

Redefining Master Plans to Promote Smart And Sustainable Cities

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Abstract - *Urban planning, globally and locally, has been dictated by the Master plans to make city growth and development more rational, orderly and logical. Studies made and analysis carried out, have shown that mechanism adopted for preparing master plans, based on pure land use planning, has made these plans both rigid and time-consuming besides unsustainable. Master plans have been found to be largely ignoring the dynamism of urban growth and development besides promoting dualities and contradictions in an urban setting. By defining the land use of all parcels of land, cities have been virtually frozen. In the process, the majority of cities have been suffering from illegal, sub-standard, haphazard and unplanned growth. Master plans have accordingly, emerged as the major roadblock in promoting planned urban development and making cities sustainable. In search for appropriate solutions for promoting planned development and making city growth both rational and dynamic, paper focus on redefining and putting in place a new order of urban planning, development options and management strategies besides suggesting new format of Master Plans to make cities smart, more humane, equitable, just, efficient, productive, sustainable and providers of assured quality of life to all existing and future urban residents including poorest of the poor.*

Key Words: Compact cities, Regional planning, Energy efficiency and Green transportation.

1. INTRODUCTION

Last two centuries have witnessed rapid transformation of countries and societies in terms of way of living, distribution of population, the pattern of employment, means of productivity & mobility, the pattern of income, distribution, and consumption of wealth and resource etc. These patterns are largely marked by both speed and concentration of population, activities, resources, and infrastructure. All these changes and transformations have their genesis in urbanization, which has reshaped and redefined the entire fabric of human settlements. Starting with the industrial revolution, the process is gaining a high degree of currency across the globe ushering a new era and regime of population growth, prosperity, development and rapid expansion of human settlements besides promoting poverty, pollution, and exclusion.

1.1 Global Trends

Globally twenty-first century has been called the century of urbanization, with a larger proportion of the population, living in the urban centers. Studies made by United Nations about the global trends in urbanization, has concluded that world is urbanizing rapidly, with the year

2007 marks a historic milestone in the human history, when for the first time global urban population exceeded the global rural population. Following the global pattern, India is also fast treading on the path of rapid urbanization. The rapid increase in urban population coupled with in-migration from rural hinterland is making cities grow larger and larger. Accordingly, metropolises, megalopolises, and ecumonopolises are fast emerging on the urban canvas. With recorded urban population standing over 377.1 million (31.16 per cent) residing in 3 super- metros, 50 metropolises and 7935 towns (Census 2011), India has emerged as the second largest urban system in the world after China. Cities like Mumbai (185lacs), Kolkata (158 lacs) and Delhi (125 lacs) are assuming monstrous proportions. Under this process of rapid population growth, cities are fast melting to encompass larger and larger rural hinterland within the urban fold, increasing distances between basic human activities of living and working, asking for the larger transportation network to keep the city moving. Energy and resource consumption levels are rising, making cities more polluted and grey.

Cities are known to be propeller of the rapid growth of the economy, generators of large-scale employment, providers of basic and essential amenities & services besides the quality of life as compared to their rural counterpart. This makes urban center's important and vital when the issues of employment, economic growth, and development are considered as a priority. Globally, urbanization and prosperity have been found to have a high degree of positive co-relationship. However, despite distinct positivity of urban centers, cities have been growing in an unplanned and haphazard manner with urban growth marked by chaos, disorder, dualities, and contradictions. Cities are facing the greatest challenges of meeting the basic needs of shelter, healthcare, education, water and sanitation for its residents. In the process, the majority of urban residents are being marginalized. Quality of life in urban India is fast becoming a nightmare for migrants. Population, poverty, pollution, and exclusion have emerged as the hallmarks of Indian urbanization. With an urban population projected to reach 590 million out of 1.4 billion in 2030, greatest challenge before urban planners, architects and policymakers would be, how to harmonize the growth and development of urban India and make it smart and rational. This calls for making the process of urbanization and urban settlements more effective, efficient and sustainable, Productivity of urban center largely hinges on their planned and rational development, which makes urban planning vital and important for rationalizing the entire process of economic and physical development.

2. DEFINING MASTER PLAN

Master plan, as a planning tool, has been extensively and religiously used by planners, locally and globally, to understand and analyze the basic fabric of the city; genesis of its origin, growth, and development; its culture and heritage; changing demographic profile; defining status of the city in terms of infrastructure, services and amenities; existing land utilization pattern and distribution of housing, work centre's, trade and commerce, industry, leisure etc; developmental and environmental issues and challenges faced by city. Based on the studies made and analysis carried out, Master Plan tries to lay down and define agenda for future growth to launch cities on the path of planned development; to make city more sustainable and to ensure that it overcomes all its existing problems; provides basic amenities of life to all its existing and future residents including poorest of the poor, to lead a dignified life. The premise of Master Plan is used extensively to make city economically vibrant, socially just and environmentally sustainable place, through the mechanism of planned development, using land use as the basic tool and strategy. It is long-term document which defines the city in a futuristic context generally spread over a period of two decades.

Considering its role and importance, Master Plans have been viewed differently by Planners in different counties. Master Plan has also been called Comprehensive Plan, considering the comprehensive approach adopted in its visioning, formulation, and implementation. Master Plan has also been named as Development Plan by redefining its intent, content, and scope in order to make city growth more flexible and less rigid, to effectively respond to challenges unleashed by urban dynamism and fast-changing technologies impacting the urban areas, urban living and urban working. Difference in approach has its genesis in the fact that Master Plan has been used both as a policy document to guide the future development of a city and a document detailing precise shape and size of the city in terms of land use and allocation of uses to different parcels of urban land. Approach to Master Plan, as a policy document, has been used extensively by developed world countries to bring flexibility in future planned development whereas majority of developing nations have adopted the mechanism of defining land use for different land parcels to control and regulate the planned development of urban centre's.. Indian planners have adopted the land use planning as the approach for preparing Master Plans of the cities. In order to understand the genesis, contents and scope, it will be relevant to look at how Master Plans have been defined by different experts/ planning agencies.

Delhi Development Authority defines Master Plan as: 'A long term perspective plan, for guiding the sustainable planned development of the city. This document lays down the planning guidelines, policies, and development code and space requirements for various socio-economic activities supporting the city population during the plan

period. It is also the basis for determining all infrastructure requirements'.

Division of Planning, City of Trenton, NJ has defined Master Plan in terms of; 'A comprehensive plan providing a long-range vision for the built environment of a community. It guides the appropriate use of lands within a municipality in order to protect the public health and safety and to promote general welfare. Among other issues, the Master Plan can identify:

- Suitable locations for commercial, housing and mixed-use development;
- Locations where the city should increase density, use redevelopment, or intervene in other ways;
- Opportunities to extend and/or improve open space, recreational areas, and civic facilities;
- Strategies for increasing economic development;
- Environmental, historic and cultural resources that need conservation; and
- Strategies for solving congestion and improving transit services.

Master Plan has also been defined as, 'A plan that shows an overall development concept that includes urban design, landscaping, infrastructure, service provision, circulation, present and future land use and built form. It consists of three dimensional images, texts, diagrams, statistics, reports, maps and aerial photos that describe how a specific location will be developed. It provides a structured approach and creates a clear framework for developing an area.

Looking at the above definitions, it can be safely concluded that Master Plans are mandated to be definer of physical environment, social environment and economic environment and are supposed to have all the ingredients which can make a city people centric, more livable, sustainable, productive and sustainers of quality human living besides making it an attractive investment destination. Considering its focus, approach, context and importance, governments and city development authorities have adopted Master Plan as the mechanism to promote planned development. Accordingly, state governments have put in place comprehensive legal framework defining objectives, intent, scope and contents besides methodology for preparing Master Plan to ensure that these plans are prepared for the existing and proposed urban centre's, in order to launch them on the fast trajectory of rational growth and planned development.

3. ISSUES

Despite the fact Master Plan showcases distinct advantages in terms of promoting planned development, capability of ushering an era of quality development, capacity to leverage economic development and making urban development both inclusive and equitable, but the

past experience of development of cities in the post-independence era, for whom Master Plans have been prepared and made operational, has been found to be marked with dualities and contradictions. Instead of planned development, majority of the growth in these cities is dotted with haphazard and sub-standard development with unplanned development emerging as the order of the day. Despite Master Plans assuring quality of life to all the residents, even to the poorest of the poor to lead a dignified life, majority of urban dwellers have been observed to face a life of deprivation and poverty, living in slums and shanty towns. As engines of economic growth, Indian cities showcase large scale poverty rubbing shoulders with prosperity and slums existing besides skyscrapers. Basic amenities of life including shelter, water supply, sanitation, electricity, road network, healthcare, education etc are eluding majority of urban residents. Cities are found to be fast emerging as island of prosperity in the sea of poverty. This clearly shows that Master Plans, in its present shape and approach, have not been able to promote, achieve and deliver the objectives for which they were put in place. Instead they have created dualities and promoted contradictions, making cities less attractive and less preferred destination. Instead of promoters of development, Master Plans have emerged as role model of controllers of development. They have frozen the cities through rigidly defining their land uses, making these plans emerging as major roadblock in the process of development.

Master plans, in majority of cases, have been found to promote and follow policy of exclusion instead of inclusion by focusing more on physical aspects of city planning ignoring the environmental, economic and social aspects. This approach has caused enormous damage to city fabric and its growth and development. By excluding majority of urban population, consisting of poor, informal sector and lower section of societal pyramid from the process of planning, Master Plans have ushered an era of unplanned growth and mushrooming of slums. In this process, these plans have emerged as instruments of serving the interests of elite at the cost of poor and have-nots. With cumbersome legal framework, large resources and time frame is required for preparing and approval of Master Plans. This invariably delays the preparation of such plans leading to a situation where planning is found to be invariably chasing the development. Mumbai Master Plan once took 17 long years for approval leading to largest city and economic capital of India growing without a plan during these 17 long years. Plan preparation in the present context is considered more as an official business, carried out within four walls of town planning agencies with minimum involvement of stake holders including people, communities, institutions, industry etc, to whom this plan is supposed to serve and whose needs and interests it is supposed to cater. Master Plan thus prepared, does not reflect the ground realities and people aspiration leading to its non-implementation and rejection by majority of urban residents. Absence of latest technologies makes planning process both time

consuming and inaccurate which invariably delays the plan preparation and negates its implementation. Existence of multiple agencies of urban planning and development in majority of Indian cities leads to conflict of interests and non-implementation of plan besides duplication of works, leading to overlap and wastage.

Lack of ownership of Master Plan has emerged as the main factor for non-implementation of these plans. Lack of focus on energy, sustainability and ignoring villages as partner in city planned growth in the Master Plans have made these plans highly energy inefficient, unsustainable leading to mushroom growth by speculators and land mafia. Process of declaring large planning area, enlarging urban and urban sable area in the successive plans has lead to making city not only energy inefficient but also consumer of large area of land and resources. It also increases the length, breadth and depth of network and services making city development and maintenance cost-intensive besides creating large number of problems related to mobility, traffic, transportation and pollution. In the words of *Ishar Judge Walia*, 'Indian urban planning needs major overhaul—it is overly top down and controlling, not providing much needed guidance, coordination and integration'. Considering all the above issues, it becomes critical that the intent, content, scope along with entire process and procedure of preparing/approval of Master Plan is, objectively and critically, reviewed and reframed to make it an effective instrument and role model of promoting planned growth, rational development and good governance.

4. REDEFINING PLANNING

In order to rationalize the urban development process in the country, Government of India has launched a Smart City Mission covering initially 100 selected cities. Creating smart cities would require new order of Master Plans, considering the contours and complexity of urban settlements. New order of Master Plans would involve making planning people centric, transparent, community oriented and flexible. Its focus shall be to minimize prevailing urban dualities and contradictions and to promote development based on equity, inclusiveness and providing opportunities to all. Contours of Master Plans, will have to be redrawn /redefined with appropriate innovations/changes made in the intent, contents and scope of such plans. New order of Master Plans will not be merely land-use plans, defining/freezing the city future once for all for next two decades, indicating the use of every parcel of land in the city. They will take a 'whole city' approach to planning and will focus on the urban form, shape and typology of the city. Since cities are dynamic entities, ever changing, ever shaping, evolving and devolving, they will require plans which provide inbuilt flexibility to cater to urban dynamism. The Master Plans would accordingly be dynamic in nature, growing and evolving with the growth of towns. New breed of Master Plans would be based on state art technologies and a distinct vision, evolved after detailed study, analysis and

understanding of the city fabric and its growth potential, duly supported by detailed planning and development guidelines. The vision shall be achieved through well defined missions for different facets of city involving planning and development. Each development project shall be evaluated in the context of defined vision and guidelines, by a multi-disciplinary team of experts by involving stakeholders before accepting. The city planning shall not be dictated exclusively by planners but will involve larger set of experts representing different shades of city planning, growth and management to rationalize decision making. Architects, urban designers, landscape experts, service providers, environmentalists, transport experts, conservationists, art and culture historians and sociologists etc will have major role in planning the smart cities.

New order of planning will be geared to make the city compact to reduce travel and extent of service network to bring economy and operational efficiency in the city. In this context, the focus of the city shall be people. Planning shall also promote better relationship between living and working by adopting the mechanism of transit oriented development. In this pattern, the focus shall be to provide housing, offices, work areas, commercial and institutions along the mass transport network provided within walking distance. Green spaces on the defined norms shall form integral part of urban living and working in order to promote highest order of environment and ecology. Smart cities will be planned on the basis of inclusiveness, self-reliance and self-sustainability, having minimum impact on local and global environment and ecology. Considering the major implications of urban areas, being largest consumers of energy and resources, generators of waste and emitters of green house gasses, largely due to transportation and built environment, the new regime of planning will focus on minimizing travel and create buildings which are least consumers of energy and resources. Smart planning will focus on creating cities which are highly energy efficient. This would be made possible by adopting shape and size of the city which involve minimum travel and services. In addition, to *looking inward*, new regime of urban planning will also be *looking outward* so as to link the city with its surrounding areas/settlements. No city exists in spatial isolation. Every city has its periphery/area of influence to support it. This zone of influence varies with the size, location, primacy, accessibility, population, nature of specialization, administrative status, amenities, services etc. Existing pattern of urban planning ignores the critical role and importance of periphery in sustaining/rationalizing the city growth and development. In fact majority of prevailing urban ills have their genesis in ignoring the planning, growth and development of surrounding urban/rural settlements. Accordingly, new regime of Master Planning will be based on the approach which would involve inward and outward looking at the cities. Most efficient cities in the world have adopted *Regional perspective* and not just looking at cities growth. The Regional approach/model has helped them in minimizing

local competition and conflicts, over/under investment in infrastructure and overcoming confusion over role and responsibilities of various agencies and making city smart. In the process, it has promoted higher order of co-operation and growth, of not only of the city but of the region. Looking outward can also help in achieving the objectives of integration and decentralized planning, enshrined in *74th Constitutional Amendment Act, 1992*.

5. WAY FORWARD

Despite the fact that urban India is placed as the second largest urban system in the world, only about 30 percent cities out of a total of 7935 urban settlements in the country have completed master plans even after seven decades of independence and completing twelve five year plans of growth and development. In order to ensure that urban centre's become smart and engines of economic growth besides ushers of new era of rapid and equitable growth, we have to put in a place a new order and system which leads to preparing Better Master Plans of cities on a time bound basis. This calls for changing our existing approach, intent, contents and scope of preparing Master Plans. Cities must be made to live, breathe and grow freely. They must provide supportive environment to promote orderly development, attract investment and ensure quality of life besides providing opportunities to all its existing and future residents to lead an optimum and quality life. Options for preparing new order of Master Plans to make cities smart and sustainable should essentially revolve around:

- **Defining a realistic and achievable Vision** for the city based on in-depth study, and analysis including SWOT analysis, through a consultative process involving all stakeholders, experts and parastatal agencies
- **Defreezing the City** by changing our approach from defining land uses of all parcels of land to providing a developmental framework within which city should grow for meeting its ever changing needs and people aspirations due to emerging technologies and ever changing urban contexts.
- **Making city Compact** by redefining shape and size of the city and adopting high rise and high density development mechanism to optimise land, minimise travel, reduce carbon footprints and make city development cost and energy efficient.
- **Promoting Green Transport** by changing our approach from planning for vehicle to planning for people with order of priority for travel placed as pedestrianisation, cycling, mass transportation and personal vehicles in that order of preference to minimise congestion, lowering environmental pollution and avoiding traffic blues.

- **Making city energy efficient** through preparing Master Plan with minimising energy consumption as the focus by adopting mixed land use, avoiding pure land use and redefining living-working-leisure relationship and adopting transit oriented development approach
- **Promoting Regional Context** by viewing and planning city in the larger context by linking cities and towns as well as linking urban areas to rural areas
- **Making urban villages integral part of planning process** by defining a well laid down policy framework and agenda for the planning and development of villages falling in urban/ urbanisable/ planning area.
- **Making informal sector integral part of planning process** by earmarking appropriate and dedicated space for their living and working
- **Creating Ownership of plan** by avoiding multiplicity of agencies and designating a single agency for co-ordination and implementation of master plan
- **Using latest, state of art and innovative technologies** for preparing, approval, implementation and interpretation of Master Plan besides using it for public consultation and receiving suggestions, views and communicating status of planning
- **Using a Group approach** comprising of architects, planners, engineers, urban designer, transport planner, landscape expert, sociologist, geographer, environmentalist, conservationist to prepare Master Plan and evaluate all projects presented for approval and implementation in city
- **Planning city on a set of well defined parameters** of open spaces, services, mobility, sanitation, services, energy etc to ensure the provision of services, amenities, services on a defined scale to all the residents.
- **Addressing issues like poverty, employment and economy** by redefining approach from merely land use planning to planning for economic development, environment promotion and employment generation
- **Making city Smart** by preparing Master plan with focus on people, energy, environment, employment, sustainability, services, mobility and shelter to create zero car, zero energy, zero slum, zero waste and zero carbon city.
- **Preserving heritage**, both natural and manmade, to showcase and preserve past glory and cultural values for posterity
- **Adopting a participatory approach** by actively creating forum and institutional framework for involving people, communities, NGO's, CBO's, industry, trade & commerce, academic institutions etc to create local ownership
- **Making Master Plan promoter of development.** rather than controller of developing by providing space for inclusion of all people centric development activities which promote public and city interest
- **Promoting use of land 24x7** to minimise diversion of land under agriculture to non-agricultural uses, making cities more compact, ensuring optimum utilisation of infrastructure and to make urban development highly cost-efficient.
- **Generating resources** for plan preparation, implementation, revision and reframing besides creating/maintaining city/local level infrastructures, amenities and services
- **Redefining the legal framework** for preparing the Master Plan in a time bound manner by making it simple cost/ time efficient and more participatory.
- **Ensuring effective implementation of Master Plan** by creating/designating a dedicated agency, duly equipped with appropriate level of resources both manpower and financial, having adequate legal backing to punish violators

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