planning control tools we discussed at the planning level basically the land dues control then development control regulations rules and few more regulations.

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So out of these development control rules and regulations the first thing is build ability are the extend of the development first I read out the points then we will discuss each and every element. The mixing of land the building use then compactness visual impact and urban design. So let me start with the build ability like an master plan are the planning exercise in master plan or land dues plan we have build with primarily the land dues as a outcome land dues and the overall structure of a city and then also we discussed about the density.

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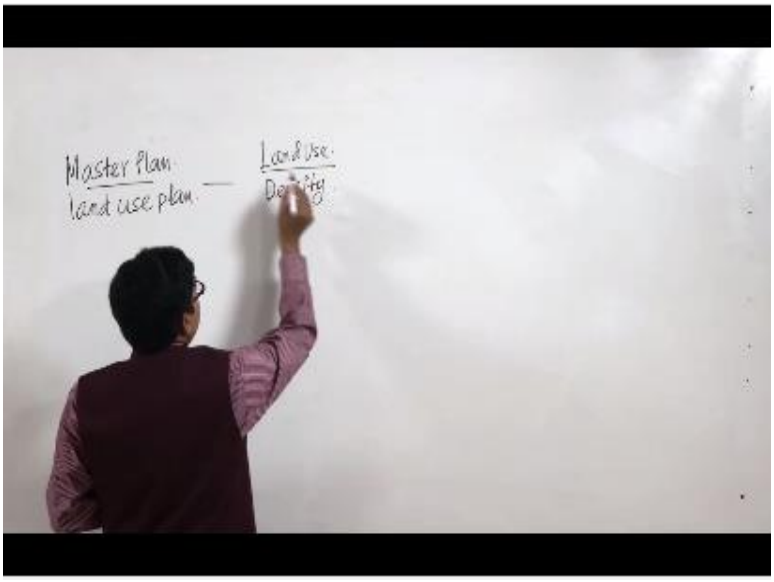

So this two parameter we dealt at the master plan level so at the master plan level basically these are the fundamental outcome of a city plan one is land dues, one is density. So land dues is a basically qualitative dimensions whereas the density is basically quantitative dimension and for discussing density we also mention that density has various levels at the city level, at the gross level and also at the net level.

Which is net density so for the land dues we deal with the gross dues and the gross density but this not sufficient to define a particular development on a given plot or a given sub land. So after that also the questions are, there what kind of building will be constructed what kind of mixing of the building uses will be constructed what is the maximum build ability of the building how much and how far we can build in particular plot.

What will be its visual locate how does it look like how big it will be what will be the height of the building so many questions come, so to define all those envelop and the building boundary conditions and parameters we need to develop few more parameters few more elements which we should discuss, before we go to the housing strategy. But so here at the land dues plan we

get the land dues and density which is qualitative and quantitative measure but based on the final outcome what we are excepting to develop to have a define scope define boundary of a particular housing project in a side.

So few more parameters like first parameter we discussed about the build ability are the extent of the development so, now the density which we discussed in the land dues plan this density is related to the extent so density we define that population divided by area. So while we take about the area when you take the gross density we take the gross land dues area when you take the net density we take the net land dues area. So its unit will be population per hectare or acre or square kilometer.

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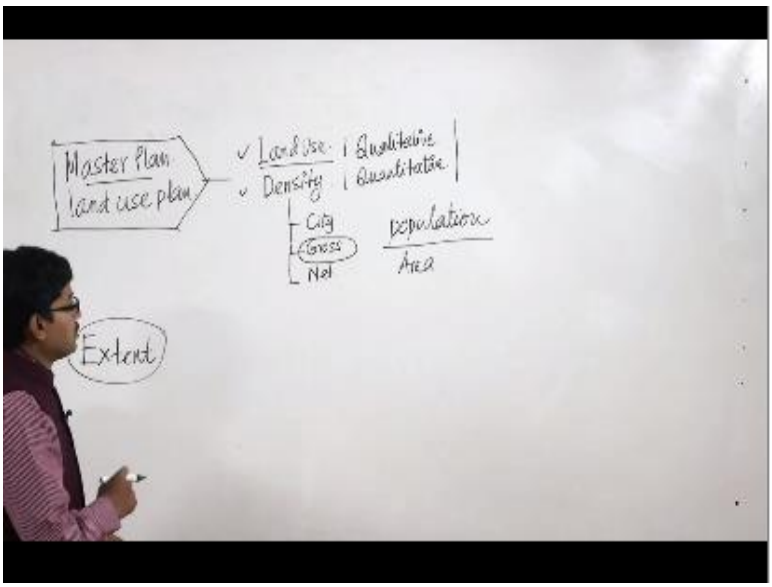

So here now this population for example for in a particular given city the density is say 500 persons per hectare now this 500 persons per hectare is a member how and another sector the density is say per hectare does it mean that this particular sector is more dense and more compact and more this is particular less compact. Let us see, theoretically this it depends on the how we are accommodating this 500 people and this 1000 thousand people over a particular floor area.

Definitely to accommodate in a housing project, to accommodate 500 persons and 1000 thousand person the floor area could be equal or floor area may not be equal. So if the floor area is equal then the per person floor area definitely will be less and if it is not equal then per persons floor area could be equal. So based on the floor area per person the total floor area required for a particular density may be varying.

For example, let us take very nice example so here the population what we are a accommodating here by it is a 500 or 1000 we are accommodating in floor area of a building or a housing project all the floor areas so that floor area becomes a very important criteria to determine the maximum extent so here we are equating the extend of development or build ability with floor area.

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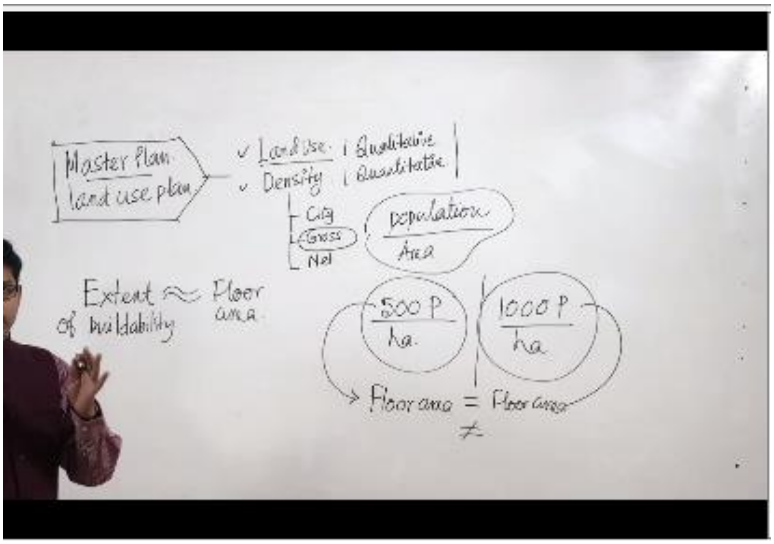

Now usually in a giver chunk of land or given district. The floor area maximum floor area permissible for any particular plot is uniform because as per the law of the land we cannot vary too much of the maximum floor area available for every piece of land in a given area. So floor area maximum floor area is equal then how we can vary the density here comes another variable that is the economic group.

Now we know the total floor area = the number of the unit * floor area of each unit. Now this number of unit = number of household basically, because we can consider at the every unit of the housing will be occupied by one household. Household means we can consider either 4 person or 5 person per unit that is the relation between the density and the floor area. Now you see this particular parameter the floor area of each unit these can vary as per the economic group for example if the economic group is HIG or MIG or LIG or economically weaker section.

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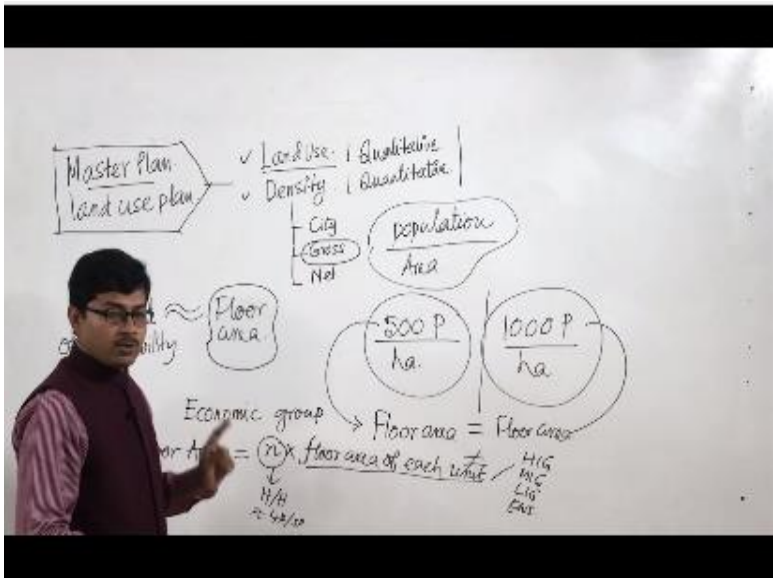

So the floor area per economic group will be different, let us take an example HIG can be 2000 square feet it can be 1000 square feet it could be 600 square feet it could be 300 square feet so you can see that how it can vary as per the each unit floor area. So if these can vary so to keep the floor area equal the total floor area equal the number of the amount of end the element of end can vary and within when the end will be varying so this total number of persons or family in a particular given area will be varying.

So that is how we maintained at the variable density by using different floor area of given districts so that is the total floor area now how we calculate the total floor area let us see, most of you those who are coming from the architecture background you can understand or you have

heard about the term FSI, so basically floor area is determined by the FSI which is floor space index that is the total floor area/ total land area.

So if the total land area we can consider as 100 so if the total floor area is 220 so floor space index is 2.2, so that is the index which we use for it can be any it is just for example we have taken 2.2 it can be 2 it can be 1.5 it can be any index. So that FSI will follow for a given residential district but definitely we can vary the density just by varying the unit side as per the economic growth but the tricks but the dealing of the planning or strategy which needs even after the master plan level.

Because at the master plan level the land dues and density is prescribed but density does not the density is figure only, so unless until we go the detail level of the economic group and the type of the housing otherwise we cannot come to the exact density which can be achieved so that is the very important part to understand that how the build ability and the density is related.

The next part is the mixing of the land and the building use now in a particular given land there could be various kind of mixing in the site and also within the building for example, this is the site and there are four building so there could be a mixing of stay out of four building this is a different use like this could be residential, this could be commercial. So within the campus within the plot we can mix the two different kind of use also is it possible that within the same building.

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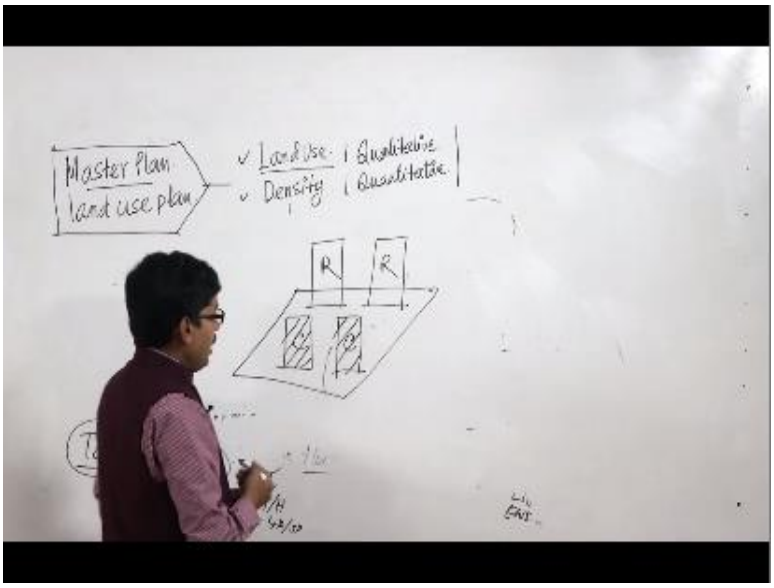

If this is a building, Residential building out of this one building may be one or two floors is used as a commercial so within the plot and within the building block how far we can mix. So mixing means the extend of mixing and type of mixing, so extend of mixing is represented as the percentage. So this is basically mix land use and type of mixing is basically given by authority by the planning document as per the list or the list of allowable mixes.

So these kind of stipulations need to be prepared or formulated after the land use plan is made other than this we cannot go into the project level, so this is very important part of the planning exercise which is done after the land is done. The second part, the third part is the compactness which is volume and ground coverage the relation between the volume and the ground coverage now we discussed about the FSI.

Now think about the situation that the same FSI or same floor area can be distributed over for example this is one plot and this another plot so the same floor area can be distributed over

comparatively low and medium storied buildings or it can be distributed over right. So we can go for high days and we can make two tall towers or less number of tall towers and we can go for low and medium rise compact developments.

So what kind of development we except out of the project if it is a HIG MIG economically weaker section or any other type of housing based on the it is context we can take the decision. Now this particular typology even if the FSI for example FSI 2 for example FSI again 2 but the development could be different so this basically depends on the ground coverage. So if these areas are like if we take this area, so total area ground coverage the foot print area of the building the amount of area which is occupied by the building and here the foot print also we can take like PNQ.

So you can see that the footprint is very much less than the because the same area is distributable for the whole plot in a with a low and medium storied building, so therefore it is the ground coverage which consoles the compactness or the extra type of the building, then that visual impact in a bigger scale in a bigger project if this is a total sight, what is the visual impact like this could be one set of buildings with a continuous multi storied and the tall buildings or there could be a combination of tall or midsized or low rise or midrise or high rise building.

So what could our visual or desired kind of the elevation part we expect but so using the effusive the ground coverage and the high stipulation we can achieve the desired visual impact of any housing development or any land dues development. So this is very important parameter these few parameters are very important to define the build ability of any plot which is based on the this build ability, we are building this build ability parameter based on the prescription of the land dues stand where we just prescribe land dues and density.

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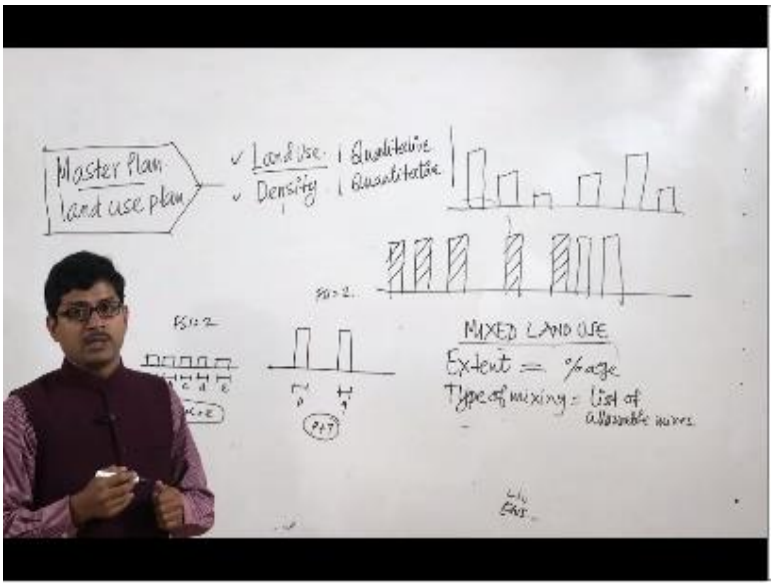

Another very important factor is urban design which is nothing but also includes these parameters and in addition to these parameters the urban design the subject to urban design deals with the elements which is also like if these are the buildings, different buildings in the different plots, so how a common relation visual relation can be established between the different building. For example, we can define we can design a commercial complex in a plot we can design another commercial complex in a different plot.

But when you see two buildings side by side how we can establish a visual relation between two buildings, so that in together both the building looks very nice and very harmonious so that is the relation between the form and the scale of the building and the color the texture of the building so those kind of elements could be designed could be understood in a better way so in urban design basically we establish, basically we establish visual relation between different buildings and also different plots now as an architect an engineer if you deal a single plot you developed so

many buildings there is also definitely some design criteria design philosophy to unite the all the buildings or the visual quality.

But if it is distributed for a large number of plots how do you do because number of owners are different number of owners are very huge and diverse, so how to establish a relation, so those kind of relation can be possible to establish if we make stipulations like, the color code, the texture the treatment elevation treatment and off course the parameters like visual impact compactness and the other parameters. To combine all these dimension we can make controlling system we can make a prescription system which defines the built element of our environment in any environment.

We have the natural environment but we are trying to define the built element which is buy and large predominantly dominated by the residential of the housing development. So these are the dimension now. Let us see the next part of the discussion, like now what are the parameters we discussed about the floor space index now floor space index is we should talk little more about the floor space index basically it is index which defines the maximum buildable area of a given plot. So for residential for commercial for industrial for cultural the floor space index could be different.

Now how what are the parameters, how does it differ, how does it affect or how it is influenced by other parameters who is the determinant of the floor space index now let me explain these things because for any housing development for any housing design and planning this is very, very important to understand, now please recall our discussion earlier discussion where we discussed the dimension of housing that housing is not only a house.

Housing is essentially a house and few other dimensions like infrastructure and facility safety and security the social belongingness and the attachment individual attachment individual perception, so from that housing concept the dimension of housing. One very important dimensions was that the house does not become a house without the essential infrastructure, a house does not become a house without the essential infrastructure like water supply, sanitation

waste management, green open space, electricity it does not become a live able house or live able area.

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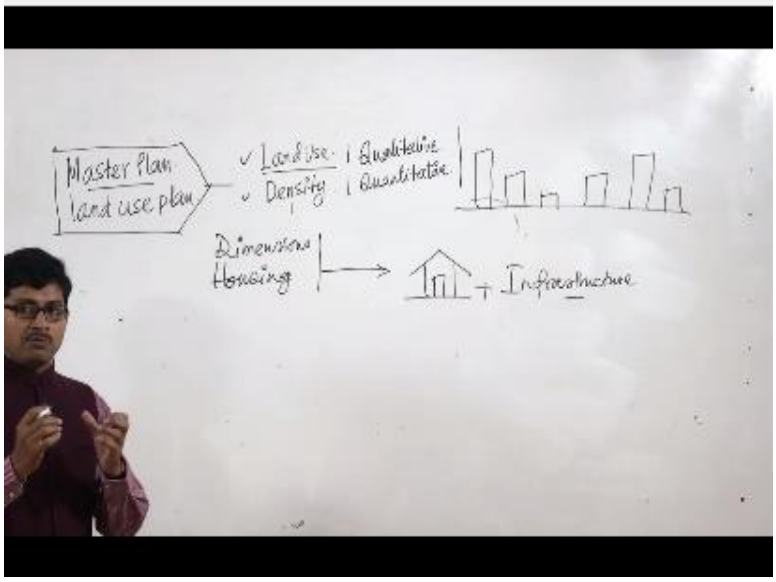

So that is the different of a developed land where the infrastructure is there available to make a house than the land which is roll and or agricultural land where urban infrastructures or housing infrastructures and not there so this infrastructure basically qualifies any plot, any plot to be eligible to be established to build a house. So how this amount of infrastructure will be determined on what basis now think about the situation that the water supply situation for a city if the population is more, the water supply requirement will be more naturally if the water the population is less the water supply requirement will be less for a given plot.

If there are 500 person so the water supply requirement for the 500 persons and if it is a 1000 person the water supply will be double the water supply requirement. So definitely the infrastructure requirement in terms of its quantity for water supply load the cost of road is huge for developing a housing project of developing a any project, so water supply road electricity

solid waste management the sanitation everything. So basically the cost of infrastructure basically depends on directly proportional to the population.

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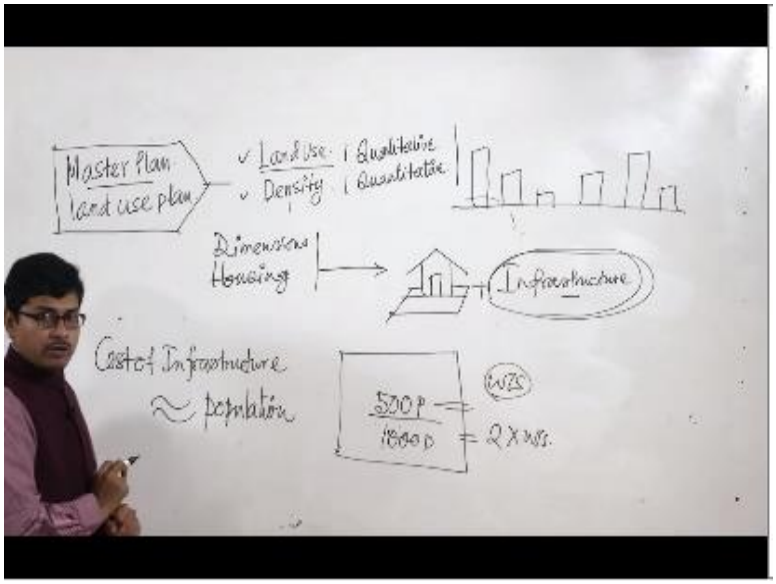

So you can understand that more the population, more the cost of the infrastructure so in a given plot in a given plot if you can accommodate more number of population definitely the cost of infrastructure and cost of land will be distributed over the population and the unit cost of each house are unit cost of each particular small plot will be less. That is why more population more dense development is more developed more affordable for the poor and the middle income group that is the reason.

So basically, since now population is depicted by two elements represented one is density and also FSI, so either we increase the density so and FSI so both are important by enlarge density and FSI both are proportional directly so we can increase the density and FSI then the more compact development will be there more compact development will increase the cost of infrastructure as well.

But also it will reduce the unit cost of infrastructure because most of the cost for the land will be distributed or shared by the more number of people that is the reason so here the infrastructure takes a huge role in determining the FSI. So there is a limitation or extent beyond which we cannot increase the infrastructure because within given plot that infrastructure may not be feasible technically. So there is a threshold there is a threshold beyond which we cannot go increasing infrastructure stress on a given plot.

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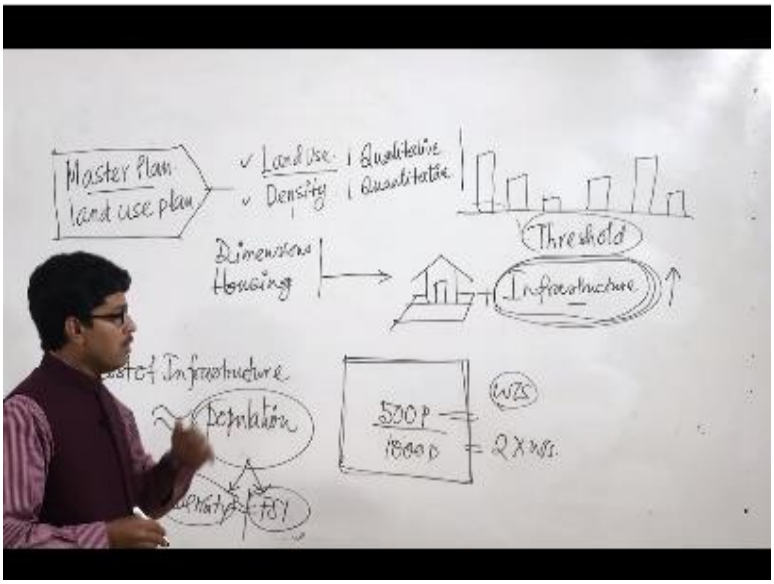

So based on that threshold of the infrastructure beyond which we cannot go it becomes infeasible it becomes non tenable so beyond that we cannot go so based on the threshold of the infrastructure we back calculate and we come to a prescribed FSI what is the he prescribed the FSI and the density so that is the relation between the FSI and the infrastructure. More FSI more density more infrastructure cost more compact development, so that is the parameter or the measurement of the floor index then the building regarding the building height.

Only two three things I should mention for you that is the last thirty to forty years back in India we did not make much high building but now it is seems the technologies are available export

man powers to design the multi storied or the very high tall buildings design. We have so therefore we are going to thirty g+30 g+40 g+50 building and as a result there is a increase in train to accommodate more compact development more compact population in a tall building.

So that more the tall building more the ground spaces available for the green and the ground coverage is less so ground coverage and building height is directly related more the building height less the ground coverage and more the ground area available for your community facilities apart from that there parameters like on sight services parking water requirement drainage etc so the infrastructure we talked here the infrastructure there are two elements one is off sight.

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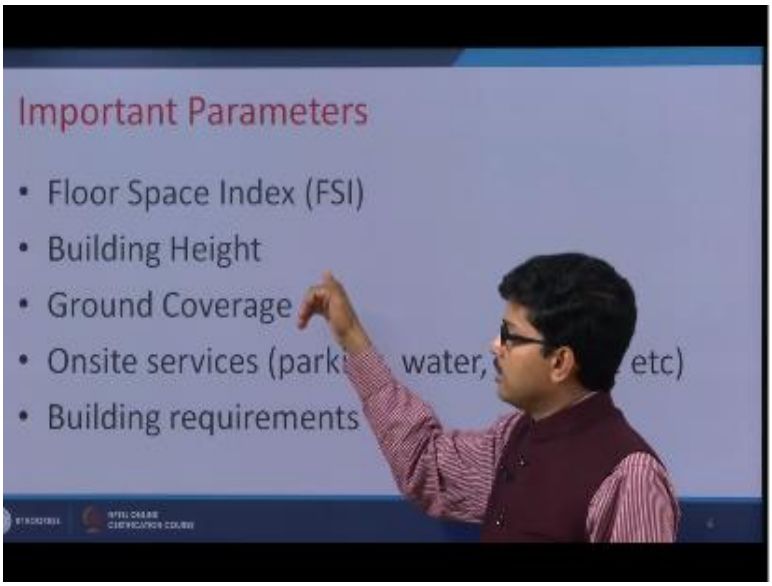

For example in a city or any township the off sight infrastructures are the centralized large infrastructure which is shared by the all population of the city of the township, but the on sight infrastructure is the specific few infrastructure which is build within a sight which is enjoyed or which is used by the population which is enjoying that particular plot so on sight and off sight both are important to define a project to define a few parameters like FSI like FSI building height and ground coverage.

So these are on sight services or infrastructure which also is very much important parameter to define the development or build ability of the project then the building requirement. Whatever we have discussed it may be on sight or it may be off sight but main objective of discussing all these parameter is to define a building envelop. So that the building looks good building becomes very much functional and building becomes very much long duration and durable for the people.

But what is happening inside the building do we design the building based on the some norms and cores so that the building becomes more live able the inside space of the building the inside space of a housing project because more live able that is why some specific building requirements in terms of the minimum, in terms of the doors and windows in terms of the electrical installation, plumbing installation, structural safety and then hitting air condition everything that is there norms and codes are available.

So these are also very important parameter which defines a the grammar of the building from the inside, so this parameter we discussed based on the few dimensions of the build development context, please take a note that here we have not disused all kind of developmental controls like we mentioned, earlier that there are development controls related to advertisement or the bill board.

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But her the we have only which is related to housing development and he vital controls for example this is the business district of a new town of a township the gesture I showed last lecture the new town Kolkata this is a business district, now you can see that in this the whole business district how the road is made different the front part of the commercial areas may be different to bring some aesthetic element to bring some urban design element common elevation treatment to the front part of the whole area.

So this kind of thing will do here also you can see that how the road is widened based on the requirement here and the other areas to accommodate the parking and the other facilities so that we can have the few other off sight infrastructural outside facility. Which is not there inside the plot so inside the plot and outside the plot both are weaker so these kind of exercise is required to be done after the master planning exercise. So that we can define the build ability and the envelop of the building.

So having said that the next discussion lecture on the very important part that which here the define the FSI and to define the density the one very important criteria is the infrastructure, so the discussion on the infrastructure and the facilities required for the housing development will be dealt in two three lectures, we will in the next lecture we will discuss the housing infrastructure and start wishes so thank you.

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