

Pathak, Chitta

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## Challenges of smart cities in India

CHITTA RANJAN PATHAK \*

*In 2015, the Central Government of India has added a new dimension to Urbanization and Urban development policy and has introduced the concept of Smart Cities. At the beginning the concept was not elaborated. Does it mean inclusive development of the selected cities? Could they correct the spatial and structural imbalance of urban development in India? The government took almost a year to define such smart cities and has identified about 100 such smart cities for integrated urban development. To start with only twenty such cities would be taken up for planning and development in 2016*

*Independent India has inherited a spatially and structurally imbalanced urban development dominated by the large cities (metropolises, mega cities, etc) with deficiency of small and medium size towns. To achieve balanced urban development the government introduced the concept of integrated development of small and medium size towns (in 1974) and to re-orient the rural-urban migration away from the large size cities. The policy has continued even now but had limited success in urban development.*

*In 1980s, the Urbanization Commission has (1986) suggested the development of selected urban areas having potential for development but still the large size cities have grown unabatingly and migration towards the metro cities continued. Because of weak economic base the small & medium size towns could not keep pace with the urbanization process.*

*The latest Population Census of India (2011) has analyzed the urbanization pattern in India. It shows that India has achieved the level of urbanization (31.16%) with annual growth rate of 2.76 percent. There are 7,935 urban areas with 377.1 million urban population and 466 cities having population more than hundred thousand (1, 00,000). The urbanization pattern in India has been supported by the development of tertiary sector of the economy rather than backed by commensurate economic growth. In 2011, about ten megacities have dominated the urban structure accounting for more than 20% of urban population while the share of the small & medium size towns remain low. The urban growth has shifted spatially from the metro cities (mega cities) to the peri-urban areas with rapid horizontal expansion of the metropolitan areas (urban fringes). Whether this urbanization trend could be regulated is an open question.*

*The role of smart cities in urban development has been examined in the context of their sustainability, inclusive growth and aspiration of the citizen.*

*\*Dr. Chitta Ranjan Pathak, Professor and Head, I.I.T Kharagpur, ( Retd.), Secretary, Regional Science Association, India and publisher of Indian Journal of Regional Science.*

## **INTRODUCTION:**

Independent India in 1951 has inherited a spatially & structurally imbalanced urbanization with the level of (17.3 percent) having out of 361.1 million total populations 62.6 million of urban population. The urban structure was dominated by four metropolitan cities of Kolkata, Mumbai, Delhi and Chennai and supported by 2,974 small & medium size towns. The small and medium size towns have accounted for more than 50% of the urban population. With the launching of the First Five year plan in 1951 and Second Five year plan in 1956 for economic reconstruction and planned economic development gave tremendous boost to urban development. The large cities/towns and the metropolitan cities grew at fast rate to achieve 18.2 percent level of urbanization in 1961. The large cities and industrial towns & state capitals grew rapidly. The process strengthened the domination by the metropolitan cities by - passing the small & medium size towns which could not keep pace because of their weak economic base. To thwart the metropolitan oriented rural-urban migration trend, the policy of IUDP (Integrated Urban Development-1974)/IDSMT (Integrated Development of Small & Medium size towns-1977) were launched & continued even today but the metropolitan oriented migration trend could not be diverted. The IUDP project has been changed to IDSMT in 1979. The IDSMT project as a component of urbanization policy has been revised by the central government in 1979 to achieve balanced urbanization planning and urban development. In 1980s (1980-85 sixth Plan) environment improvement of urban slums (EIUS) was undertaken to enhance the development of the IDSMT towns.

In 1985, the Commission on Urbanization (NCU) was setup to examine the state of urbanization, to identify the development of special urban-industrial areas (3 ones) and the urban structure, but the metropolitan oriented trend of urbanization continued un-abated. Some of the metropolitan cities grew to megacities with urban agglomeration.

In 2011, the last Population Census has recorded the level of urbanization in India at 31.16 % with 337.1 million urban populations having the decadal growth rate of 32% (2001-2011). The trend of urbanization spread in the peri-urban areas with a number of urban pockets outside the boundary of the metropolitan areas. In 2011, there were 16 mega cities (having population more than 5 million) each.

The 74<sup>th</sup> Constitutional Amendment Act 1992 has envisaged effective decentralization of the functions of the municipality and the state government to urban local bodies (ULB). Their functions & responsibilities have been laid down in the twelfth schedule of the Act to render the appropriate governance at the local level. The ULBS are supposed to supply basic infrastructure services with the provision of safe drinking water, sanitation, sewerage, housing, transport and communication, health & education for inclusive growth. Still the urban problems could not be solved because of horizontal expansion of the metropolitan areas to the unplanned peri-urban areas.

While the cores of the metropolises have been saturated, metropolitan de-concentration has started at the core. The problems of urban development have expanded to the unplanned periphery and have brought about new challenges to urban development.

The latest population Census of India in 2011 has recorded a total population of India at 1210.2 million with the decadal growth of 17.64% (2001 to 2011) with 377.1 million urban populations accounting for 31.16% level of urbanization and 31.81 % growth rate in urban population with total number of cities/towns (7935) including 466 cities of population hundred thousand s and above (class 1).

The towns are distributed as number of statutory towns 4,041 and number of census towns – 3,894, an increase of 242 and 2532 respectively.

In 2015, there has been change in the central government and pattern of governance. The Planning Commission which used to prepare the five year plans for country's economic development including urban development, the new government has dismantled the Planning Commission and has been replaced by the economic advisory committee. While the new government at the centre even though has not abandoned the 12<sup>th</sup> Five Year Plan, the new economic policy has been adopted.

The new government at the Centre launched a urban development project – popularly known as 'Smart City Mission' in the Ministry of Urban Development.

### **SMART CITY MISSION**

There has been a paradigm shift in the urbanization/urban development policy in India in 2015 with the setting up of 'Smart City Mission', Ministry of Urban Development, Government of India. The government of India has shifted its policy of urbanization to area based urban development focusing on the selected cities announced by the Smart City Mission. The Smart cities shall have the provisions for fulfilling the aspirations and needs of the citizens with four pillars of development: comprehensiveness, institutional, physical and economic infrastructure. The Smart City concept shall create a replicable model which shall act like a light house to other aspiring cities. In the First Phase, 20 cities are to be developed (2015-16) as per the guidelines of the mission and the funding shall be provided. The development performance of these cities shall be assessed for continuation of funding for a five year period with accelerated rate basis in 2016-17. All the smart cities shall have timelines for progress and monitored. In total 97 cities are to be taken up in phases for comprehensive infrastructure development. Their phase wise temporal distribution is: 1<sup>st</sup> round 20 cities selected out of 97 cities completed in smart city Mission for funding in the financial year 2015-16, 2<sup>nd</sup> round of the challenge (2016-17) include 54 cities with revised proposal by 30 June 2016, & the rest within the next three years (2017-2020). The selected 20 cities in 2015: are Bhubaneswar, Pune, Jaipur, Surat, Kochi, Ahmedabad, Jabalpur, Visakhapatnam, Solapur, Devangere, Indore, NDMC, Coimbatore, Kakinada, Belagavi, Udaipur, Guwahati, Chennai, Ludhiana and Bhopal.

The core infrastructure elements of a smart city shall include the development of 1. Adequate water supply. 2. Assured electricity supply. 3. Sanitation, including waste management. 4. Efficient urban mobility & public transport. 5. Affordable housing especially for the poor. 6. Robust IT connectivity & digitization. 7. Good governance, especially e-governance & citizen participation. 8. Sustainable environment. 9. Safety and security of citizens particularly of women, children and the elderly. 10. Health and education ( Report of the Smart City Mission 2015) .

## **STRATEGY PUT FORWARD BY THE COMMISSION:**

The strategic components of area based urban development in smart cities are improvement (retrofitting), city renewal (redevelopment) and city extension (Greenfield development) plus Pan City Initiatives. The Smart Cities with comprehensive development shall aim at area based development to improve the quality of life, create employment opportunities and enhance income of all including the urban poor and disadvantaged people:

**Area Based development:** Retrofitting – in the existing area with more than 500 acres is to be identified in consultation with the citizen – assessing existing area – infrastructure gap to be plugged – in short term.

**Re-development:** replacement of existing environment & enable to co-creation of new layout with enhanced infrastructure – An area of 50 acres identified by ULB in consultation with the citizen could be developed for mixed land use with high FSI & ground coverage.

**Greenfield Vacant Area** (more than 250 acres) shall be improved with innovative planning, plan financing & implementation tools (land pooling) to make affordable towns for the poor.

**Pan-city development:** application of selected smart solutions to existing infrastructure technology, information, to better infrastructure & servicing – reducing average commuting time. Pan-city is an additional feature in the compact area approved to make it inclusive.

## **CHALLENGES**

The Smart Cities shall capture the spirit of competitive cooperative federalism. The States & ULBs shall play the key supportive role and with ability to act towards the success of the mission. The concept of retrofitting, redevelopment and Greenfield development have been put forward by the policy makers, implementers & other stake holders with needed capacity assistance. Major investment in terms of resources will have to be made before participation in the challenges. Smart city requires smart people to participate in the governance. The smart solution and implementation of reforms shall make the smart cities sustainable – ICT & mobile based tools shall be used to integrate the smart cities.

### **Coverage & Duration**

The mission will cover 100 cities in 5 years (2015-2016 to 2019-2020). Thereafter evaluation of the M of U D may continue and incorporate learning experience into the Mission.

## **SMART CITY FEATURES**

The Mission report includes the following features of the smart cities as long term goals:

1. Promote mixed land-use – efficient land-use.
2. Housing opportunities for all.

3. Create walk able localities – reduce congestion, air pollution, conserve depleted areas, local economic development, ensure security, food network, pedestrian, cycling & necessary administrative services.
4. Preserving and developing open spaces- parks, reduce urban heat, promote eco balance.
5. Promote diversified transport oriented development.
6. People friendly governance and cost effective – feedback from people.
7. Identify the city based main economic activity – local cuisine, health, art & culture, sports.
8. Apply Smart Solutions to infrastructure and services in area-based development and reduce vulnerability.

## **SMART SOLUTIONS:**

### E-governance & Citizen Services

1. Establish Public information /grievance redressal cell,
2. Develop Electronic Service delivery system,
3. Ensure Citizen Engagement in city governance,
4. Citizen – City's eyes & ears,
5. Video crime monitoring.

### Waste Management

1. Waste to energy & fuel generation,
2. Waste to compost development,
3. Waste water treatment, preventive, Maintenance
4. Waste Recycling & Reduction of C & D

### Water Management

1. Smart meter & management
2. Leakage identification
3. Water quality monitoring
4. Preventive management

### Energy Management

1. Smart meter & management
2. Renewable source of energy
3. Energy efficient & green building

### Urban Mobility

1. Smart Parking,
2. Intelligent traffic management,
3. Integrated multi modal transport system.

### Others

1. Telemedicine & tele -education
2. Incubation / trade facilitation centre
3. Skill development centres.

Drive for Economic Growth to strengthen the economic base of the cities:

Improve the quality of life

Area based development (Retrofit & redevelop)

Slums- better planned one

Improve livability of the whole city

New Greenfield development to accommodate the expanding population in urban areas.

Comprehensive development to improve the quality of life, create employment opportunity & enhance income of all, especially poor & disadvantaged leading to inclusive cities.

## **CONCLUSION**

Smart Cities are not panacea to urban development but an approach to the maladies of urban way of life. Smart solutions are called for sustainable urban living. It is a new but a modest beginning. The Mission cities are identified but the development work is yet to start. Time is not ripe to evaluate the program.

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**Table: 1 Urbanization in India during the twentieth century and beyond**

Census Year	Total population in million	Percent variation	Urban population in million	Percent variation	Percent urban to total
1901	236.3	--	25.7	--	10.9
1911	252.1	+05.7	26.6	+02.4	10.6
1921	251.4	-00.3	28.6	+07.3	11.4
1931	279.0	+11.0	33.8	+18.4	12.1
1941	318.7	+14.2	44.3	+31.1	13.9
1951	361.1	+13.3	62.6	+11.2**	17.3
1961	439.2	+21.5	78.9	+25.9**	18.2
1971	548.1	+24.5	109.11	+38.2	20.0
1981	683.3	+24.66	159.5	+46.4	23.3
1991	846.3	+23.85	217.61	+36.46	25.7
2001	1027.0	+21.35	285.35	+31.13	27.78
2011	1210.02	+17.64	377.1	31.8	31.16

**Table: 2 Rank of 97 smart cities in India**

Rank	State/UT	City
1	Odisha	Bhubaneswar
2	Maharashtra	Pune
3	Rajasthan	Jaipur
4	Gujarat	Surat
5	Kerala	Kochi
6	Gujarat	Admedabad
7	Madhya Pradesh	Jabalpur
8	Andhra Pradesh	Vishakhapatnam
9	Maharashtra	Solapur
10	Karnataka	Davangere
11	Madhya Pradesh	Indore
12	Delhi	NDMC
13	Tamil Nadu	Coimbatore
14	Andhra Pradesh	Kakinada
15	Karnataka	Belagavi
16	Rajasthan	Udaipur
17	Assam	Guwahati
18	Tamil Nadu	Chennai
19	Punjab	Ludhiana
20	Madhya Pradesh	Bhopal
21	Madhya Pradesh	Ujjain
22	Madhya Pradesh	Gwalior

23	Telangana	Warangal
24	Chandigarh	Chandigarh
25	Punjab	Amritsar
26	Karnataka	Shivamogga
27	Punjab	Jalandhar
28	Tamil Nadu	Madurai
29	Uttar Pradesh	Lucknow
30	West Bengal	New Town Kolkata
31	Maharashtra	Nagpur
32	Goa	Panaji
33	Tamil Nadu	Salem
34	Maharashtra	Nashik
35	Uttar Pradesh	Agra
36	Maharashtra	Thane
37	Gujarat	Rajkot
38	Maharashtra	Kalyan-Dombivali
39	Arunachal Pradesh	Pasighat
40	Tamil Nadu	Vellore
41	Uttar Pradesh	Kanpur
42	Andhra Pradesh	Tirupati



43	Maharashtra	Greater Mumbai
44	Karnataka	Hubli-Dharwad
45	Maharashtra	Navi Mumbai
46	Odisha	Rourkela
47	West Bengal	Bidhannagar
48	Gujarat	Dahod
49	Karnataka	Mangaluru
50	Rajasthan	Ajmer
51	Madhya Pradesh	Sagar
52	Uttar Pradesh	Aligarh
53	Karnataka	Tumkuru
54	West Bengal	Durgapur
55	Madhya Pradesh	Satna
56	Tamil Nadu	Tirunelveli
57	Tamil Nadu	Thoothukudi
58	Tamil Nadu	Erode
59	Himachal Pradesh	Dharamshala
60	Haryana	Faridabad
61	Tamil Nadu	Tiruchirapalli
62	Chhattisgarh	Raipur
63	Tamil Nadu	Dindigul
64	Maharashtra	Amravati
65	Bihar	Bhagalpur
66	Haryana	Karnal
67	Rajasthan	Kota
68	West Bengal	Haldia
69	Tamil Nadu	Thanjavur
70	Meghalaya	Shillong

71	Sikkim	Namchi
72	Gujarat	Gandhinagar
73	A&N Islands	Port Blair
74	Daman & Diu	Diu
75	Puducherry	Oulgaret
76	Tamil Nadu	Tiruppur
77	Maharashtra	Aurangabad
78	Dadar & Nagar Haveli	Silvassa
79	Uttar Pradesh	Allahabad
80	Chhattisgarh	Bilaspur
81	Gujarat	Vadodara
82	Uttar Pradesh	Jhansi
83	Manipur	Imphal
84	Jharkhand	Ranchi
85	Tripura	Agartala
86	Uttar Pradesh	Moradabad
87	Uttar Pradesh	Ghaziabad
88	Uttar Pradesh	Bareilly
89	Uttar Pradesh	Rampur
90	Nagaland	Rampur
91	Bihar	Biharsharif
92	Uttar Pradesh	Saharanpur
93	Mizoram	Aizawl
94	Bihar	Muzaffarpur
95	Lakshadweep	Kavaratti
96	Uttar Pradesh	Varanasi
97	Uttarakhand	Dehradun