

Urban Housing

Lecture 11

Various Approaches

To take a look at, approaches to the concept of management role in housing has three different types. One would be the Contractual Approach, here the process is very simple where the tenant and the landlord are involved. A contract is being signed between the two in terms of an agreement and the contract form of relationship between the landlord and the tenant is exposing different rights and duties of both the owner and the tenant. Rights to the tenant such as right to security of tenure is also included, the next way of management involves a social concept where this involves different social participants, community organizers to involve themselves and push people into a more sociable activity and this involves providing advice to them and Reunification of management with social work is also done and different welfare activities are carried out in terms of management of housing and the third form is Tenant Self management where each one of us takes responsibility for our own housing, this abolishes landlord role, attempts to encourage self-help and mutual aid. When individual users come up themselves in terms of managing, there could be a different methodology adopted and every house could be managed in a different way and a different style of management could also get evolved. Looking at some of the key factors that affect the housing development especially in developing countries. One would be the fragmented housing policies in administrative systems. All these points you look at, have already been studied in the previous chapters. Fragmented housing policies address how unclear we are about in framing the housing rules to set the targeted housing demand. Lack of capacity: non-payment of housing loans. In developing countries people take loan and assurance to the bank or the lending institutions is very minimal. Non-payment of loans retard the economy and retard in turn the provision of housing in future. Inappropriate standards of housing, inexperienced housing consumers. People who are targeted might not know how to use the housing as a commodity or as a social unit for living.

Looking at the housing scenario in India, for the past 10 years or 1 decade, there has been an incremental growth of 286.1 million that has grown to a number of 360 million. It also states that more 50% of India will live in an urbanized condition in 2020. Looking at scenario on one side and weighing the problems on another, you have a lot of problems which includes lack of equitable supply of plan. There is a lot of inequality on how the land as a target commodity or a house is being given to different users, lack of shelter, services at an affordable price and the depletion of resources on another hand plays a very important role. Land as a resource is not being utilized properly and channelized in a correct way to develop housing projects. This image shows what are the conditions of the houses people live in. You can see a series of high rises or

say medium density housing that are completely encircled with a lot of tin sheets. This is the scenario of squatter settlements in India.

For us to remember one billion people live in inadequate housing which means almost 1/6th of the entire population of the world lives in an adequate housing situation. Out of which half of those are our neighbours who live in the South Asian pacific region that includes India as well. What does the government do in achieving this? Government has set some objectives through different schemes and services that relate to developed templates of 1 Lakh Rupees. If you look at alternative building techniques, to develop research methodologies and technologies to improve housing conditions, providing a house of minimum plinth area of 25 sq m. A planning of projects of low rise, high density basis doesn't happen because most of the housing that are targeted by the user are high rise buildings because of lack of land. Achieving economy of scale i.e 2000 to 3000 houses/ place is the most concentrated of housing projects. Using alternate or local building materials, utilization of environmental friendly materials, all these are the objectives that are being led on by the government which are still remaining in an infant stage to cross over which has led to one different planning of a typology which shows a proper living unit with a private bedroom, a kitchen, a water closet with a basic facility and an entrance to the service core. This has done under the integrated housing and slum development programme where a small backyard is given for every house and this works out to the cost of 1,67,000 INR. This 1 lakh objective has been achieved but it still cannot be a mass house or it cannot be a customized unit which could be replicated in different parts to different urban conditions.

Looking at a cluster, moving down to another scale done in Wardha. Here, planning is very simple, you have a central road and two different organization of spaces happening. This central road leads to two different cluster units and all of these lead to housing units that are clustered in different spaces and organization of secondary green spaces around the site provide the community a relief space. In this planning, you could see maximum accessibility with minimum road area which means that there is a minimum motor road that connects the entire community, backyard to all units have been achieved, a central green space that has been evolved around every space and a play area for the tiny tots is also being given. This at least ensures a level of community facility within and it gives a sense of identity and community for these low income housing projects. One can ask, housing related to health, how can it be related?

Looking at the flip side, better ventilation improves better airflow within, it ensures a better quality of air, it improves one's health, better roofing, better flooring, improved water and sanitation; all of these put together, a decent housing reduces the level of infections, the kind of safety. Here, the provision of housing with better quality and better security ensures good

health to people which in turns helps in a pleasant living condition especially amongst the poorest people.

Moving on to the next part, Housing and Education. When the people achieved healthy living, they could invest elsewhere. Infact, there is a statement such as "People who live in a poor condition or any one, affords or invests 50% of their income in housing conditions". When housing and health has been improved, the remaining proportion of the income could be put into education where they can have a financial security in a later stage that could generate an employment opportunity which simply states, a clean, dry place, a well lit place creates less illness so that there is a financial security and there is a clear path to employment and a brighter future. Housing as a process, is just not providing a house as such or providing shelter, it relates to various other aspects involved in it.

Community Participation

What can communities get from one house? Imagine, a house is not just a commodity that is placed on a ground but on a scaling of process, it is a community. When there is better health, better education, better economic security, there is a sense of security that is being achieved. Between a group of houses, a common courtyard ensures safety and security. Good invigilation could be done from one house to another and they could be small economic security through provision of smaller micro wages within and there could also be a community empowerment done by providing social stability, safety and cultural identity. When every house is being designed beyond thinking of what a small shelter is, it grows organically and this process ends up in something called 'Community participation' which means in simple words, 'it is in our hands'.

A community participation is a very simple process of involving the community to participate in the design, build and execution of a project. As the image clearly shows, there is group of people i.e a community involved in terms of education and empowerment before even the design and build option step into the picture. This involves various stakeholders, local community authorities, governments and the public involved along with architects and engineers who play a technical role in the provision of housing. The element framework is very simple which includes the housing needs, resources i.e the land, land is already available because this community participation would mostly be done in an in situ rehabilitation which means that land is already available and a regulatory framework which is done by the government. This eventually leads to the development of the programmes for the community where keeping the public participation as a major framework. People's participation stages are in different ways where it starts with participation, social learning, self reliance, capacity building and empowerment sustainability. People are just not involved in learning something

but they learning techniques to use, learn to empower themselves, they learn to be independent and they also participate in developing their own communities as well.

Significance of the public participation, it is an essential part of human growth which promotes self confidence amongst each one of them and along with this, vocational training when combined, gives a more stronger sense of security to the neighbourhood. It starts with elderly's wise words, where a sense of the location's history is taken. A group of people interact with the old people or people who have lived more than fifty years in that particular area, to gather details on when was the settlement formed, how far are they coming from, why had they come from one particular location to another. All these smaller details have been collected to gather the data on historical statistics related to that settlement.

Gradually it moves on to Community Participation which involves 'Thinking' as the first process that moves on to Planning, Decision making, Implementation and Evaluation. Community participation does not only relate to the design of it but also the implementation and evaluation stage of it. Once these strategies and framework have been done, to take it to the further stage, you need to discuss it with the municipal offices, once every data is gathered, you need to seek permission with the local authorities where to proceed with it or not and the government support is always essential in a community participation.

There are local program motivators, who motivate the community to design and build. These local program motivators are being trained on another scale by the national programme training and these National program motivators are in turn developed or trained by an international facilitator. This goes on as a cycle on discussing with people and helping people improve their community and providing techniques to do it. Next, motivating the community happens. People of the neighbourhood come together and cluster into one point. This happen in public schools, in government schools, in open spaces in and around the community.

Some ways and forms of community participation includes - Consultation, Financial contribution, Self help projects by group beneficiaries, Indigenous development, mass action, collective commitment, Autonomous development and approaches to self sufficiency. Most of it relates to what we call as self independent construction of projects and the people could either consult in terms of designing projects, they could be build their own projects or they could take self mutual aid to develop a particular house. Then, training sessions by Non-governmental organizations and local program motivators happen in classrooms and in different spaces around the community where they gather some and mostly women are targeted here, where they feel more responsible for the community.

The next crucial stage is the source of financing, you have a community and you have things in terms of paper to developed, as in a practical project. Where does the source of fund come from? Of Course, the central government, the government initiatives pool in fund for this but the other ways of doing it is the part of beneficiaries workmanship. A part of their income would be taken into the form of community funding, membership fees will be collected, that will be a part of their income which will be used as a membership fee, establishment fee for the community, investment revenues if someone is willing to do it or if a private investor could do it and Governmental loans could help. All these five put together helps in financing these schemes. Even though there are a lot of funds coming from abroad and different organizations help financially, these are the sources of income to help communities. Self help in construction takes place. Once all these motivations happen, these people are trained to build their own house. The carpentry work, the plumbing, the joinery, the RCC construction brick infilling, preparation of window frames; the technical details involved in the construction of houses are taught to the people and individually people work within the site to develop their own housing models.

Finally, Training to build. There is a common space that is being adopted where individual people are able to visualize their new houses. It will be done through smaller models which you can see here. These models are built for them to visualize how the 3d form of it would be. All these put together, the community gets enriched and empowered to build their new household. Community participation is a very beneficial part in everyone's livelihood especially for the low income.

Environmental Aspects

Moving on to the next concept of environmental aspects in housing. This talks about how in a housing process, we could avoid natural hazards or we needn't disturb the environment. The first key factor which we will be dealing with is the buffer zone where it could be a row of trees. A row of trees that are planted just outside the boundary of the site. The planting of trees could extend to 200 - 400 m in width along the boundary of the site. What could be done with just the row of trees over here? This acts as a natural filter. Buffer zone actually prevents noise pollution, prevents air pollution. These row of trees act as a visual pleaser, also screens the polluted air that flows inside and filters the noise pollution. Buffer zones to be planted along the direction of wind to avoid noise and air pollution.

Another element which could be used is, Colonnades along roads, streets and parks. Every avenue that is being created with sidewalks like in the picture, a row of streets creates a sense of social environment where you could have street furniture, a row of trees which makes it aesthetically pleasing, it has a good impact on what the social status of the project is about. It gives a green lighting effect, a green mode, a greener version of the environment is taken into

consideration. It is also considered important for shade. Apart from talking about air and noise pollution, environmental aspects also include aesthetics on how these functional elements could be used in an environment positive way.

Recreational zone or open spaces - every housing process needs a breathing space to work with. Breathing spaces are just not open spaces, rather gives an advantage of more scope for expansion in the future. As such, these spaces might not actually be sold to the end users but used as only a common facility because in any developing city with land as an important resource, people try to take up all the land to build more building structures on it. When you build more and more buildings, what happens to our open spaces will be a major question mark. An overall area of 10% covered by housing schemes should be allowed for open spaces. If this is not allowed, the community will not be provided with a proper open space. If you look at these development examples, you could see ample of open space, this is a high density environment but you can see the amount of green spaces, all these are avenue of trees - the buffers we were talking about. The row of trees that are planted across the road, act as natural environmental buffers and in other words, these open spaces and green lawns around the site act as these 10% open spaces we are talking about. This refreshes the community. Other than that, a small community space itself is given in a housing layout. In a high density environment, these breathing spaces are much important to clutter out the building forms we see.

Housing Technology

The last part of it deals with housing technology. We could categorize it into three different forms - one would be the conventional technology, Industrialized technology and Appropriate technology. Conventional way is the way almost every user looks at it, RCC framed construction, it is a prevailing technique and it is slow and inefficient. Industrialized technology - This would be more in terms of a speedier construction, cutting down of cost, incinto fabrication, because of technology involved in it, industrialized machine and equipments involved in it, the efficiencies improved. Appropriate technology on another hand as the image shows is the use of efficient natural resources on site so that it increases the efficiency, increases the productivity, the quality and speed of construction is also done because when you use the available resources within the site, you don't need to transport the materials from another site. That improves productivity as well.

One example of housing technology and the new construction material is 'Ferro Cement'. This is highly advantageous because this material helps reduce the weight of this entire structure, having no steel bars. There are hardly steel bars used for reinforcement and it is much versatile and possess high strength quality. A layer of Chicken mesh is surrounded with supporting small reinforcement bars, making the structure much thin, much elegant, more serviceability and a dead load of it is much lesser than a heavy steel or a reinforcement based construction. These

ferro cement bars are layered over a chicken mesh where the cement is poured on top of it and the dead weight is much less to carry and precast things over here. Ferro cement speeds up the process of construction, it does not require skilled labour, a normal labour could do it in a much conventional way. This is being used amongst low income groups or in rural areas to build water tanks, public toilets and other facilities.

Another new construction material is fly ash which is being used as a residue obtained from the thermal power stations. It is used efficiently in terms of replacement of cement. Again, this reduces. When you add fly ash to it, the amount of steel involved in reinforcement would be much lesser and yet again, the dead weight of the structure might drop even further. It can also be mixed with other ingredients of concrete.

Laterite blocks, it is another natural material taken from Laterite soil. It is developed by the structural engineering institute here. The best advantage here is, these blocks have a moisture absorption of less than 10% which means that these blocks have good weathering characteristics and platable ability. This materialistically has a visual quality attributed to it and it also doesn't require any skilled labour to be used or employed for construction.

Different ways of housing technology developed by Structural engineering research institute, Chennai. These are Hyperbolic Paraboloid Shell Roof which are an unconventional way of developing housing strategies. These kind of roof forms are visually and aesthetically pleasing but not widely used for housing projects but these could be used for much bigger spans. It could be enhanced in terms of having a columnless construction. These roof structures and kinds can be visually appealing for a user as such. This is not being done only by Structural Engineering Research Institute but other institutes like Indian Institute of technology, cement based organizations and other non-profit organizations are working on structure based research to improve the efficiency of construction. Another way of dealing with the housing technology here is brick shell roofing with flat bricks that you can see in the image. This is very simple in terms of construction. Having a brick of 3 inch with a concrete which is poured in and these pointings done in lime surkhi mortar so that the finish is much pleasant, the cost of construction is much less. There is saving in steel and cement which would reduce the cost of construction and is more suitable for mass housing because in a developing country like ours, we look forward to multiplying things not individual houses. Even though, the latter is suitable to see and pleasing, this is mass housing. Speedier construction and good aesthetics; all these form the characteristics of Brick Shell Roof that makes it an advantage for introducing this as a technology for further upgradation projects and slum redevelopment projects.

The last form of technology we are going to look at is Modular Construction and prefabrication. Modular construction is nothing but being based on a particular module. Every frame members

has a particular proportion, say the size of it is x and the entire module would be to the proportion of x which means that it has greater efficiency in terms of variants and the most advantageous of the modular construction includes- Cost reduction of greater efficiency, it has less wastage because all these modules are already pre fabricated. It is already done in an industrialized way. Smaller number of standard types, this is a disadvantage that is expected. It is because of modules, one can only have only limited permutations of use rather than having different modules which are being done. Modular dimension is multiples of basic modules, limitation of the variant and Standardization of building components in structures.

Prefabrication is still in infant stage. Prefabrication is nothing but a new technique that deals with offside fabrication, putting or assembling things in it. It is a new technique and desirable for low income groups and development of slum settlements over here. Looking at India from one perspective where housing demands are much higher, for a speedier construction for a target population where building 1 million houses is the challenge, Pre fabrication could be a solution for it, provided it is done by the Government. It needs to be introduced wherever larger number of houses are required to be built yearly or in a period of 5 to 10 years. It is defined in a way that it is completely assembled and erected building of which, different parts - walls, doors, frames; everything is pre fabricated separately and is being assembled on site as a unit. The unit itself is assembled off site and is being carried and placed on the original structure. Prefabrication has a lot of advantages in terms of speedier construction, achieving the deadline earlier and the cost, the logistics and everything would not add to the initial cost of mass housing.