

## Strategy for Urban Infrastructure Development in Identified Towns of Manipur State

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**ABSTRACT :** It is right time to look into the urban infrastructure facilities as the rapid pace of urbanization is set to be continued across the world by various factor such as migration and natural growth. Urban centers across country are full of constraint in the sectors of water supply, waste water management, storm water and drainages and solid waste management as well as social infrastructure facilities such as health facilities, education facility, banks, and so on. This paper is identified the towns in Manipur and examined infrastructure facilities (physical and social) status. The first objective of this paper is to identify towns in Manipur based on the 2001 census. The second objective is to examine the status of physical and social infrastructure facilities and compare it to the benchmarks of urban services which was documented by government of India and finally draw useful inference for sustaining growth of towns in Manipur. The research methodology was adopted through statistical reports of Manipur Government and data available to public domain from various line agencies. The research tools and techniques used for the analysis of data are GIS arch, MS Excel and so on.

**KEY WORDS:** Urbanization, Water Supply, Waste Water Management, Solid Waste Management, Storm Water and Drainage, Education and Health facility

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### I. INTRODUCTION

Urbanization is linked to economic growth and dynamic form of urban pattern in transforming the urban morphology (environment, social, economic and physical aspects) of a specific area. It brings the opportunities and challenges for sustainable and inclusive development plan (Hildebrand et al., 2013). India has the second highest population in the world; it is second to China (Census, 2001). Urban population of India have increased from 28.6 percent in 2001 to 37.7 percent in 2011 (Census, 2011). The “Census Town” had been defined by Census Office, Government of India in accordance of certain criteria which were (1) the areas having a population of 5000, (2) at least 75 percent of the male main working population engaged in non-agriculture pursuits; and (3) a population density of at least 400 person per sq. km. Increase in urban population has put immense pressure on urban infrastructure to support quality of life and manifest itself as overcrowded, rise in crime rates, physical and mental illness and poor living condition (Khwairakpam, 2013). Urbanization could have either a positive or negative impact on various aspects such as environment, landscape modification, erosion, pollution, socio-economic, loss of economic value of the area, and hydrology of the region (Carrero et al., 2009). In this context challenges of urbanization are water supply, waste water management, storm water and drainage, solid waste management and other social infrastructure facilities.

### II. URBAN INFRASTRUCTURE SCENARIO IN INDIA

Massive urban growth has led to complexities in the sectors of urban services such as water supply, waste water management, storm water and drainages, solid waste management and urban transport system. About 21% of urban population is living in squatter settlements where access to basic services is very poor. About 80% of population living in urban areas has access to safe drinking water but they possess inequitable distribution of water. As per estimates about 46% of households have water borne toilets while only 36% are connected with public sewerage system. Almost half of the solid waste generated in towns & cities remains uncollected. The town roads are inadequate to meet the growing traffic demand which in turn leads to traffic congestion and noise pollution. Inadequacy of minimum basic services in urban areas has resulted in deterioration of quality of life. The infrastructure services are not able to meet the demands as per the urbanization is growing at faster rate (MoUD, 2009). The future prospects for urbanization will integrate the following areas: (1) **economic sustainability** – the ability of cities to attract profitable businesses and grow as centers of production (to attract investment, create job, facilitate efficient communication and linkages, and enable continuing improvements in productivities and standard of living); (2) **environment sustainability** – the

ability of cities to provide self-sufficiency in terms of shelter, safe drinking water, air quality, waste management, efficient energy, climate change adaption and mitigation measure (necessary for health, productivity, satisfying lives for the citizens in the present and as well as the future); and (3) **social sustainability** – the ability of cities to provide a safe, vibrant community where the opportunities and benefits of economic growth are equitably shared, involvement of community in decision making , accountability to community, equal eye on across sections of society. Cities must create opportunities and vertical bridge among the sections of society, enabling individuals and group to interact there by strengthening and social cohesion (UNDP, 2013).

### III. COMPARATIVE STUDY URBANIZATION TRENDS IN NORTH EAST

The north east region of India is located at extreme side of Himalayan range sharing its international boundaries with China in the northern side, Myanmar in the eastern side and with Bangladesh in the southern side. It comprises the seven sister states viz. Arunachal Pradesh (AP), Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. The north eastern region is endowed with vast natural resources and has potential for development in the sector of tourism. Due to lack of infrastructure facilities the region could not be developed (Askokvardhan, 2004). This is the situation in north east region in 21<sup>st</sup> century. Optimistically speaking with the rich culture, tradition, and natural beauty of the region, they have the potential to overcome the advanced region in India. Based on the census 2011, the state of Mizoram shows the highest urban growth rate as compared to other states of north east. The lowest rate is in the state of Assam. In the case of Manipur, there was an increase from 0.5 percent to 27.52 percent during the span of 30years (from 1951 to 1991) and a sudden decline from 27.52 percent to 23.88 percent from 1991 to 2001. This was due to the fluctuation of population movement from urban to rural areas since the urban areas have been having lack of opportunities for economic activities. Again there was an increase from 23.88 percent to 30.02 percent during the years of 2001 to 2011. The comparison of urban population among the north east region is represented in the Fig. 1.

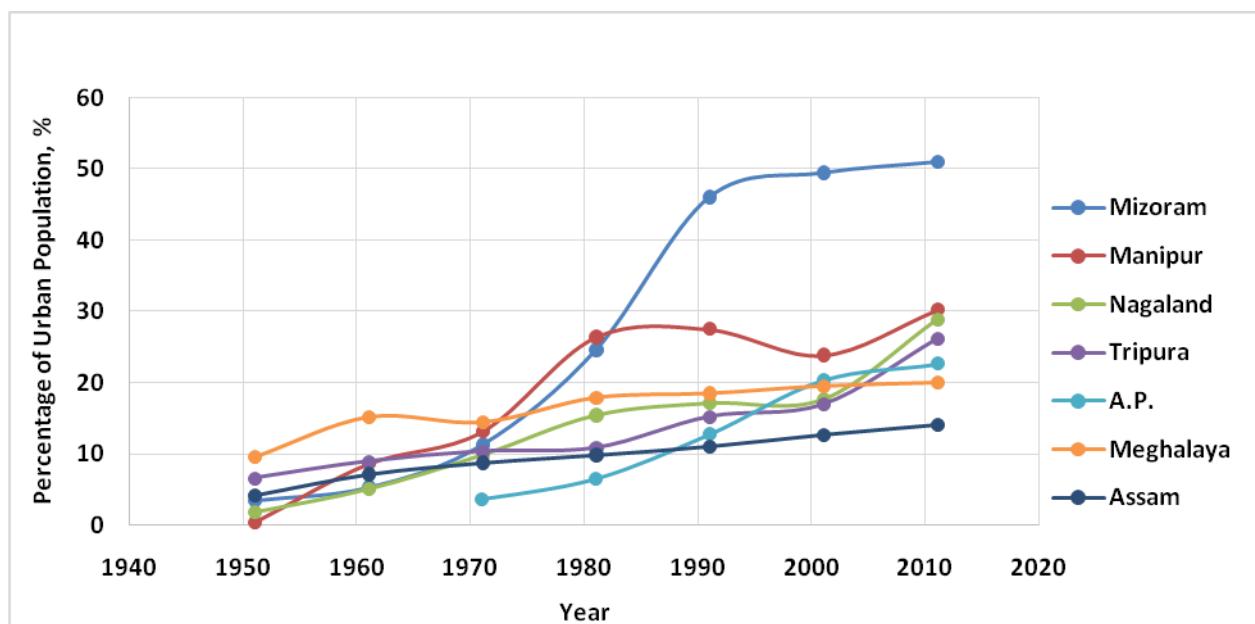


Fig. 1: Urbanization trend of Northeast States of India

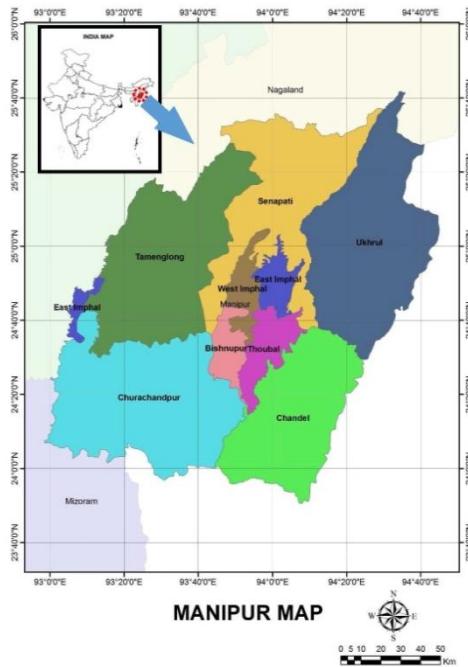


Fig. 2: Location Map of Manipur

#### IV. CASE STUDY OF MANIPUR STATE LOCATION

The state of Manipur is one of the seven sisters in North East India. It is located at the extreme side of the Himalayan region at latitude of 23.83°N to 25.68°N and longitude 93.03°E to 94.78°E. Imphal is the capital of **Manipur State**. The total population of Manipur had reached 27, 21,756 with an area of 22327 sq. km (Census, 2011). Manipur is well connected to other cities of India through roads and airways. There are three national high ways viz. National Highway-39 connecting Imphal with Dimapur (Nagaland), National Highway-53 connecting Imphal with Silchar (Assam) through Jiribam and National Highway-150 connecting Imphal with Aizawl (Mizoram). The national high way is represented in Fig.3. (Statistical Abstract of Imphal West District, 2008). The state has nine districts namely; Imphal-West, Imphal-East, Thoubal, Ukhrul, Churachanpur, Tamenglong and Senapati, Chandel, and Bishnupur. The location map of Manipur is represented in Fig.2.

**Demography :** Among the nine districts of Manipur the Imphal West district shared 18 percent of the total population and the district of Imphal East follows. The lowest percentage (5.20 %) of the population is in the Tamenglong district. The population distribution district wise is shown in Table No. 1.

Table 1: Ranking of Districts by Population Size, 2001 and 2011

Rank in 2011	District	Population 2011	Percent to total population of the State 2011	Population 2001	Percent to total population of the State 2001	Rank in 2001
1	2	3	4	5	6	7
	Manipur*	2,721,756	100.00	2,293,896	47.54	
1	Imphal West	514,683	18.91	444,382	19.37	1
2	Imphal East	452,661	16.63	394,876	17.21	2
3	Thoubal	420,517	15.45	364,140	15.87	3
4	Senapati*	354,972	13.04	283,621	12.36	4
5	Churachandpur	271,274	9.97	227,905	9.94	5
6	Bishnupur	240,363	8.83	208,368	9.08	6
7	Ukhrul	183,115	6.73	140,778	6.14	7
8	Chandel	144,028	5.29	118,327	5.16	8
9	Tamenglong	140,143	5.20	111,499	4.86	9

Source: Census, 2011

The highest density district in Manipur is Imphal West and lowest is in the Tamenglong district. The details of all other districts density map and administrative head quarter is shown in the map as represented in Fig. 3. The socio-economic status of Manipur is very low. There were limited scopes of development in both rural and urban areas. Agriculture is the main economic activity and contributes about 52.19 percent which play a vital role in the economics of the state. As far as industrial sector is concerned, Government of Manipur had designed the policy for revival and revitalization of the traditional handlooms and handicraft of the local habitats. The government and other organization were weak in implementation and management (Statistical abstract of Manipur, 2009). The infrastructure facilities (physical and social) in all identified towns across Manipur are very poor. The available facilities in both rural and urban areas could not deliver effectively and sufficiently (Rathod et al., 2012).

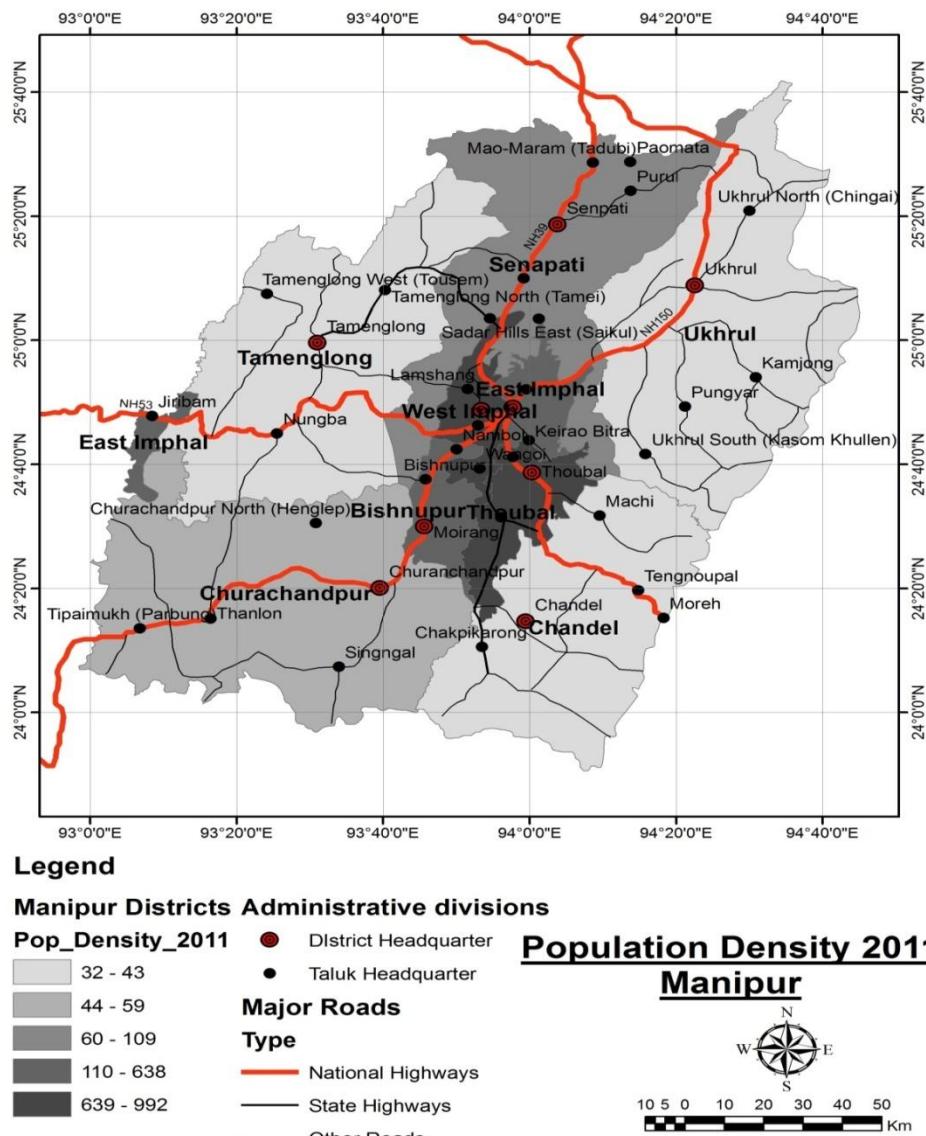


Fig. 3: Based Map of Manipur

The literacy rate of Manipur was 79.85 percent and comparatively higher than national level (74.04%). In comparison of literacy rate among the north east states of India, Mizoram was the highest (91.6%), Tripura (87.8%), Sikkim (82.2%), Nagaland (80.1%), Manipur (79.85), Meghalaya (75.5%), Assam (73.2%), and the lowest was in the state of Arunachal Pradesh (67.00%) (Report of Manipur at Glance, 2009). The urban occupation scenario in the state of Manipur shows that maximum percentage (64%) of total population came under the category of non-workers, 29 percent were in the category of main workers and the rest were in the marginal workers category. In case of male occupation, 38 percent were in the category of main workers, 5 percent were in the category of marginal workers and the rest were in the non-worker category. For the female

occupation, 19 percent were in the main worker category, 10 percent were in the marginal worker category and rest was in the category of non-worker. The percentage of the occupation in the urban areas in division of person, male and female workers in Manipur is shown in Fig.4.

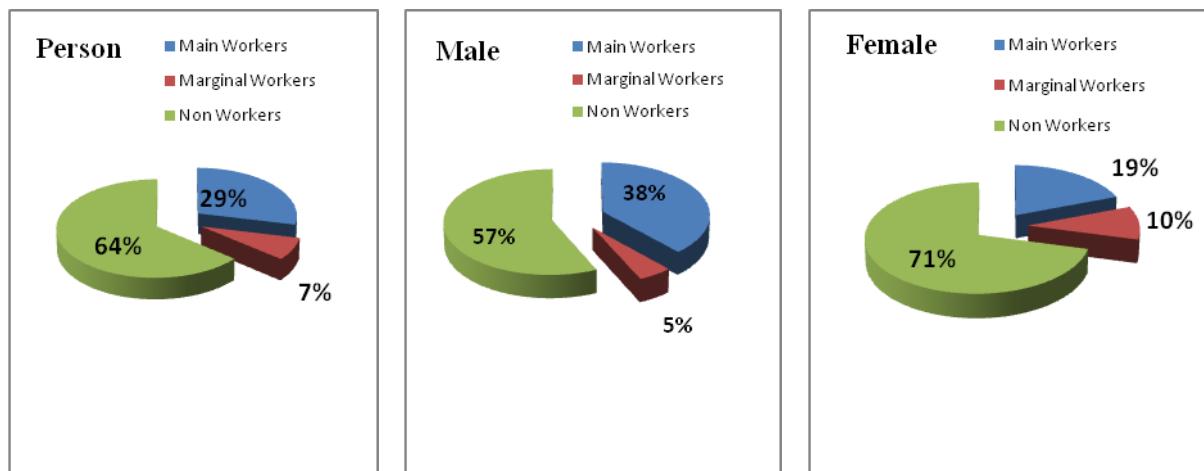


Fig.4: Occupation in Urban areas, (Source: Based Directorate of Economics and Statistics, 2008)

**Identified Towns in Manipur :** The state has 33 towns (28 statutory towns and 5 census towns) and 2391 villages (2315 inhabited and 76 uninhabited) as per 2001 census (Directorate of Economic & Statistics., 2009). The progress of urbanization in the state is very slow (17.94%) (CDP, 2006) as compared to the other states of India such as West Bengal (48.44%) ranking the highest degree of urbanization primacy and Jammu & Kashmir is (37.30%) as per census 2011. Out of 33 towns of Manipur, 20 towns come under the category which has a population of lesser than 10,000 people which were distributed in four districts namely (1) Thoubal district which includes Kakching Khunou, Yairipok, Wangjing, Sikhong Sekmai, Sugnu and Heirok towns; (2) Imphal west includes Lamjaotongba, Wanggoi, Naoriya Pakhanglakpa, Lamsang and Sekmai Bazar towns; (3) Bishnupur district includes Kumbi, Kwakta and Oinam towns; and (4) Imphal east includes Andro, Jiribam, Khongman, Porompat, Torban and Lamlai. There were 8 towns having a population ranging from 10,000 to 20,000, out of which 4 towns namely; (1) Moirang, (2) Ningthoukhong, (3) Nambol and (4) Bishnupur Bazar are in the district of Bishnupur while 3 towns namely (1) Thongkhong, (2) Lilong and (3) Samurou in Imphal west, and Moreh town are in Chandel district.

The identified towns having population between 20,000 to 30,000 were Lilong town in Imphal east, Mayang Imphal town in Imphal west, and Kakching town in Thoubal district. There was no city listed in the range of 30,000 to 40,000 populations across the state of Manipur. The last category is having population size above 50,000 under which only one city is identified (Imphal Urban Agglomeration). The identified towns of the Manipur state are shown in Fig.5.

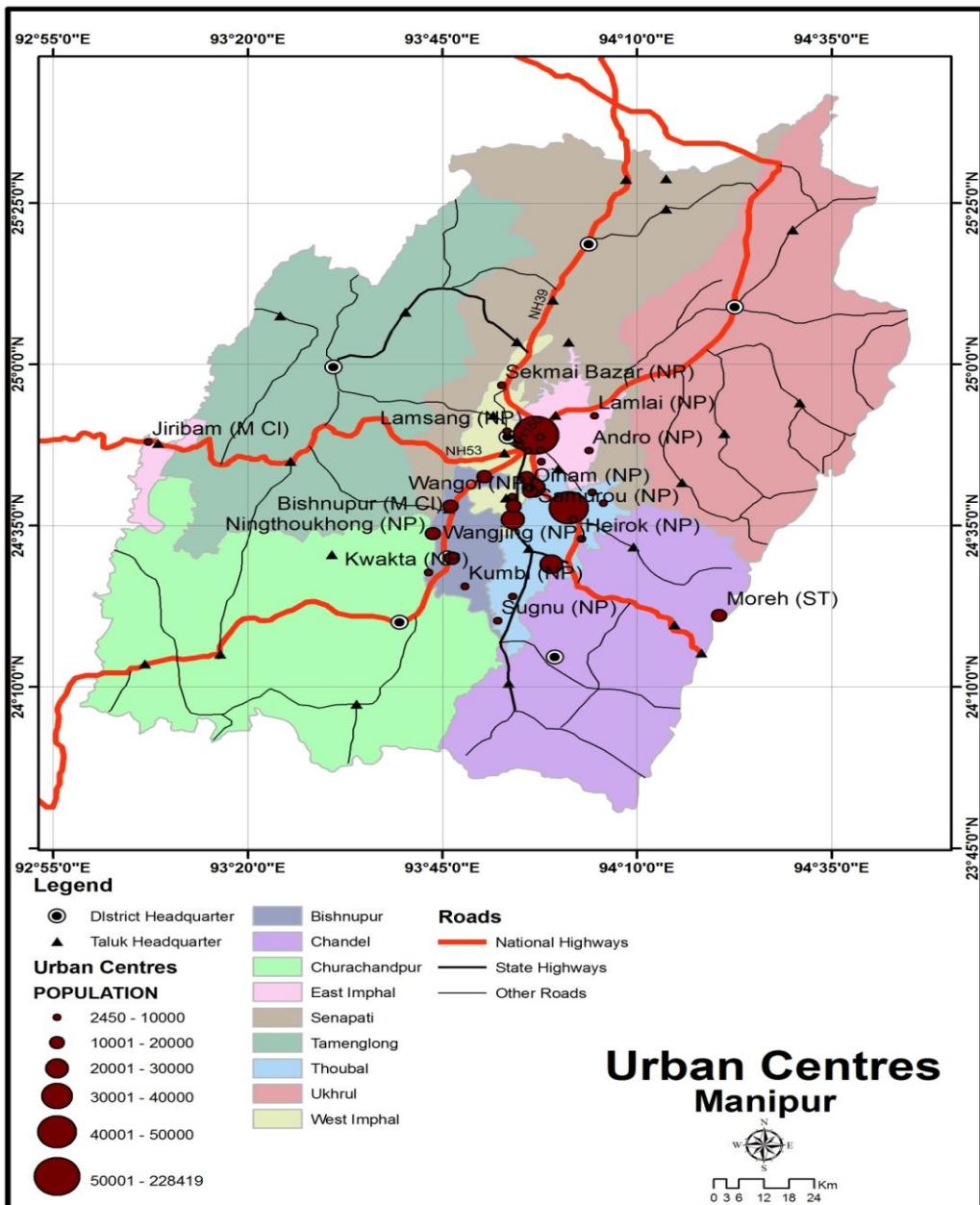


Fig. 5: Identified Towns/urban Centers in Manipur

## V. URBAN INFRASTRUCTURE SCENARIO IN MANIPUR

The urban infrastructure facilities are very poor as compare to other states of India. The smaller and medium towns in the state of Manipur do not have proper infrastructure facilities such as water supply and waste water management, storm water and drainage, solid waste management and so on. The drinking water supply is a common issue. There is a lack of awareness among the citizens about the waste water management system, storm water management and drainages. The government too pays less attention to these matters and do not take initiative to create such infrastructure facilities in every nook and corner of towns in Manipur. Maximum number of towns in the state faces major problems in the field of education and health facilities. The education and health facilities services are inefficient and inadequate except in Imphal city. There is no proper plan for drinking water, waste water management, storm water and drainage and solid waste management in the identified small and medium towns in Manipur. Government has paid less attention towards operation and maintenance of urban services and cause failure of delivery system. The quality and quantity of education system in Manipur was very poor. The number of educational institutions has increased from 538 in the year of 1950- 51 to over 4222 by the end of 2004- 2005. Out of these 4222 institutions, 4089 were schools, 62 colleges and two universities.

The above mentioned institutions were performing poorly both quality and quantity wise due to lack of evaluation in education system in Manipur (Statistical Abstract Manipur, 2009). As per Manipur Government report, (2009), medical facilities are being provided by the State Government. The Health and Family Welfare Department is providing services such as public health, control of communicable diseases, health education, family welfare, maternal and child health care through a network of 13 civil Hospitals, 72 primary health centres, 420 primary health sub - centres, 16 community health Centres, 20 dispensaries as on 2006.

## **VI. PRESCRIBES FOR URBAN DEVELOPMENT UNDER URDPFI GUIDELINES, 2014**

In view of the Urban and Regional Development Plans Formulation & Implementation Guidelines (URDPFI), 2014 has been documented for states and planning department agencies to follow the norms for various provision of the urban development. Planning for development is an envisioning process which required a sound assessment of the ground issues and provides options for sustainability within the bound constraints of the demographic, physical, socio-economic, jurisdiction and financial aspects. The process of planning must always be continuous to address the evolving issues of the human settlements. The norms and standard prescribed by URDPFI guidelines 2014 would be a model which could be adopted and adapted by the respective states government in accordance to the local conditions. The quality of the life in urban areas depends on the availability and accessibility to qualify social infrastructure which include sectors such as education, health, socio cultural, recreational, sport, and police safety facilities.

**Table 2: Standard Norm for Education Facilities**

Sl. No	Category	Student Strength	Population Served per unit
1	Pre Primary, Nursery School		2500
2	Primary School (Class I to V)	500	5000
3	Senior Secondary School (VI to XII)	1000	7500
4	Integrated School without hostel facility (class I to XII)	1500	90,000 – 1 lakh
5	Integrated School with hostel facility (class I to XII)	1500	90,000 – 1 lakh
6	Physical Challenged School	400	45000
7	School for Mentally		10 lakh
6	Colleges	1000-1500	1.25 lakh
7	University Campus		
8	Technical Education	ITI = 400, Polytechnic = 500	10 lakh
9	Engineering Colleges	1500	10 lakh
10	Medical College		10 lakh
11	Nursing and Paramedical Institute		10 lakh

Source: URDPFI guidelines, 2014

The size of a hospital depends upon the hospital bed requirement which in turn is a function of the size of the population it serves. As per the Indian Public Health Standards (IPHS), 2012, the calculation of the numbers of beds is based on – annual rate of admission as 1 per 50 population and average length of stay in a hospital as 5 days. The standards Norm for Health facilities as URDPFI, 2014 is shown in Table No.3.

**Table 3: Standard Norm for Health facility**

Sl. No	Category	No. Beds	Population served per units
1	Dispensary		15000
2	Nursing home, child welfare and maternity centre	25 to 30 beds	45000 to 1 lakh
3	Polyclinic	Some observation	1 lakh
4	Intermediate Hospital (Category B)	80 beds initially may be for 50 beds including 20 maternity beds	1 lakh
5	Intermediate Hospital (Category A)	200 beds initially the provision may be for 100 beds	1 lakh
6	Multi Specialty Hospital	200 beds initially the provision for 100 beds	1 lakh
7	Specialty Hospital	200 beds initially the provision may be for 100 beds	1 lakh
8	General Hospital	500 initially the provision may be for 300 beds	2.5 lakh
9	Family Welfare Centre	As per requirement	50000
10	Diagnostic centre		50000
11	Veterinary Hospital for pets and animals		5 lakh
12	Dispensary for pet animal and birds		1 lakh

Source: UDPFI, 2014

In order to improve the quality of urban life, the ministry of urban development, 2012 had documented the urban services benchmark in sectors of water supply, waste water management, storm water and drainage and solid waste management in towns and cities of India. The given below of the services benchmark considering basic need such as water supply, waste water management, storm water drainage and solid waste management is described in Table No.4.

**Table 4: Benchmarks for Urban Infrastructure Service**

<b>Sl. No</b>	<b>Water Supply Services</b>	<b>Indicators</b>
1	Coverage of Water Supply connections	100%
2	Per capita supply of water	135 lpcd
3	Extent of metering of water connections	100%
4	Extent of non-revenue water	20%
5	Continuity of water supply	24 hours
6	Efficiency in redressal of customer complaints	80%
7	Cost recovery in water supply services	100%
8	Efficiency in collection of water related charges	90%
<b>Waste Water Management</b>		<b>In %</b>
1	Coverage of toilets	100
2	Coverage of sewage networks services	100
3	Collection efficiency of the sewage network	100
4	Adequate of sewage treatment	100
5	Quality of sewage treatment	100
6	Extent of reuse and recycling of sewage	20
7	Efficiency in redressal of customer management	80
8	Extent of cost recovery in sewage management	100
9	Efficiency in collection of sewage charges	90
<b>Storm Water Drainage</b>		<b>In %</b>
1	Coverage of storm water drainage networks	100
2	Incidence of storm water logging /flooding	0
<b>Solid Waste Management</b>		<b>In %</b>
1	Household level coverage of solid waste management services	100
2	Efficiency of collection of municipal solid waste	100
3	Extent of segregation of municipal solid waste	100
4	Extent of municipal solid waste recovered	80
5	Extent of scientific disposal of municipal solid waste	100
6	Efficiency in redressal of customer complaints	80
7	Extent of cost recovery in solid waste management services	100
8	Efficiency in collection of solid waste management charges	90

Source: Based on Compilation of URDPFI guidelines (2014) & MoUD, (2009)

## **VII. FINDING AND DISCUSSION**

Urban Local Bodies are not able to cope up with the increasing demand of urban infrastructure facilities. There were no services at maximum number of small and medium towns in Manipur. There were no drinking water supply, no drainage system, inadequate storm water and drainage system, and no collection for solid waste. These had caused unhygienic conditions in the growing small and medium towns in Manipur. In comparison to the URDPFI guidelines, the existing services in identified towns in Manipur had huge gaps to meet benchmarks in sectors of health facilities, education facilities, water supply, waste water management, storm water and drainage, and solid waste management. The overall delivery of portable water in the towns of Manipur is short against the benchmark documented by Ministry of urban development. Some of the towns in Manipur are depending on the community ponds which have been provided through community based social organization. In the smaller towns, people are still depending on the natural water resources such as river, ponds and spring. Imphal city has a pipe line connection and covered only 75 percent of city population. The duration of water supply is at an average of 1-2 hours in a day and some colonies are being supplied in alternate day.

The government of Manipur gives less attention to improve the quality for younger generation. Private schools are setting up in every corner of towns in Manipur. This is due to the lack of government attention towards the quality of education in **government schools**. The central scheme for improvement in education sector namely Rashtriya Madhyamik Shiksha Abhiyan (RMSA) was implemented in 2009 to enhance access to secondary education and to improve the quality of education. Sarva Shiksha Abhiya (SSA) is government of India's flagship programme for achieving universalization of elementary education (Zaidi et al., 2011). **The RMSA scheme is performing poor in terms of education quality and same as SSA.**

Flooding is very common in all towns of Manipur. Inadequate drainage system in towns had been a very serious issue. Dumping of solid waste in open spaces, adjoining areas and water body are common practice in towns of Manipur. The public utilities had been inadequate at present situation in most of towns. In this view, urban services are totally neglected by state government. There should be encouragement of the Public Private Partnership (PPP) model to work out effectively and efficiently. The provision of PPP model will be highly appropriate to create the urban infrastructure facilities.

## VIII. CONCLUSION AND RECOMMENDATION

The overall urban infrastructure facilities are very poor and need to improve a lot through state government initiative. The system of management by state government in order to deliver the services is to encourage. 74<sup>th</sup> Constitutional Amendment Act is to be effectively implemented in the bigger towns in Manipur. There should be separate department for towns and planning department in the 9 district to develop the strategy of plan prospect in the identified towns, district wise. The holistic approaches for planning with the proper set up of administrative frameworks is urgently required for the physical planning aspects. In the case of the bigger towns the need of the hour is to inject Jawaharlal Nehru National Urban Renewal Mission (JnNURM) money to upgrade the quality of life in Imphal city. Strengthening of urban local bodies is first priority to deliver the services effective and efficiently. Awareness program to citizens and transparency and accountability of government plan and policies are mandatory for achieving success in the projects.

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