

URBAN PLANNING AND REGIONAL DEVELOPMENT IN INDIA-THE EMERGING CHALLENGES AND PRIORITIES FOR THE 21ST CENTURY

P. Jayapal and Rajesh Goel¹⁾

Assistant Chiefs, Housing and Urban Development Corporation, India

Introduction

One of the most striking features of the 20th century is the extraordinary growth of population, particularly in the developing countries. Started with a total population of about 2 billion, the world at the dawn of the century is estimated to have 6 billion people. Equally significant has been the growth of urban population. The century which started with an urban population of about 10%, now accommodates about 50% of the population in urban areas. Probably, instead of quoting as the 'world becoming a village', we need to quote as the 'globe emerging as a city'. Even more striking is the fact that a substantial proportion of this growth in population and particularly in the urban areas has occurred in the developing countries. At present, the world is dotted with 21 mega cities having populations more than 10 million each, and out of which 17 are located in the developing countries.

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Indian Urbanisation scenario

Like most other developing countries of the world, India too has passed through this twentieth century phenomenon. In 1901, India had about 10.85% of its population living in urban areas which rose to 13.86 in 1941 and 19.91% in 1971. The proportion increased to 23.34% in 1981 and 25.71% in 1991. Where as the total population of the country grew at the rate of 24% during the decade 1981-99, the urban population grew at the rate of 36.47%. Particularly significant is the fact that the larger cities have been growing faster than the smaller ones. For instance, while the 291 class I cities (with population over 100,000) grew at the rate of 36.35% and the 341 class II towns (with population between 50,000 and 100,000) grew at the rate of 47.22%, during the decade 1981-91, the 924 medium sized towns (population size 20,000 to 50,000) and the 1138 towns of population size 10,000 to 20,000 grew at 28.32% and 25.17% respectively. However, the smaller towns of population size 5000 to 10,000 (725 in number) and towns of less than 50,00 size (186 in number) grew at negative rates of (-)1.16% and (-)20.95% respectively. Aided by the same, the Indian urbanisation scenario presents a picture of metropolitanisation, or concentration in larger cities. This is evident from the fact that about 76.17% of urban population are concentrated in the 637 urban centres of population size 50,000 and above alone.

The Indian population which has crossed the billion mark has witnessed a phenomenal growth in urban population with the present estimates of 330 million equalling the total population which existed at the time of India's Independence in 1947. India had 6 mega cities (with population over 4 million) and 23 metropolitan cities in 1991, which is expected to reach 40 by 2001. Additionally, there were 300 large towns (with population more than 0.1 million) and 3,396 medium and small towns (population less than 0.1 million) in 1991. By 2021, it is projected that India will have a total of 5,000 towns in 2021, with 70 million plus cities, 500 large towns and 4,430 medium and small towns, accommodating about 550 million people in the urban areas. By 2025, India's urban population is estimated to reach the 50% mark.

Like elsewhere, in India too, the urbanisation process has been associated with improved economic growth. In 1950-51, India had about 16% of its population living in urban areas, and urban India contributed to 29% of India's Gross Domestic Product (GDP). Where as the urban population increased to 23% in 1981 and 26% in 1991, the urban areas contribution to GDP increased to 47% and 55% during the corresponding years. With the projected urban population touching the mark of 33% in 2001 and 40% in 2021, the urban areas contribution is estimated to reach 60% and 73% during the respective years.

The Indian urban scenario exhibits in general the following characteristics:

- a) high rates of urban population growth, with urban centres in general growing much faster than the national rate of population increase
- b) a particularly rapid and relentless increase mainly because of rural in-migration resulting in urban poverty as reflected by the growth of slums and shanty towns in the larger urban centres
- c) such an urban growth and concentration (with over 60% of urban population living in class I cities with population over 100,000), mainly in the bigger urban settlements is resulting in severe overcrowding, physical limitations to urban expansion and high cost of investment in such centres,
- d) lack of strong middle and lower order urban hierarchy of settlements which could over time undertake the functions of bigger settlements and possibly relieve the larger towns from the pressure they are experiencing at present
- e) the urbanisation process would continue unhindered and is irreversible atleast in the near future, and
- f) the urban areas have merged as the backbone of Indian national economy and its contribution is expected to continue to increase in the coming years.

Cities – The emerging concerns

Today's **cities present a scenario of paradoxes**. At once, the city presents a picture of extraordinary economic vibrancy and also a scenario of increasing unemployment with its inability to offer employment to all the needy. Even while this centre of prosperity is able to offer an improved quality of life to a large section of its citizens, it also presents a picture of an agglomeration of poverty, with even larger quantum of population living in deplorable conditions. While the city has created peaks of affluence, it has also created depths of poverty and despair. And, even while it acts as the centre of cultural synthesis, it also presents a scenario of 'hollow of conscience' with crimes against women and children rising to unbelievable heights. The increasing difference in the levels of income and quality of life of the people as reflected in the economic marginality, has resulted in the discernible demarcation of the 'have's and haven'ts' in terms of spatial, economic, cultural components in the city fabric.

The primary reason for the emergence of such a paradox is the **inability of the urban system to respond** to the requirements of the migrant population moving into the city. Where as the response of the surrounding rural system to the requirement of the urban areas, in providing cheap labour has been overwhelming, the urban areas have not been able to respond, in terms of providing affordable land or shelter to the required extent. This has resulted in the low income population squatting on the vacant lands, often at the centre of the city. Today, Indian cities accommodate anywhere between one-third to one-fourth of its populations in the informal settlements of slums and slum like conditions. Where as the over all population is growing at around 2.4 per cent per annum and the urban population is growing at 3 to 4%, the population in slums is increasing at a rate of 7 to 8%. The local authorities have not been able to provide/ensure access to basic infrastructural facilities either, due to financial constraints and also in view of the spontaneous settlements being 'illegal', where in 'authorised expenditure' is unacceptable, resulting in development of slums and slum like conditions. The social exclusion becoming inevitable, the city's ability to integrate the citizenry is

under severe strain. Economic progress alone emerging as the symbol of success, the relevance of ethical, political, cultural and diversities has assumed a marginal significance. There exists a sense of marginalisation in the city development process by a substantial proportion of population, be it the low income groups, the women and children, the youth or the elderly citizens, the disabled, the minority and even the rich and affluent.

Urban Production systems unable to accommodate the rural work force:

The increased adoption of mechanised production processes and declining need for human labour with marginal skills is bringing in a sense of insecurity among the unemployed population. With the growing labour force in the cities that gets reinforced through in-migration from rural areas, predominantly being semi-skilled and often unskilled to fit in the production systems of 'urban manufacturing industries', a large proportion of the workforce remained 'excluded' from the labour systems. Lack of access to employment opportunities forms the prime reason for the marginalisation of the 'other half'. As observed by the Human Development Report (UNDP, 1996), 'the quality of economic growth is as important as its quantity. For human development, growth should be job-creating rather than jobless, poverty reducing rather than ruthless, participatory rather than voiceless, culturally enriched rather than rootless, and environment friendly rather than futureless. A growth strategy that aims for a more equitable distribution of assets, that is job-creating and labour intensive, and that is decentralised can achieve such growth'.

Informal Production Systems Equally Important: Unable to identify themselves appropriate to the requirements of the formal urban economy, the workforce engages itself in informal economic activities, that remain 'supportive' of the urban production systems. Contrary to the general perception that the informal settlements and the economic activities undertaken there, of not being 'productive' and of not making a significant contribution to the functioning of the urban system, the informal economy presents a strong forward and backward economic linkages with the 'formal economy'.

Urban Infrastructure Development in India

Status of Physical provision of infrastructure in urban areas

In spite of substantial emphasis on the provision of basic facilities and services, particularly in the urban areas, the present status of infrastructure development leaves much to be desired.

Protected water supply is accessible to only 84% of the population and even of this, the in-house connection coverage is limited to 58% of the urban households. The International Water Supply and Sanitation Decade (1981-90) had projected 100% water for all in urban areas. Against the suggested norm of 140 lpcd, the availability of potable water ranges from 165 lpcd in a few larger towns to 50 lpcd in most of the smaller and medium towns. The slum areas in towns that accommodate 20 to 25% of the population, on an average receive less than 30 lpcd of water.

Sewerage and Sanitation: Acceptable level of sewerage and sanitation facilities is available only to 46% of the urban population that too only in part of the city areas. Of the 3700 towns in India, only 200 are assessed to have acceptable level of sewerage facilities that are environmentally safe and hygienic and acceptable. This is not available for the entire town and only covers part areas, primarily covering new urban extensions. **Latrines** are yet not accessible to 31% of urban residents and a significant proportion of population is compelled to opt for open defecation resulting in substantial health hazards.

Waste collection and management services: The existing system of solid waste management practices in the urban areas of India is characterised by partial coverage, which is manually operated and labour intensive. Even though the per capita generation of solid waste in Indian urban centres is very low (national average ranging from 150 to 350 gms/head/day) compared to that of developed countries, the total quantum generated in large cities is indeed substantial. For example, Mumbai produces a total of 4400 tonnes of waste every day while Chennai and Bangalore each produce about 2200 tonnes every day. The average generation in metropolitan and large cities

range from 450 to 500 gms/capita/day. Estimates indicate that solid waste collection facilities have reached only 72% of the population.

Electricity supply is one of the critical requirements for a better quality of life of the citizens. In spite of substantial efforts, primarily because of the concentration of informal and unauthorised settlements, power supply is yet to be provided to close to 25% of the population in urban areas.

Transportation requirements: The large cities in India face substantial crisis in the transportation sector. With the densities increasing along with population growth and the road length not increasing to the required extent, the vibrancy of the cities is affected significantly. Even more serious is the projection that the vehicle population in cities would double in the next 10 years. By that time, Calcutta is estimated to require a system which could handle 38 billion passenger kms compared to the present 29 billion, Bangalore would require to handle 41 billion against the present 32 billion kms and Delhi which presently handles 80 billion passenger kms, would need to handle a staggering 108 billion passenger kms of traffic.

Environmental concerns: Fuelled by the rapid growth of personalised vehicle ownership and also location of industrial activities often in the city centres and peripheries, the larger cities of India today face severe problems of environmental management. With the personalised vehicle ownership in Delhi exceeding the combined quantum of vehicles in Mumbai, Calcutta and Bangalore, Delhi ranks among the most polluted cities of the world. A WHO study indicates that, the Suspended Particulate Matter released by cars every day in Delhi amounts to 23 tonnes, while the same is 15 tonnes in Mumbai, 11 tonnes in Calcutta and 9 tonnes in Bangalore.

Reasons for deficiency in infrastructure in urban areas

Some of the major reasons for the inadequacy of infrastructure in urban areas are as under:

- a) inadequate resources with urban local bodies

- b) absence of a reasonable linkage between the cost of production and price of consumption
- c) absence of qualified personnel and problem of poor staff strength for maintenance activities
- d) absence of regular maintenance of the capital works taken up and the marginal importance attached to the same as compared to undertaking new capital works
- e) inability to reduce losses and leakages resulting in substantial quantum of the provided remaining 'unaccounted for' levy of user charges/tariffs
- f) high project costs resulting from the high administrative cost of the implementing institutions which undertake capital works on behalf of the urban local bodies

Financial requirement for urban Infrastructure Development

The Rakesh Mohan Committee set up by the Government of India to look into Infrastructure sector in detail, in its 'India Infrastructure Report' has identified the cause, consequences, problem size and the resources needed for making a dent in the present scenario of infrastructure development.

Though the Plan provisions for water supply and sanitation sector have steadily increased from 0.65% of the total outlay in the Second Five Year Plan (1956-61) to 1.81% in the Seventh Plan period (1985-90), this provision has been found to be grossly inadequate. As a result, in urban areas, against the target of achieving 100% coverage (which was subsequently scaled down to 90%) with safe drinking water and 75% (which was subsequently scaled down to 50%) with sanitation during the International Drinking Water and Sanitation Decade (1980-90), the coverage achieved in the urban areas was only 85% with safe drinking water and 45% with sanitation. The Planning Commission has estimated additional investment needs of water supply and sanitation for the period 1997-2001 to be about Rs 51,284 crores. The Rakesh Mohan Committee's India Infrastructure Report has estimated a requirement of Rs 69,670 crores to address the backlog upto 1995, an additional

requirement of Rs 8612 crores during 1996-97 to 2000-2001 and an additional investment of about Rs 7738 crores during the period 2001-06.

Investment Requirements for Urban Infrastructure 1996-2006

(Rs in Billion)

	Water Supply	Sanitation	Roads	Total	Per Annum
Backlog upto 1995	696.70	528.60	108.50	1333.80	133.38
Additional Investment 1996-97 to 2000-01	86.12	86.12	86.12	258.36	51.67
Addl. Investment 2001-06	77.38	77.38	77.38	232.14	46.43
O & M				489.62	97.92
Total (1996-2001)					282.98
Total (2001-06)					277.73

Source: India Infrastructure Report, 1998.

The total requirement for urban infrastructure development covering the backlog in service provision, new investments and operation & maintenance for the next 10 years is a mammoth Rs 2,50,000 Crores (USD 59.5 Billion), according to estimates of the Rakesh Mohan Committee. This would mean a per annum requirement of about Rs. 25,000 Crores (USD 5952 million).

Against this mammoth figure, the National Ninth plan (1997-2002) proposals identify only Rs 11795 crores (USD 2,800 million) for urban development, water supply and sanitation which implies that the available plan funds for urban infrastructure development fall short by more than 10 times the requirement.

Initiatives of Government towards Improved Infrastructure development

Setting in motion the Democratic Decentralisation Process

A significant initiative towards devolution of political, administrative and financial powers to the urban local bodies has been effected by the Government through the Constitution (Seventy Fourth Amendment) Act, 1992. Specifying the tenure as five years, the Act provides that no duly elected local body can be superceded for more than six months. It also specifies reservation of one-third of the seats for elected representatives for women and that a specified proportion of seats has also been reserved for the socially disadvantaged population. The functional domain of the municipalities has been widened to include responsibilities for economic development and social justice besides performance of conventional municipal functions. This makes Urban Local Bodies the most important functionary in the provision of the urban services. As per the 12th Schedule of the 74th Constitutional Amendment Act of India, 18 new tasks have been defined as in the functional domain of the ULBs, the most important of which are:

- i. Urban Planning including town planning
- ii. Regulation of land-use and construction of buildings
- iii. Planning for economic and social development
- iv. Roads and bridges
- v. Water supply for domestic, industrial and commercial purposes
- vi. Public health, sanitation conservancy and solid waste management
- vii. Fire services
- viii. Urban forestry, protection of the environment and promotion of ecological aspects
- ix. Safeguarding the interests of weaker sections of society, including the handicapped and mentally retarded
- x. Slum improvement and upgradation

- xi. Urban poverty alleviation
- xii. Promotion of cultural, educational and aesthetic aspects.

With the adequate powers to raise financial resources for city development and management also incorporated, the process of democratic decentralised governance is expected to make the management of cities more efficient, transparent and accountable as the people themselves will participate in the governance of the city at various levels.

Major Programmes of Government for Infrastructure Development in urban areas

The government of India has been implementing a number of programmes which have a nationwide coverage and envisage improvement in the overall quality of life of the citizens in the urban areas. The funding of the programmes generally have been through contribution from the Central and state governments and also from the implementing institutions, with accessing of loans from financial institutions where ever envisaged.

Integrated Development of Small and Medium Towns: To improve the economic and physical infrastructure, to provide essential facilities and services and also to slow down the growth of large cities by developing small and medium towns through increased investments in these towns, a centrally sponsored scheme of Integrated Development of Small and Medium Towns (IDSMT) was initiated in the year 1979-80 and is being continued since then. Investment in the development of small urban centres would also help in reducing migration to large cities and support the growth of surrounding rural areas as well.

Mega Cities Development Programme: Mega cities are the generators of national wealth and they contribute substantially to the national exchequer. The programme aims at development of citywide infrastructure in mega cities with adoption of cost recovery measures to build a revolving fund for undertaking infrastructure projects on a self sustained basis. This programme covered the mega cities of Calcutta, Mumbai, Chennai, Hyderabad and

Bangalore (population above 4 million). This scheme launched in 1993-94 provides funds to state governments for infrastructural development in the ratio of 25:25 through a designated nodal agency and the balance 50% is to be met by the states from financial institutions or accessing the capital market.

Night Shelter and Sanitation Facility for Urban Footpath Dwellers: This central scheme seeks to provide night shelter and sanitation facilities to foot path dwellers at a per capita cost of Rs 5000 with 20% subsidy from Central government and 80% as contribution from the implementing agencies or through availing loan from designated financial institutions. This scheme is being implemented through HUDCO and now has been extended to cover all urban areas wherever the problem of footpath dwellers exists.

Low Cost Sanitation Programme: This centrally sponsored programme is under implementation since 1989-90. It provides for conversion of existing dry latrines into low cost water seal pour flush latrines and construction of new sanitary units where none exist, to prevent open defecation. The basic objective is to liberate the scavengers from the obnoxious practice of carrying head loads of night soil and this scheme is being implemented on a 'whole town' basis. The scheme is operated by providing subsidy from the Government of India and loans from HUDCO in a synchronised manner so that the conversion/construction of low cost sanitation units and liberation of scavengers is done on a whole town basis.

Accelerated Urban Water Supply Programme: This centrally sponsored scheme has been initiated with the objective of solving the drinking water problems in towns having population of less than 20,000 (as per 1991 census). Considering the water scarcity and the narrow revenue base of these small towns, the scheme is funded by the Central and State governments in the ratio of 50:50. This programme was launched in 1994.

Special Programme for Solid Waste Management: The Urban Local Bodies and Municipalities are primarily responsible for the formulation and implementation of schemes for management of municipal solid waste. The governments' role is to act as a facilitator, wherever possible. The problem of waste management around the vicinity of IAF airfields has been engaging the attention of the government for quite some time. Open dumping of waste and

carcass disposal attracts birds, which have posed a danger of air accidents. Towards improving the situation the Ministry of urban Development & Poverty Alleviation took up the initiative for proper sanitation facilities at 10 airfields to overcome the bird menace, namely Gwalior, Ambala, Hindon, Jodhpur, Tezpur, Dindukkal, Sirsa, Adampur, Pune and Bareilly. It was decided that 100% central assistance might be provided for improvement of solid waste management and drainage in these towns.

National Slum Development Programme: Launched in 1996, this special programme aims to extend additional assistance to the States and Union Territories for the integrated development of slums for improving the quality of the citizens living in the disadvantaged conditions. The programme aims to provide water supply, sanitation, primary education, adult literacy and health care requirements and envisages community empowerment as one of the primary achievements. In addition to promoting organised and proper garbage collection and disposal, the programme proposes overall environmental improvement of the slum areas as one of its primary objectives. The focus in the programme is on provision of community infrastructure, shelter, empowerment of the urban poor women, training and involvement of Non-governmental institutions, community based institutions and the private sector institutions. Monitored directly by the Ministry of Urban Development & Poverty Alleviation, this programme also envisages at least 10% of the funds under the programme is allocated for shelter up-gradation component.

Programme for Urban Mapping: The planning exercises need continuous data collection, analysis, interpretation and updating of data. A computer based database and information system in GIS environment is an important requirement for scientific planning which would provide support to planners in development planning, particularly for the present and future development of rapidly growing cities and metropolitan areas. Urban maps need to be multi-purpose so that they can be used by all the agencies and institutions which are involved in the planning and development of such areas. To meet the requirement of base maps for towns and cities, a scheme for preparing urban maps using aerial photography was started during the

Eighth Five Year Plan. The project also envisages development of technical capabilities of the planning capabilities both in the central and state governments so as to enable updating of the maps in a revision cycle.

Emerging Initiatives for Sustainable Urban Development in India

Commercialisation Initiatives

Predominantly, urban infrastructure development hitherto, has been funded through budgetary support from Central/State Governments and Local bodies through its Five-Year Plans and Annual Plans. The resources have been supplemented with funds from both domestic financial institutions and also grants and loans received from the international financing institutions. Under such a budgetary system, the concept of commercialisation in the infrastructure sector could not gain roots in India. Not only the funds were made available partly as grants and partly as soft loans, the recovery of costs from the beneficiaries could not be effectively introduced. Repayments of loans, if any, were generally book adjustments. In many cases, these loans remained in books of accounts, ultimately to be adjusted or written off by the State/Central Government. Such an environment has hindered the entry by the commercial financing institutions to a large extent.

However, with resource constraints, the availability of funds for these sectors could not keep pace with the growing demand. On the other hand, the investment made every year generated the recurring demand for operation and maintenance in the subsequent years, leading to additional strain on the limited resources. It is in this context, the infrastructure projects need to be promoted on a self-sustaining basis which would not only be able to support the operation and maintenance cost but also meet adequately the repayment liabilities of the project loan assistance received. Thus the concept of cost recovery assumes critical importance in the sustainable development of infrastructure in cities. To the extent that the pricing of such services remains constant or relatively inelastic, or worse still, the services are not priced at all, the costs of services are an increasing burden on relatively static municipal resources and state budgets.

The present system of extending subsidized/free services has to change and the cost of services including production, distribution, debt servicing and operation and maintenance, have to be recovered from the beneficiaries. This has become even more important in the context of the overall changed economic scenario of the country wherein less and less budgetary support is being made available from the Govt. in the recent years. In other words, infrastructure services have to be commercialized.

There is an increasing awareness among the public about the need to contribute in the form of user charges or tariff if the services are to be received at the adequate level. Towards increased adoption of commercialisation principles, HUDCO and other financial institutions in India are increasingly emphasising on appropriately fixing/revising the user tariff/charges as a pre-condition to gain access to institutional credit for infrastructure projects. For example, the options insisted in respect of water supply schemes include immediate hike in tariff rates in respect of domestic, commercial and industrial connections, adoption of an annual automatic increase of a fixed proportion ranging from 5 to 10%, levy of a one time connection charge, and also advance registration charges.

Some of these users pay instruments used in HUDCO directed at city infrastructure Schemes are as follows:

Some innovative user-pay instruments promoted by HUDCO

Infrastructure Type	Innovative user pay Instruments
1. Water Supply	Advance registration charges, Connection charges, Enhancement of water tariff, Water benefit tax/water tax, Betterment charges, Development charges, Utilization from other sources such as octroi, property tax, sale of plots etc. and Charges from water Kiosks
2. Sewerage	Connection Charges, Sewerage Cess Tax, Conservancy Tax, Sale of Renewable waste, Sale of Sludge and Sale of Nutrient rich wastewater.
3. Solid waste	Collection Charges, Cess, Sale of Renewable waste, and Fines for dumping waste.
4. Roads/Fly-overs/Bridges	Toll Tax, Land as a Resource and Advertising
5. Airports/ Railway	Surcharge on tickets, using land as a resource, Toll Tax, User,

Private Sector Participation initiatives in infrastructure Development

The substantial hesitancy of the public sector to involve the private sector in the provision of basic infrastructure hitherto has been primarily because of the fear of possible capitalisation of the monopolistic situation by the private sector foregoing the social objectives. On the other hand, the private sector too has been hesitant due to its perceived fear of lesser profits in an area which has been promoted as a public sector responsibility for a long time. The need for a larger capital investment for the city level infrastructure facilities and the long gestation periods for revenue recovery are some of the other major reasons for the marginal involvement of the private sector.

Of late, the scenario has changed significantly with a substantial improvement in the awareness about the need to involve private sector in the service delivery. This has been necessitated because of the following reasons:

- i) **Awareness about opportunities for unbundling** of infrastructure operations, which has radically reduced the requirement of funds from one source, as every infrastructure has been unbundled into projects of comprehensible nature and size and investment magnitude, reducing the risk substantially. For instance, the water supply project has often been segregated into source identification and development, treatment, transmission and distribution, billing, collection, consumer grievances redressal etc.
- ii) **Existence of a significant gap in the physical demand and actual supply**, which has been widening inspite of substantial emphasis to reduce the same by the public sector in the recent past. The realisation has dawned that arresting the widening gap in the infrastructure and also providing for the additional need, in the context of the rapid urban growth fuelled by large scale migration trends, by the public sector alone, is indeed difficult and that large scale involvement of private sector in this process is unavoidable.
- iii) **Inadequacy of funds from the public sector to address the requirement adequately** has emerged by far the most important

reason for soliciting the involvement of private sector in the service delivery. With the indications that in the urban infrastructure sector, the requirement and likely flow of funds from the public sector ratio as 10:1, the involvement of private sector has become inevitable.

- iv) **Willingness to avail the perceived advantages of private sector participation** has been one of the major reasons for the increased emphasis on private participation in the infrastructure promotion and delivery. The private sector is generally associated with higher level of productivity, adoption of innovative practices in the management, increased resources flow into the sector and also higher level of technology applications.

Successful Private sector participation initiatives in Infrastructure Delivery

Land Assembly and Development: In addition to the already prevalent extensive private sector participation in housing delivery, particularly for the middle and higher income groups, a number of successful experiments have been attempted in the crucial area of land assembly and development and infrastructure delivery in India, which adequately takes care of the issue of social equity as well. Some of the innovative examples that exhibit potential for wider replication are as under:

- i) Land assemblies in Haryana through private partnership in which colonisers are permitted to acquire land, develop and market with specified proportion of area sold for weaker sections.
- ii) Allotment of land to private developers at pre-determined prices and land assembly by public agencies while construction and delivery is through the private sector, in Uttar Pradesh.
- iii) Land assembly and shelter delivery by CIDCO through private participation in which a specified number of units are constructed and handed over by the private developers to CIDCO for allotment to lower income group population, at prices fixed by the public authority in advance.

- iv) Construction of LIG and MIG residential units on land purchased by a private company financed by public housing finance institutions with plan approval and enabling assistance provided by the local authority as in Ahmedabad.
- v) Guided urban development in Chennai as a joint venture with private land owners/ developers in which a specified number of constructed units are sold on subsidised rates to CMDA for allotment to low income groups. This mode is yet to be experimented extensively.

Infrastructure Provision: A number of initiatives have been taken by the urban local bodies towards involvement of private sector in the infrastructure provision. In the water supply sector, for instance in respect of Tirupur town, a special purpose vehicle has been formed to implement a project that covers supply of water to industries in and around the town, domestic water supply and sewerage works within municipal limits, and treatment of effluent and land development. In Pune too, private sector participation has been solicited for taking up a major water supply scheme with a project cost of Rs 750 crores. In Bangalore, BOOT arrangement has been entered into for sourcing of 500 mld of water and also incorporates establishment of two tertiary treatment plants of total 60 mld capacity with HUDCO's assistance with the private sector industries undertaking laying of feeder mains in the project. In Chennai, the private sector has been involved extensively in the operation and maintenance of sewerage treatment. In addition to sourcing of water, private sector is also enlisted for promoting a waste treatment plant through private sector. Of late, many progressive cities have opted for involvement of private sector in water supply such as Nagpur, Dewas, Kolhapur, Cochin, Vishakapatnam and Dharwad.

Such initiatives have been attempted in the field of waste management too. In Pune, Pimpri Chinchwad, Nagpur, and in Delhi waste to energy projects have been implemented with private sector participation. Similarly, units for bio-degradation of solid waste have been set up with private sector participation in Vijayawada, Calcutta, Mumbai, Bhopal, Bangalore, Gwalior,

Cochin, and Calicut. In addition, innovative schemes for recovery of fuel/energy and compost from municipal/urban or industrial waste have also been set up with the participation of private sector in a number.

Infrastructure Maintenance: Similarly, in infrastructure provision and maintenance too, a number of cities have adopted innovated methods of private sector involvement for mutual advantage. Examples include the fields of solid waste management operations (Ahmedabad, Baroda, Rajkot, Jaipur, Bangalore, Kochi, Chennai, etc.); sanitation and public health (Bangalore, Navi Mumbai, Faridabad, Aurangabad, Jodhpur etc); maintenance of water supply systems (Navi Mumbai); road construction and maintenance including street lighting (Bangalore, Rajkot, Navi Mumbai, Faridabad, Kochi, Ahmedabad etc) and maintenance of public parks and gardens in a number of towns. CIDCO in Mumbai has also been successful in privatising maintenance of sewerage pumps, and water pumps, meter reading, and billing, maintenance of parks and gardens, collection of service charges etc.

HUDCO's initiatives towards Development of Sustainable Infrastructure

Housing and Urban Development Corporation Ltd (HUDCO) is the premier techno-financing institution in the field of housing and urban development in India, established in the year 1970 as a fully owned government of India enterprise. HUDCO started an exclusive urban infrastructure financing window in 1988-89. Financial assistance is extended for taking up utility infrastructure covering water supply, sewerage, drainage and sanitation, solid waste management, and transport sector projects; social infrastructure covering health, educational and recreational facilities; and economic and commercial infrastructure covering commercial complexes, shopping complexes, information technology parks etc. Substantial priority is given to projects which are environment friendly, ecologically appropriate and sustainable in nature.

As a market leader in the field of urban infrastructure financing in India, contributing about 85% of Indian Institutional funds for city level infrastructure

development, HUDCO has so far extended an assistance of over Rs 13348 crores for taking up 1830 projects spread over the entire country.

Details of HUDCO involvement in the infrastructure sector

Sl No	Scheme type	No of Schemes	Loan Amount (Rs in millions)
1	Water Supply	314	34,360
2	Sewerage and Drainage	63	1216
3.	Low Cost Sanitation	1,015	661
4.	Solid Waste Management	26	238
5	Transport Nagars/Terminals	27	786
6.	Roads & Bridges	88	2,901
7	Airports & Ports	8	386
8	Area Development and IDSMT	133	1,508
9	Social Infrastructure Schemes	89	1,597
10.	Economic & Commercial Infrastructure	67	621
	Grand Total	1,830	13,348

In addition to extending financial assistance for development of infrastructure in urban areas, HUDCO's role in the development of sustainable urban infrastructure projects in India is commendable.

- i) Initiatives to **bring in commercialisation principles** in the operation of urban infrastructure projects through making it a pre-condition for the implementing institutions and state governments to operationalise a reform agenda that include rationalisation of tariffs/user charges, automatic periodic revision of user charges/tariff, adoption of innovative financing mechanisms to make the projects viable and sustainable, maintenance of proper records and accounting systems, establishment of appropriate regulatory mechanisms to ensure transparency, ensuring equity and promoting multiple stake

holders for participation in the development and monitoring of the sector.

- ii) **Promoting private sector participation** in infrastructure provision by appropriately extending financial assistance either directly or through a consortium approach, particularly in the basic services and green field areas which are traditionally understood as non-remunerative, be it development of water supply, waste recycling projects, waste management projects including hospital waste management, transportation sector projects covering roads, terminals and bus fleet, airports, etc.
- iii) Emphasis on **cross subsidisation** in operations with provisions for affordable interest and other terms in respect of projects which have a long gestation period and are socially more relevant and an absolute necessity. Schemes such as low cost sanitation, sewerage, drainage, solid waste management, night shelters for pavement dwellers etc.
- iv) Promotion of **innovative projects** which have substantial social relevance and long term impact on ensuring sustainability of urban systems. Such projects include rain water harvesting, waste water recycling etc. Such schemes which are not generally in the priority list of commercial lending bodies, have been actively promoted by HUDCO.

Imperatives and Priorities in sustainable urban development

There is an increasing awareness about the need to arrest the growing marginalisation of the 'other half' of the population on economic, social or cultural issues. This has been primarily because of the social unrest and disruption of social peace that have resulted due to the violent reactions of the marginalised groups, which has had regressive impact on the economic advantage and competitiveness of the cities. We need to engineer integration through economic progress; culture, education and communication advances;

planning provisions and urban management innovations; and inclusive urban governance initiatives. The sustainability of the cities depends on the success of our strategies to bring in such integration.

a) Need for emphasis on Regional Development rather than the settlements alone: The urban local bodies continue to address the concerns of the city as an independent identity rather than conceiving them as part of a regional system. The symbiotic relationship of the town and its functional region should be taken cognisance and should be reflected in the town development plans. Town development should be viewed as an integral part of regional development strategy and it should act as a catalyst of regional development. The regional aspirations of its resource utilisation and improved technology adoption can be fulfilled only through reorienting the towns role in regional development in terms of supplementing and complementing the services and goods.

b) Enhancing the resource mobilisation capacity of ULBs: Today, the ULBs primarily depend on the budgetary resources provided by the state or central governments. With the increasing difficulties and uncertainties for accessing through budgetary route, it is becoming imperative for the ULBs to seek and look for alternative and innovative resource mobilisation initiatives. A number of ULBs in India have already been quite successful in accessing domestic capital market through the bonds route. The central and state governments have also supported these initiatives of floating bonds through extending fiscal concessions to a limited extent.

c) City Planning Needs to be with long term foresight: At present the approach to urban planning continues to be one of 'post development management' rather than 'pro-active vision' of growth and development trends. The City Planning tools of master plans and building bye-laws have often been criticised for being too rigid to accommodate the rapid changes occurring in the city scape and that rather than being 'development promoting', these legal instruments have become 'development restraining'. It is in this context that innovative planning tools need to be evolved which would be able to forecast the rapid changes occurring in the city's economy and the resultant physical manifestations and guide the future development

of both horizontal and vertical space development and management. The planning approaches need to scientifically forecast various growth scenarios and accordingly incorporate space provisions for various categories of population. The urban lay-out planning approach need to be one that would increase interaction among the residents even while ensuring household privacy. The lay-out and shelter designs need to be responsive to the requirements of low income population and enable taking up of self-help remunerative economic initiatives. We need to introduce large scale 'growing house' concept linking the shelter development to the increasing incomes and economic status of the households. The houses built particularly for the weaker sections and low income categories need to keep provisions in the designs to promote self-employment, and as such the houses need to be in the pattern of work-cum-shelter. The Building Codes and Norms need to be made more realistic and though not relaxed to allow proper implementation. With nearly half of the population living in slums and slum like conditions, the planning bye-laws and building construction standards needs to be extensively relaxed/modified so as to be in tune with the reality of affordability. Low-Rise High-Density housing needs to be promoted on a larger scale as it provides greater densities even while ensuring the minimal requirements, thereby saving land for future developments and also resulting in savings on the high costs associated with conventional high density developments. Cluster planning approach to housing design is increasingly being accepted for its innovativeness for achieving reasonably high densities and without hindering the social life-style of the population. With nearly half of the population living in slums and slum like conditions, the planning bye-laws and building construction standards need to be extensively relaxed/modified so as to be in tune with the reality of affordability.

d) Urban transport deserves a larger emphasis as a primary tool for the development of Urban form in India. Road-based systems have been the most conventional and convenient modes of transport in Indian cities. However, with the development of other specialised means of transport, more efficient and more cost-effective systems such as railways tramways and rapid transport modes are now available for certain specialised needs. To get the maximum out

of these specialised systems, certain prerequisites are to be fulfilled through a coordinated effort. For example, for local travel in small town, walking and cycling are the most cost-effective ways but with the increase in travel distance or density of travel these modes are no more convenient or cost-effective. Efforts are on to provide compulsory **cycle tracks and separation of road traffic** according to mode of transport in medium and large towns. In larger urban metropolises of Calcutta, Delhi Chennai and Bangalore **mass transit systems** in the form of either elevated light railway systems or metro railways are being taken up as a solution to addressing the congestion problems on roads and addressing the associated environmental problems and providing a cost effective solution to public transport. With the income levels and corresponding expectation levels of people increasing, India needs to evolve a policy on personalised transport systems suitably integrated with other related infrastructure requirements.

River front and Lake side development offers a substantial potential in Indian cities both for economic and ecological and environmental points of view. In Delhi and Ahmedabad detailed plans have been drawn up for development of the river front for both commercial and leisure activities with private sector participation. Other than this plans have also been drawn up for increasing and structuring regional transportation schemes based on rivers. Other than this many large and medium towns have directly involved the private sector in the maintenance of **parks and city gardens** with great effectiveness.

e) **Increased availability of developed land:** By far, lack of availability of developed land particularly in the urban areas, has remained the prime factor hindering the increased housing and urban development activities. Innovative measures need to be extensively adopted and adhered to ease this constraint. HUDCO has been insisting for reserving 5% of the land in the larger lay outs as land bank which could be used for housing the service personnel and population that primarily comprises economically weaker sections and low income groups. Land availability could also be increased through appropriate use of innovative methods of land assembly such as land pooling, land readjustment, etc. A heavy vacant land tax would also enable

release of considerable land for urban housing particularly in view of the fact that 10% of the land in urban areas has been estimated to be lying vacant. Promotion of rental housing through appropriate modulation of extreme interests of the owners and tenants would also enable increased construction activity, maintenance of housing units constructed and release of constructed units for occupation, obviating the need for additional construction to a large extent. Use of land as a resource has been demonstrated by HUDCO in New Delhi extensively.

f) Need for promotion of Micro-Enterprises and Self-help Initiatives:

Where as the population in the informal sector is unable to participate directly in the urban production systems, it has shown a substantial success and potential in perceiving the requirements of the formal system, and accordingly involve itself through the micro-enterprises as a successful 'supportive' component. The self-help initiatives have been successful even without the support of the formal system, in the form of enabling technology inputs or market tie-ups. A conscious policy to promote such micro-enterprises and self-help initiatives through involvement of the informal sector population, by extending technology guidance and the facilitatory market tie-ups is needed. Limited access to credit facilities is another factor which increasingly marginalises even the technically feasible and sound self-help initiatives promoted by the informal sector population. In addition to promotion of increased employment in the large scale mechanised production activities, the encouragement to the small scale self-help initiatives could cover a wide variety of possible areas such as production of building materials, implementation of environment friendly and income generating waste recycling initiatives including vermin-composting, adoption of horticulture activity on a small scale etc.

g) Extension of Security of Tenure to the Low Income Population:

The low income population in the city, being an integral component of the city's economy by contributing cheap labour that forms a principal reason for the success of the city's economic progress, needs to be adequately provided with shelter. As the affordability of the low income population is under severe strain, the local authorities need to increasingly promote approaches such as

in-situ upgradation where ever feasible and resettlement where-ever the upgradation is not possible because of the technical reasons. A number of alternative innovations have emerged in the recent past which include land sharing, particularly on the private land; and development of part land for commercial development with the revenue earned used to subsidise the slum redevelopment or renovation. While the option adopted should vary according to the contextual requirements, emphasis should be on in-situ upgradation as otherwise, uprooting would cost the employment and the source of income to the low income population.

h) Gender Equality in Employment Opportunities: The increasing emphasis on larger production based systems and the resultant degradation of traditional skill and labour based production processes, has resulted in the marginalisation of women from active employment and enabling them only to participate in the 'low paid, low skill requiring, and supportive production components'. Notwithstanding the fact that a larger proportion of women are engaged in self-help initiatives and home based activities, their income/ economic status has not been commensurate with their either skill level or the quantum of labour put-in. The employment promotion policies need to be gender sensitive. The building industry being the biggest employer of women, needs to promote technologies which are adaptable to women. A large-scale skill upgradation is a pre-requisite so those women are not left out in the building construction industry, as a result of the innovations.

i) Enabling access to credit requirements of the marginalised: The low income population inevitably faced financial exclusion from the formal institutions due to lack of regular income and evidence of acceptable collateral. The experience of **SEWA** in Gujarat, **SPARC** in Mumbai or Community Development Societies (**CDS**) experiment in Kerala have shown that the **co-operative initiatives** have enormous potential to make a significant impact on the low income population and to deal with their social and financial exclusion by the formal sector institutions. Another method advocated by HUDCO called the '**Composite Credit Mechanism**' is also picking up and will develop in the future for increasing access to finance for the Marginalised.

j) Access to Basic Infrastructure Facilities to reduce marginality: In addition to employment opportunities and shelter requirements, the marginality of the low income population in the urban areas, is more pronounced in their inability to have adequate access to basic infrastructure facilities. With the commercialisation of social facilities, the marginalisation is likely to further widen and in this context, the local authorities have to maintain a delicate balance of ensuring delivery of quality services even while ensuring equity in terms of increased access to all groups. In utility services, efforts should be made to incorporate planning inputs that would ensure its perennial availability. In respect of water supply this could include rain water harvesting, aquifer recharging and waste water recycling initiatives, and in respect of energy, use of wind power and solar energy for power generation.

k) Extensive adoption of sustainable resource management practices: In order to ensure sustainability of urban systems, we need to incorporate practices which are innovative and have far reaching positive impact on the overall eco-system. For instance, in respect of water supply, in the light of substantial water shortage in the urban areas, India needs to **promote extensive rain water harvesting, aquifer recharging and waste water recycling initiatives**. The rain water harvesting practices needs to be adopted both at the regional level and at the city or urban level. There already exists substantial evidence to indicate the success of experiments in India in this regard. Whether it is through the artificial recharge with well injection technique in Mehsana and percolation tanks in Amravathi, or the earthen check dams across rivulets and streams of shivalik foothills in Punjab, or the construction of sub-surface dykes in Odakkali or the artificial recharge through check dams in the JNU campus of New Delhi, these efforts at the regional level have resulted in considerable improvement in water levels. At the city level too, a number of initiatives have been taken up as in Chennai, where in technical parameters for rain water harvesting through percolation pits, pebble beds, ponds, through ditch and furrow storage, or through recharge wells have been specified and made mandatory for obtaining building permission. Similarly, India is yet to have a full fledged tertiary

treatment plant, the first of which is in the process of being set up in Bangalore with HUDCO's assistance.

There are a large number of industrial units in the urban precincts flouting the norms of refuse treatment resulting in rampant pollution of ambient air and water. Similarly, many of the small and medium sized industries often do not have adequate treatment facility for their toxic wastes and effluent. The corporate strategies need to be geared more towards clean technologies and common effluent treatment plants. The urban local bodies also need to incorporate punitive provisions for polluting activities, be it for air, water or land polluting activities. HUDCO has provided consultancy and financial assistance for waste management projects in numerous cities such as Shillong, Imphal, Hyderabad, Vijayawada, Cochin, Pondicherry, Calicut etc. The role of waste-to-energy projects is also stressed as in the bagasse based co-generation plants in Mudhol (Karnataka), Sangli (Maharashtra) and Vadodara (Gujarat). These four bagasse based co-generation schemes with a total power generation capacity of 56 MW would have an exportable surplus power of 33.45 MW.

1) Initiatives for Increased Private Sector Participation in Urban Infrastructure Sector: The India Infrastructure Report (1996) suggests that 'the project macro-economic framework for the next 10 years (1995-96 to 2005-06) envisages an increase in the rate of annual economic growth from the current 5% or so to over 8% by the end of the period'. It further projects that 'the public sector's share in infrastructure investment would decline from over 80% to 55% by the end of 2005-06 AD. Private investment in infrastructure is projected to rise almost 7 fold from Rs 120 billion in 1995-96 to over Rs 800 billion in 2005-06. The focal areas for private investment in infrastructure are likely to be initially in power generation and telecommunications and subsequently ports, roads, civil aviation and urban infrastructure.

A few imperatives need to be addressed to enable an increased role for private sector in urban infrastructure are as under:

- i) **Financial Imperatives:** Increasing access to finance to private sector from capital market/financial institutions

through appropriate fiscal policies, enabling borrowings of longer repayment periods both from domestic and international is an unavoidable imperative, to encourage private sector participation in urban infrastructure development. It is also urgently required to establish a scientific system of pricing for the use of infrastructure facilities which would take care of both equity and commercial interests. Transparency and clarity in pricing and likely profits would certainly encourage genuine private sector to invest in such operations. Appropriate risk segregation in respect of each component of a larger project and also among the implementing partners – namely private and public, need to be clearly identified and the revenue sharing should be in consonance with the proportion of investment and risk acceptance. The financial institutions favor extending loans for medium/short terms rather than long term in view of uncertainties in the interest rate fluctuations, inflation, etc. In view of this, to obtain funds from Financial Institutions, it would be advisable to unbundle the project into feasible components and seek financing at appropriate stage of implementation.

- ii) **Legal Imperatives:** While there is a substantial willingness to involve private sector in housing and infrastructure development, there is considerable confusion among the states/local bodies about the relevance and feasibility of the methods/ mechanisms of their involvement. In view of this, at the central level, guidelines and model Acts need to be prepared for advising the State governments and implementing agencies. Similarly, the States and the local bodies need to modify their respective planning/development Act/regulations etc. to incorporate enabling and explicit provisions for involvement of the private sector.

m) Institutional and Regulatory Imperatives: Identification and setting up of specific institutions – Special Purpose Vehicles (SPVs) for taking up comprehensive projects and also generate resources from the market is another necessity that needs priority attention. Wider application of ‘credit rating systems’ for selection and formulation of guidelines to encourage ‘consortium’ of private concerns to engage in the implementation of larger sized projects is also necessary. In addition, documentation of successful experiments of private sector participation in the field of housing and urban infrastructure needs to be attempted and widely publicised to facilitate greater awareness among the local bodies. In the light of the new forms of relationships that emerge between the public and private sector in project implementation, the economic, financial, technical and legal appraisal of such schemes and the institutional and regulatory mechanisms under which such participation is possible and feasible need to be thoroughly understood.

n) Setting up of Regulatory framework and instruments: In order to effectively promote private sector participation in infrastructure delivery, India needs to bring in an appropriate regulatory regime to ensure transferency, efficiency and equity between public concerns and private initiatives. The regulatory bodies at either the state or city levels could guide in setting the standards for service delivery, fixation of tariffs/user charges with due regard to social equity and profitability concerns, ensuring free play in the market by offering opportunities for equitable competition among the participants and stake holders, and also reserve mechanisms to ensure that service delivery is assured.

o) Development of a strong Information base: This is a crucial resource for planning, as it is impractical to imagine the success of planning in this era of rapidly changing and growing urban and rural areas, without accurate information of the field situation. The emerging technologies of imageries and aerial photos for land information with their extraordinary advantages for spatial and periodical information generation and collation needs to be extensively taken advantage of for appropriate planning and management.

p) Addressing the requirements of Capacity Building of Settlement Development Managers: In India there are some 3,900 towns (ULBs) with

thousands of local government personnel in charge of development and management matters will need to augment their knowledge and skills. Additionally, personnel in the State Departments will need to achieve more sound professionalism and to perform their supportive and enabling roles towards local agencies. Manpower and management resources are therefore the crucial bottleneck to the development of urban areas. The number and quality of staff needed to support the large number of services is quite inadequate.

The developing and nurturing of partnerships has been identified as the **new tool** for the achieving progress without hampering resources for future generations. Education and **capacity building** has to play an important input in this agenda if it has to be successfully implemented. At this moment there is a woeful lack of manpower and management resources as no one could be termed as an **“Human settlement manager”** who could comprehensively foresee and manage the overall development of the urban or rural area. While we have specialists in particular fields, there is a need for professional managers who could comprehend the problems, conceptualize options and conceive solutions to development through a comprehensive vision of the present and the future. Capacity Building efforts along with policies have to be developed to allow for greater awareness and attitude towards formation of *Public Private Peoples Partnerships (PPPP)*. Future education/capacity building efforts have to be aimed at the development of the pre requisites for sustainability reflected in the four interrelated principles of *transparency, efficiency, mutual understanding and partnership*.

Conclusion:

The rapid urbanisation world over indicates that the process is irreversible in the near future. Also clear is the fact that the economic vibrancy of cities would continue to make their role more important in the economic development of the Nations. In this process, the cities would continue to attract population, skilled, semi-skilled and unskilled. At the dawn of the new

millennium, India's population has already crossed the one billion mark and about one-third of the entire population is living in our cities and towns. As such, the approaches to urban planning, urban development and urban governance need to be re-looked into, so as to make these more effective, more responsive and more participatory in nature. The city needs to be developed as an 'inclusive entity', inclusive to recognise the will and wishes of its citizenry and inclusive to promote a common purpose and goal among the citizenry for the sustainable development of cities.