

livelihoods

today and tomorrow

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**'7L' - Life, Living,
Leadership, Learning and
Love**

'Shelters' Naturally

Shelter is the basic need of every human being. Owning an individual house is one of the most cherished dreams of people in their lifetime. People wanting to construct houses, calculate costs of place, construction, wood works, electrification, windows, iron grills, painting, plumbing, setting showcases etc., but they do not even notice the environmental costs of constructing house such as house management. According to Confederation Indian Industries (CII) - Indian Green Building Council (IGBC), every year in our country, construction takes place in around 27 billion sq feet area. In this construction area, 60% is under house construction and 40% under commercial building construction. Buildings (commercial or individual house) construction is the biggest consumer of natural resources and one of the important factors of green gas emissions, which causes global warming and climate changes. But it should be noted that people are gradually recognizing the dangerous consequences of gas emissions and shifting towards eco-friendly/ naturally-made shelters or 'shelters' naturally.



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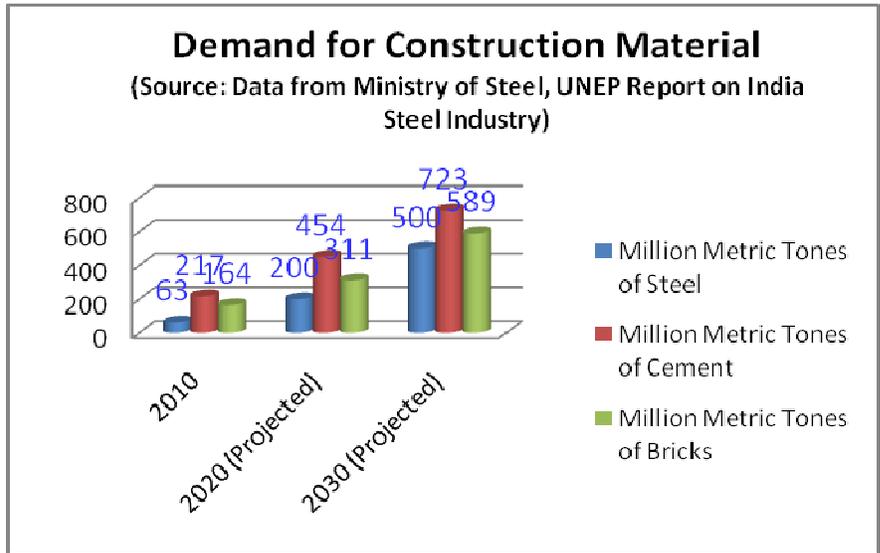
The population of humankind has increased tremendously after shifting from animal hunting and food collection stage to food grains’ production. Population shot up from 6 million to around 7 billion in 11,000 years after the emergence of agriculture. This unprecedented population growth has put a lot of pressure on natural resources for producing food, clothes, shelters, services etc.. Particularly, construction of shelters and their management consumes a lot of natural resources. In the last 150 years, the world has witnessed great industrial and technological revolutions. Unimaginable progress has happened in this one and half century. Houses, offices, commercial buildings’ construction began to be taken up at an unprecedented scale.

Earlier, protection was people’s main objective behind building shelters. They used to construct houses with local renewable natural resources such as mud, stones, bricks, wood, grass and bamboo products etc.. For these materials, there was no need to depend on outside markets and the cost of construction was also very less. Also, people used to design and construct houses to access more light and air. Those houses never required lights and fans at day time; moreover, availing natural light and air is always healthier and eco-friendlier than electricity or fuel based lights and air. People used to plant trees in the premises of their houses and these would provide fresh air, food and other health benefits along with aesthetic pleasure. Those houses also reduced cost of house management such as regular charges for electricity and fuel. Constructing those types of houses is also very easy, as almost anyone can construct their own house. Except for doing woodwork, those constructions did not require any specialists. The structures of those houses are more eco-friendly and natural disaster resilient. In those houses, people used to suffer little loss in terms of lives, livestock, money and assets etc.. If people wanted to dismantle the houses, most of the material could be re-used in construction of new houses.

After the industrial and technological revolutions, the world has witnessed inconceivable changes in all aspects. Markets have introduced a bevy of products keeping in mind parameters for design, comfort, status and luxury living. At present, protection as an objective of house construction takes up only a small part, as people’s outlook on houses has mostly changed. They prefer houses for comfort, luxury and as status symbol more than for protection. The growing population and changes in people’s attitude in construction of houses has forced people’s dependency

on non-renewable resources (Some materials take longer time to evolve) and industrial products like sand, iron, steel, fired bricks, cement, interior designed products which are far away from eco-friendly or natural shelters and are costlier. These shelters are facilitating a gap between nature and human beings. As global greenhouse gas levels increase, the temperatures rise the world-over. Ozone layer depletion and global warming are also wrecking havoc on our environment. Polar ice caps are melting. These are facilitating climate changes and destruction of natural resources, and impacting lives and livelihoods very badly across the world and our country. This necessitates building shelter naturally if we want to reduce the negative impact of large scale construction.

In tribal and rural areas, shelters are more near to natural than urban areas, as people have more opportunities to get natural resources instead of industrial construction related products or readymade products. Urbanization has been increasing for decades in the country. Over the years, providing shelters with minimum facilities and infrastructure to the poorest of the poor and poor families has become a big challenge for the governments. Along with lack of sufficient plan, funds and political commitment, objective



constraints such as place, increasing construction cost are big problems in providing proper shelters to the people. Natural shelters require sufficient space for sunlight and air, but there is no place for these in the small rooms in apartments or in slum areas. Therefore, eco-friendly houses have become a day dream for the poor people in slum areas in the towns. And they don't even get houses with minimum space for protection and living. Their condition is very vulnerable. Planting trees in streets and houses premises and building parks require land, which is difficult in urban areas.

As previously-mentioned, as per CII - IGBC, every year, construction is happening in 27 billion sq feet area, which means that around 145 billion bricks are required per year for construction of houses, commercial complexes and office buildings. In the country, the growth of the construction industry is 6.6% per year, and it is contributing a whopping 25% to the nation's carbon emissions. Around 33% of global energy is consumed in construction of offices, houses and commercial buildings. That figure may be doubled by 2030. A huge quantity of soil, coal, water, firewood is required to make bricks. Along with bricks, production of cement, iron, steel and other construction related material is impacting environment at a large scale. Major products such as steel, cement and bricks' utilization increased in the last decade. According to the experts, in the next couple of decades, steel utilization will increase by 9 times, cement - 6 times and bricks - 3 times.

Gradually, the cost of construction has been increasing for decades. According to one survey, 70% to 75% of cost of construction goes to investment on construction materials. Prices of construction materials such as cement, iron & steel, bricks, sand, gravel, stone, murrum (clayey material), welding material, tiles, plumber material and electrical material and wood etc., have been increasing. Particularly, cement, sand and steel prices increased at a big level. Actually in most of the places, sand is unavailable or government has been imposing restriction on sand collection. The wages of people who are involved in construction like construction workers, welders, carpenters, electricians

etc., are increasing. According to the builders, constructing a medium level house in 1800 sq feet (200 gajalu) in a town may cost 18 to 20 lakhs. Details are given below:

Construction Cost Estimation (Constructing a house in 1800 sq feet)		
S. No	Material Details	In Rs.
1	Cement (800 Bags)	2,50,000
2	Iron & Steel	3,00,000
3	Bricks (7 Tractors X 24,000)	1,68,000
4	Wood	1,00,000
5	Sand	1,50,000
6	Gravel	90,000
7	Stone	50,000
8	Murram (Clayey material)	4,000
9	Welding material	70,000
10	Tiles	60,000
11	Plumber material	1,50,000
12	Electrical material	1,00,000
Sub – total amount		14,92,000
13	Construction workers wages	2,50,000
14	Carpenter, Electrician, Welder etc., charges	1,15,000
Total amount		18,57,000

Increasing construction costs, scarcity of resources like sand, increasing management costs have been forcing people for alternative shelters. In this context, the idea of shelters ‘naturally’ has evolved and is gradually attracting people’s attention. Natural resources, particularly non renewable resources, have been abundant for centuries. It is a fact! However, in the long run, people cannot run along with conservative ideas of construction. Alternative house construction may not be easy in the times we live, where there are predominant influences of market. People are going with the flow of advertisements designed to lure people by the market. This can create a trend where only particular models are considered viable, feasible and sustainable and thereby push back the other models. For example, people had earlier used non plastic water tanks to preserve water on the roof of the houses. Now, almost all water tanks have been replaced with plastic water tanks. Plastic market promoters have managed to convince people that stone or cement built tanks are not safe on roofs.



Building shelters naturally means building houses with renewable natural resources which can be easily recycled / having recyclable material and also has less management cost by utilizing natural sources for light, energy and air. Renewable natural resources and proper planning provide light and cooling in daytime without the support of artificial energy. For cooking, the house has to get energy from a biogas plant. Solar technology also can be used for lighting, cooking etc.. Naturally made shelters mean not just using

local and renewable resources, but they also include proper planning in construction. The structure of the house, the sufficient size of doors and windows in right places provides enough daylight and natural ventilation. Aeration should be from directions and installing skylights on dining halls, study rooms and common halls reduces the

dependency on artificial lights in daytime. Constructing rooftop gardens and wall gardens provide coolness and fresh, clean air.

Planning water management in the house is another important element in natural shelter. A proper plan is required for rainwater harvesting, recycling and management of usage water. Most of the usage water can be utilized for cultivation of plants and vegetables. Utilizing energy in multiple ways is always preferable. For example, in earlier times, even in the villages most of the poor peoples’ houses had fireplaces (mitti poyi) utilized for cooking and heating water at the same time. It facilitates maximum utilization of energy. The house’s raw material should be planned to use in a way that if the house is demolished, then those used raw materials should be reused directly in construction of a new house or in preparation material for construction of a new house. These plans are not new! At present times, these plans may appear to be innovative, but earlier generations used these formulas. They constructed houses with local renewable resources with proper planning for enough light and ventilation. These types of structures require the innovative planning rather than resources for construction. These methods reduce operational costs and also benefit the health of people.

In essence, shelters made naturally mean not depending on materials on outside world for house construction, should have less operating cost and also should environment friendly. At present, constructing natural shelters for common people in urban areas is a tough task, as the cost of the existing predominant model of natural shelters’ construction cannot be affordable. In urban areas, not only lower class but even the middle class can afford, get or build eco-friendly small houses which provide enough daylight and ventilation. The apartment model of housing structure is a predominant model in urban areas and even those are constructed by builders who then sell it to the consumers. In this model, there is less space for people’s choices in building houses in an eco-friendly way as per their wishes. Tribal and rural areas are different and these areas provide space and possibilities for building shelters naturally for the people.

Building shelters naturally is a call of the present time. Shelters should be designed based on locally available renewable resources. Bringing raw materials from distant places attracts high transport charges and specialists, as local construction workers can’t construct houses with those raw materials; it would increase the cost of the construction. In constructing natural shelters, people can use local renewable natural resources like mud, stones, grasses, reeds, leaves, wood, bamboo and un-burnt bricks etc..

People are gradually shifting from conventional method of constructing houses to environment friendly houses. But their share is very less in total number of constructions. Largely, people are depending on conventional construction methods because of various factors such as lack of awareness about natural shelters, projecting houses as a prestige symbol, unable to invest sufficient time for designing house during construction, providing raw materials, space unavailability, dependence on manufactured construction materials, scarcity of natural resources and dependence on builders for construction in urban areas etc..

Generally, any new innovation comes from the few and gradually enters the minds of a large number of people. This idea is materializing gradually. According to the experts around the world, natural resources may suffice for another 150 to 200 years. People have to be forced to go for low cost alternative houses. People have to shift towards constructing shelters naturally. It may take time and various new innovations based on the availability of local renewable natural resources. Natural shelter provides a healthier, aesthetic and peaceful environment to dwellers, leads to a natural way of living and reduces house management costs. Civil Society Organizations (CSOs) and governments have to come forward to promote and support construction of shelters naturally, as this would reduce greenhouse gas emissions and the rising of planet’s temperature. It leads towards world’s journey towards sustainability and an environmentally friendly future. ❖