

original site does not have any other land then he may sell TDR to another person and be compensated by such second site owner.

**68) Trust Lands** – means land owned or acquired by any Trustee.

**69) Total Project Cost** means the lower of the total capital cost of the PPP Project: (a) as estimated by the government/statutory entity that owns the project; (b) as sanctioned by the Lead Financial Institution; and (c) as actually expended; but does not in any case include the cost of land incurred by the government/statutory entity.

**70) Untenable slums** – are those slums which are on environmentally hazardous sites (like riverbank, pond sites, hilly or marshy terrains, etc.), ecologically sensitive sites (like mangroves, national parks, sanctuaries, etc.), and on land marked for public utilities and services (such as major roads, railway tracks, trunk infrastructure, etc.).

**71) Unauthorized housing** – Means housing units constructed on land to which the occupants have no legal claim, or which they occupy illegally or unplanned settlements and areas where housing is not in compliance with current planning and building regulations.

**72) Urban Area** – means the area comprised within the limits of all cities and towns classified as urban by Census 2001 including the limits of Municipal Corporation or Municipal Council or Nagar Panchayat as constituted under the respective State Acts, including cantonment board or notified areas, and shall include the planning area as per the Development Plan of a town or city.

**73) Verandah** means a covered area with at least one side open to the outside with the exception of 1 m high parapet to be provided on the open side.

**74) Viability Gap Funding or Grant** means a grant one-time or deferred, provided under this Scheme with the objective of making a project commercially viable.

## 1.5 NATIONAL HOUSING POLICY (NHP)

The Indian Government came out with a national Housing Policy (NHP) to declare its political will to intensify the housing activity in the country. The preliminary draft was presented in August, 1986 and the final policy was announced on 12-05-1988. The NHP initiates the engineers, architects, town planners and housing finance corporations' can evolve viable strategies on issues relating to the housing.

### 1.5.1 Objectives of NHP

1. To create a situation of creating more house.
2. To increase the investment of housing
3. To encourage the investment of individuals
4. To create the awareness among the people that “**The housing for all**”
5. To motivate and help houseless and inadequately housed people to secure for themselves affordable shelter.
6. To promote vernacular architecture i.e., pertaining to the style of architecture and decoration peculiar to a specific culture or locality.

The NHP hopes to achieve the goal of eliminating houselessness by the year 2010. It envisages towards this end not only the construction of additional dwelling units, but also a substantial step in maintenance, upgradation and improvement of the existing housing stock.

### 1.5.2. Important features of NHP

Following are the important features of the NHP

#### 1. Design aspects

It focuses on the design aspects of the houses with regard to their location. The architecture as well as the building materials would

necessarily have to differ according to the type of region – whether it be hilly, desert land or coastal.

## 2. Fiscal incentives

The fiscal incentives under the laws relating to taxation of income, wealth and gifts will be rationalised to channelise savings into housing institutions. The concept of luxury housing is to be discouraged through ceiling on institutional finance assistance. The co-operative and group housing societies are to be treated on a priority basis.

## 3. Housing schemes

The housing schemes should take into consideration the mentally and physically disabled, the aged, widows and incorporate dwellings units of appropriate design.

## 4. National Housing Bank

An apex body, to build up a housing finance superstructure envisaged by the NHP, a national housing bank, has been set up. It will lead to easy accessibility of institutional finance at affordable rates of interest to the houseless and disadvantaged groups.

## 5. Rational laws

The entire area of legal provisions contained in different acts is to be reviewed and wherever necessary, amendment to the laws relating to land tenure, acquisition and ceiling are to be made. The municipal regulations relating to the house building, apartment ownership and other connected laws will also be initiated and new legislations enacted, wherever necessary.

## 6. Role of government

The role of government will be that of a promoter and enabler rather than of a builder. The government has thought it fit to assume the role of a facilitator and let people build houses for themselves. At the same time, it has to discharge the vital role of sustaining a regular supply of serviced land, a steady flow of finance, an easy availability of newer and cheaper building materials, creating a conducive legal environment, etc., It has also to provide essential services like potable water, sanitation, drainage, street lighting, paved pathways, etc.

In this policy the planning commission was formed to know the requirement of houses, types of people, number of village house required and number of houses in urban area are collected and decisions are made.

This commission forms 5 sub commissions among them.

1. Housing development and
2. Finance is the works
3. Deals with rural housing,
4. Welfare schemes and
5. The problems of housing requirement.

The planning commission gives the following statics, showing the urban and rural requirements of housing.

Year	No of Villages (in millions)		Total
	Rural	Urban	
1951	6.5	2.5	9
1961	11.6	3.6	15.2
1971	11.6	2.9	14.5
1981	16.1	5.0	21.1
1985	18.8	5.9	24.7
1990	22.3	6.9	29.2
2001	29.8	9.3	39.1

### 1.5.3. Salient features of NHP

- 1) The housing development should be based on the exact requirement and the environment.
- 2) The housing design should be based on these important points.
- 3) NHP gives the technical things and advises towards construction materials.
- 4) For the individual investors various financial relaxations are given for the construction of their homes.
- 5) The tax benefits or expectations or freedom are given for the people constructing their homes.
- 6) More house loans are released and people are encouraged to construct the houses.
- 7) NHP implemented various schemes for helping the people to fulfill the housing requirements.
- 8) NHP formed a National Housing bank for making various housing schemes.
- 9) NHP helps to get financial support. The housing schemes are constructed and developed based on the building bye-laws.
- 10) The NHP motivates the government to provide the water facility and drainage facility for various schemes.

### 1.5.4. National Urban Housing and Habitat Policy 2007

National Housing policy is reaffirmed as National Urban Housing and Habitat Policy. Shelter is a basic human need next only to food and clothing. At the end of the 10 th Five Year Plan, the housing shortage is estimated to be 24.7 million. However, urban areas in our country are also characterized by severe

shortage of basic services like potable water, well laid out drainage system, sewerage network, sanitation facilities, electricity, roads and appropriate solid waste disposal. It is these shortages that constitute the rationale for policy focus on housing and basic services in urban areas. This policy intends to promote sustainable development of habitat in the country with a view to ensuring equitable supply of land, shelter and services at affordable prices to all sections of society. Given the magnitude of the housing shortage and budgetary constraints of both the Central and State Governments, it is amply clear that Public Sector efforts will not suffice in fulfilling the housing demand. In view of this scenario, the National Urban Housing and Habitat Policy 2007 focuses the spotlight on multiple stake-holders namely, the Private Sector, the Cooperative Sector, the Industrial Sector for labour housing and the Services / Institutional Sector for employee housing. In this manner, the Policy will seek to promote various types of public-private partnerships for realizing the goal of affordable Housing for all.

### 1.5.5. The Need for Policy (NHHP 2007)

- a) Urbanization and development
- b) Rural to urban shift of labour
- c) Balanced regional development
- d) New Integrated Townships and Green-Field Development
- e) Role of Housing Department
- f) Housing needs
- g) Magnitude of poverty
- h) Development of sustainable habitat
- i) Policies & programmes related to "Housing for all"

## 1.5.6. The aim of National Urban Housing and Habitat Policy 2007.

### a) Urban Planning

- i) Encouraging State Governments, Urban Local Bodies, Development Authorities to periodically update their Master Plans and Zoning Plans which should, inter-alia adequately provide for housing and basic services for the urban poor.
- ii) Promoting balanced urban-rural planning by following the Regional Planning approach, take the whole State/UT as a region, under the Town & Country Planning Acts in the States.
- iii) Planning of Mass Rapid Transit Systems (MRTS) at the city Metropolitan Planning Area and Sub-region levels.

### b) Affordable Housing

- i) Accelerating the pace of development of housing and related infrastructure.
- ii) Creating adequate housing stock both on rental and ownership basis with special emphasis on improving the affordability of the vulnerable and economically weaker sections of society through appropriate capital or interest subsidies.
- iii) Using technology for modernizing the housing sector for enhancing energy and cost efficiency, productivity and quality. Technology would be harnessed to meet the housing needs of the poor. The concept of 'green' and 'intelligent' buildings would be put in place on the ground. Technological advances would be disseminated for preventing and mitigating the effects of natural disasters on buildings, e.g., in case of earthquakes, floods, cyclones, etc.

### c) Increase flow of Funds

- i) Promoting larger flow of funds from governmental and private sources for fulfilling housing and infrastructure needs by designing innovative financial instruments.
- ii) Designing suitable fiscal concessions in congruence with the Housing and Habitat Policy with appropriate monitoring mechanism to ensure that the concessions are correctly targeted and utilized.
- iii) Removing legal, financial and administrative barriers for facilitating access to tenure, land, finance and technology.
- iv) Shifting to a demand driven approach and from subsidy based housing schemes to cost recovery-cum-subsidy schemes for housing through a pro-active financial policy including micro-finance and related self-help group programmes.

### d) Spatial Incentives

- i) Innovative spatial incentives like relaxation of Floor Area Ratio (FAR) for ensuring that 20-25 % of the FAR are reserved for EWS / LIG and issuance of Transferable Development Rights (TDR) for clearance of transport bottlenecks in the inner-city areas and availability of additional FAR in Outer Zones will be promoted with a view to meeting the housing shortage amongst EWS / LIG.
- ii) Careful review of authorized Floor Area Ratio (FAR) in line with international practices for allowing more efficient use of scarce urban land by construction of high rise buildings.

**e) Increase Supply of Land**

- i) Facilitating accessibility to serviced land and housing with focus on economically weaker sections and low income group categories.
- ii) Suitable restructuring for enabling both institutions at the State and Centre levels as well as the private sector for increasing supply of land. Special Provision for SC / ST / OBC / Minorities / Disabled.
- iii) Special efforts for catering to the needs of Scheduled Castes, Scheduled Tribes, Other Backward Classes, Minorities, Disabled persons, Slum dwellers, Street vendors other informal sector workers and other vulnerable sections of the society in relation to housing and access to basic services.

**f) Special Provision for Women**

- i) Involving women at all levels of decision making for ensuring their participation in formulation and implementation of housing policies and programmes.
- ii) Addressing the special needs of women headed households, single women, working women and women in difficult circumstances in relation to housing serviced by basic amenities.
- iii) Up gradation of construction skills and accelerated development of housing and infrastructure sectors for giving an impetus to employment generation.

**g) Public-Private Partnerships**

- i) Forging strong partnerships between public, private and cooperative sectors for accelerated growth in the Housing Sector and sustainable development of habitat.

- ii) Establishing a Management Information System (MIS) in the Housing Sector for strengthening monitoring of building activities in the country.

**h) Healthy Environment**

- i) Developing cities / towns in a manner which promotes a healthy environment, encouraging use of renewable energy resources and ensuring effective solid waste management in collaboration with persons involved in recycling activities.
- ii) Protecting our cultural heritage and architecture as well as promoting traditional skills with suitable adaptation to modern technologies.

**1.5.7. The Ultimate goal of National Urban Housing and Habitat Policy, 2007**

The ultimate goal of this Policy is to ensure sustainable development of all urban human settlements, duly serviced by basic civic amenities for ensuring better quality of life for all urban citizens. The action plan at the State / UT level in this regard must be prepared with the active involvement of all stakeholders.

The National Urban Housing and Habitat Policy, 2007 also lays special emphasis on provision of social housing for the EWS / LIG categories so that they are fully integrated into the mainstream of ecologically well-balanced urban development.

**1.5.8. Slum Housing Policy**

The principal policies and strategies for Chennai Metropolitan Development Authority have been evolved based on the National Urban Housing and Habitat Policy and the National Slum Policy.

The specific strategies proposed for inclusive housing are:

1. Review of space standards considering land cost, availability of developable lands, land requirements, affordability and space standards for housing developments.
1. New housing for EWS and LIG as well as rehabilitation of slum households will be in composite and special neighborhoods whether developed by the public, private, cooperative or joint sector. These may be in the form of built dwelling units or affordable serviced sites.
2. When housing neighborhoods and apartment blocks are developed by the private sector on lands exceeding one hectare, 10% of the land shall be reserved and developed for housing for LIG/EWS with dwelling units not exceeding 45 sq. m. Within the site proposed for development or in a location within a radius of 2 km from the site under reference.
3. Public-Private Partnerships will be facilitated to enhance capacity of construction industry to deliver housing for EWS and LIG through prefab and other innovative technology routes.
4. Pavement dwellers will be provided with affordable opportunities for housing in selected sites preferably close to their present pavement residence.

**Other Strategies proposed are:**

1. Taking note of the demands for various target groups for housing, working women's hostels, student hostels, employees housing by employers, single person dwellings and night shelters will form part of housing action plans.
2. Standard housing includes basic services like water supply, sanitation and proper access roads. Before the Government declared that the layout of house sites unauthorisedly is opposed to public policy and prohibited registration of plots therein, a number of unauthorized layouts had come up in the last 30 years, which lack basic services. These unapproved layout areas should be properly merged with the urban fabric by framing suitable regulation and permitting constructions in these plots.
3. Land assembly using innovative measures such as land readjustment, land pooling, guided development and neighbourhood developments by TNHB and TNSCB severally or jointly will be encouraged to minimize undesirable speculation and increase in land cost to ensure planned development to provide for the needs of the lower income groups.
4. Problems of shelter for the urban poor and their shelter improvement should be addressed through improvement of physical surroundings so that it has adequate basic services such as water supply, drainage, sanitation, street lighting, and other physical conditions leading to better hygienic environment; secondly, through the improvement of the actual structures that the slum dwellers live in, preferably by themselves (extending assistance in terms of financial and physical resources) and by encouraging in-

situ development; thirdly, through the improvement of the whole economic and social environment beyond the mere physical condition they live in.

5. TNSCB would take steps to segregate the slums in unsuitable sites which require resettlement in the nearby sites or elsewhere; high dense slums which cannot be improved as – is – where – is’ require to be housed in storeyed tenements; for slums which can be improved as-is-where-is’ plans may be prepared with phasing and the same implemented in order to achieve the goal of total eradication of slums in near future, say at the latest by 2021. This policy would incorporate land readjustment and redevelopment using the BOT route.

6. Identification of suitable land for urban renewal such as redevelopment and rehabilitation taking into consideration of age and structural stability of buildings, land use and level of infrastructure will be made by TNHB and TNSCB.

7. Encouragement and incentives are proposed for development of self-contained new towns and settlements around and inside the CMA with all infrastructure facilities including those required for the IT developments with all attendant infrastructure facilities and housing needed.

8. To discourage speculation and encourage optimum utilization of land, levy of a suitable nature in proportion to permissible FSI can be thought of.

9. All Government lands have to be properly identified, documented and safeguarded to prevent encroachment.

10. Retrofitting of old and vulnerable houses to make them disaster-resistant encouraged by involving financial institutions.

## 1.6. SUSTAINABLE HOUSING

“A sustainable house is one that uses energy and material more effectively both in production and operation while polluting and damaging natural systems as little as possible.”

Sustainable building refers to a structure and using process that is environmentally responsible and resource-efficient throughout a building’s life-cycle from siting to design, construction, operation, maintenance, renovation and demolition. This requires close cooperation of the design team, architects, engineers and the client at all project stages. The Green Building practice expands and complements the classical building design concerns of economy, utility, durability and comfort.

The common objective is that green buildings are designed to reduce the overall impact of the built environment on human health and the natural environment by

- a) Efficiently using energy, water and other resources.
- b) Protecting occupant health and improving employee productivity.
- c) Reducing waste, pollution and environmental degradation.

### 1.6.1 Goals of green building

- a) Life Cycle Assessment (LCA)
- b) Energy efficient housing
- c) Water efficiency
- d) Materials efficiency
- e) Indoor environmental quality enhancement
- f) Operations and maintenance optimization
- g) Waste reduction

The concept of sustainable development can be traced to the energy crisis and environmental pollution concerns. The green building movement originated from the need and desire for more energy efficient and environmentally friendly construction practices. There are a number of motives for building green, including environmental, economic and social benefits. However, modern sustainability initiatives call for an integrated and synergistic design to both new construction and in the retrofiting of existing structures.

#### a) Life cycle assessment (LCA)

**Life cycle assessment** is a technique to assess environmental impacts associated with all the stages of a product's life from cradle-to-cradle (i.e., from raw material extraction through materials processing, manufacture, distribution, use, repair and maintenance and disposal or recycling).

#### b) Energy Efficient Housing

An energy-efficient home retains the best quality living environment for its occupants living while minimizing the consumption and waste of energy.

Green buildings often include measures to reduce energy consumption. To reduce operating energy use, designers use details that reduce air leakage through the building envelope (the barrier between conditioned and unconditioned space). They also specify high-performance windows and extra insulation in walls, ceilings and floors.

Another strategy, passive solar building design, is often implemented in low-energy homes. Designers orient windows and walls and place awnings, porches and trees to shade windows and roofs during the summer while maximizing solar gain in the winter.

In addition, effective window placement for day lighting can provide more natural light and lessen the need for electric lighting during the day. Solar water heating further reduces energy costs.

Onsite generation of renewable energy through solar power, wind power, hydro power, or biomass can significantly reduce the environmental impact of the building. Power generation is generally the most expensive feature to add to a building.

#### c) Water efficiency

Reducing water consumption and protecting water quality are key objectives in sustainable building.

One critical issue of water consumption is that in many areas, the demands on the supplying aquifer exceed its ability to replenish itself. To the maximum extent feasible, facilities should increase their dependence on water that is collected, used, purified, and reused on-site.

The protection and conservation of water throughout the life of a building may be accomplished by designing for dual plumbing that recycles water in toilet flushing or by using water for washing of the cars.

Waste-water may be minimized by utilizing water conserving fixtures such as ultra-low flush toilets and low-flow shower heads.

#### d) Materials efficiency

Building materials typically considered to be 'green' include lumber from forests that have been certified to a third-party forest standard, rapidly renewable plant materials like bamboo and straw, dimension stone, recycled stone, recycled metal and other products that are non-toxic, reusable, renewable, and /or recyclable (e.g., Trass, Linoleum, sheep wool, panels made from



paper flakes, compressed earth block, adobe, baked earth, rammed earth, clay, vermiculite, flax linen, sisal, sea grass, cork, expanded clay grains, coconut, wood fibre plates, calcium sand stone, concrete (high and ultra high performance, roman self-healing concrete), etc.

The Environmental Protection Agency (EPA) also suggests using recycled industrial goods, such as coal combustion products, foundry sand, and demolition debris in construction projects.

Building materials should be extracted and manufactured locally to the building site to minimize the energy embedded in their transportation.

#### **e) The Indoor Environmental Quality enhancement**

The Indoor Environmental Quality (IEQ) category in LEED standards, one of the five environmental categories, was created to provide comfort, well-being, and productivity of occupants.

Indoor Air Quality (IAQ) seeks to reduce volatile organic compounds (VOC) and other air impurities such as microbial contaminants. Buildings rely on a properly designed ventilation system (passively / naturally or mechanically powered) to provide adequate ventilation of cleaner air from outdoors or recirculated, filtered air as well as isolated operations (kitchens, dry cleaners, etc.) from other occupancies.

During the design and construction process choosing construction materials and interior finish products with zero or low VOC emissions will improve IAQ. Most building materials and cleaning / maintenance products emit gases, some of them toxic, such as many VOCs including formaldehyde. These gases

can have a detrimental impact on occupants, health, comfort and productivity. Avoiding these products will increase a building's IEQ.

Also important to indoor air quality is the control of moisture accumulation (dampness) leading to mold growth and the presence of bacteria and viruses as well as dust mites and other organisms and microbiological concerns. Water intrusion through a building's envelope or water condensing on cold surfaces on the building's interior can enhance and sustain microbial growth. A well-insulated and tightly sealed envelope will reduce moisture problems but adequate ventilation is also necessary to eliminate moisture from sources indoors including human metabolic processes, cooking, bathing, cleaning and other activities.

#### **f) Operations and maintenance optimization**

No matter how sustainable a building may have been in its design and construction, it can only remain so if it is operated responsibly and maintained properly. Ensuring operations and maintenance (O & M) personnel are part of the project's planning and development process will help retain the green criteria designed at the onset of the project. Every aspect of green building is integrated into the O & M phase of a building's life.

#### **g) Waste reduction**

Green architecture also seeks to reduce waste of energy, water and materials used during construction. During the construction phase, one goal should be to reduce the amount of material going to landfills. Well-designed buildings also help reduce the amount of waste generated by the occupants as well, by providing on-site solutions such as compost bins to reduce matter going to landfills.

To reduce the impact on wells or water treatment plants, several options exist. "Greywater", wastewater from sources such as dishwashing or washing machines, can be used for subsurface irrigation, or if treated, for non-potable purposes, e.g., to flush toilets and wash cars. Rainwater collectors are used for similar purposes.

Centralized wastewater treatment systems can be costly and use a lot of energy. An alternative to this process is converting waste and wastewater into fertilizer, which avoids these costs and shows other benefits. By collecting human waste at the source and running it to a semi-centralized biogas plant with other biological waste, liquid fertilizer can be produced.

### 1.6.2 Principles of Sustainable Housing

Sustainable housing is defined as the meeting of the needs of the person without compromising the ability of future generation to meet their own needs.

The important features or principles of sustainable housing is as follows

- The needs of the housing are to be satisfied or fulfilled for the present requirement without affecting the environment.
- Sustainable development should ensure the environmental protection while taking the housing programs.
- The sustainable development should ensure the maximum rate of resource consumption.
- The waste materials should not be harmful to the society.
- The sustainable development should minimize the reverse impacts on resources and the environment for future generation.

This should ensure the stopping of over exploitation of resources, reduce waste discharge and emissions and maintain ecological balance.

The sustainable development will support economical growth of poor countries and help to narrow / minimize the wealth gap between the nations and within the nations.

- The 3R approach should be followed. i.e., Reduce, Reuse, Recycle. This means reduce the usage of resources, using them again and again and redo the process to utilize again the resources to the maximum extent possible. This 3R approach reduces the waste generation and pollution.
- Environmental education and awareness should be created. This is possible by teaching the environmental subject from the school stage itself.
- The sustainable development should follow an appropriate technology which should be adaptable, eco-friendly, resource efficient and culturally suitable. It involves mostly local resources and local labours.

### 1.6.3 Sustainability Concerns as per NHHP 2007

- Green belts will be developed around cities with a view to maintaining the ecological balance.
- Suitable green recreational areas like zoo, lakes and gardens will be earmarked / developed for public visits in the Master Plan of each city / town.
- Water bodies will be protected with special emphasis on keeping the flood plains of tropical rivers free from construction or encroachments.

- d) Efforts will be made to ensure that Master Plans protect large depressions from being filled up since they are natural drainage points for conservation of water and can be developed as suitable water bodies.
- e) Efforts will be made to encourage cities / towns to keep a significant proportion of the total Master Plan area as 'green lungs of the city.'
- f) Efforts will be made to encourage States / UTs to develop Sub-regional / Special Area Development Plans for areas with fragile ecological characteristics on the basis of Environment Impact Assessment (EIA) so as to take care of all environmental concerns at the planning stage itself in consultation with the Ministry of Environment & Forests.
- g) Growth of a city beyond reasonable limits imposes unbearable strain on its services. City planners would be encouraged to lay down norms for development of urban sprawls and satellite townships.
- h) Reduction in the rate of in-migration into mega and metro cities is urgently needed through preparation of State / UT level regional plans based on fast transport corridors for balanced growth.
- i) Model bye-laws will be developed to promote the use of renewable energy sources particularly solar water heating systems in residential and commercial buildings.
- j) Poverty and unemployment are detrimental to the well balanced growth of urban settlements. States / UTs Governments and local authorities will be encouraged to formulate and implement poverty alleviation and employment generation programmes based on skills' training especially in the services sector.

### **1.7. Integrated approach on arriving holding capacity and density norms**

The traditional approach to development has been basically single sector oriented in the developing countries of the world. In India, in the early stages of the development planning process, there were, however, a few attempts to link up one or two components of activities within a sector. It was much later that attempts were made to integrate some of these components but they were largely uncoordinated, having no sequence in the flow of development inputs. The integration was often a political palliative, an attempt by governments to keep up with the Jones, rather than to reach the benefits of an integrated approach to the target groups. Evidences of this approach have been seen across the world and India is no exception. The basic reason for this was no agreed upon concept of integration. In the absence of that, it was used as per the convenience of a situation. The limited resource availability was most probably the real reason for this approach.

In India, there were some isolated attempts made during the latter part of the 1980s and in early nineties to bring about an integration in the real sense, of trying to bring together development components not only from within a sector but also from inter-related sectors. The mechanism for this process was not yet established and the 1990s may be considered to be nascent period for the effective integration process in India. This was spurred by the Constitutional Amendments in early nineties, that provided opportunity to address local level development issues by the local bodies and the application of integrated approach could be tested and its impact felt better after the combination of below set up of integration.