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**Prevailing Basic Facilities in Slums  
of Greater Mumbai**

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**Aparajita Chattopadhyay, Aparna Mukherjee and G Sudha**



(Established in 1956)

Capacity Building for a Better Future

INTERNATIONAL INSTITUTE FOR POPULATION SCIENCES

Mumbai, India

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June, 2016

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**INTERNATIONAL INSTITUTE FOR POPULATION SCIENCES**

**Deonar, Mumbai 400 088, Maharashtra, India**

**Tel: +91 22 42372400; Fax: +91 22 25563257**

**E-mail: [publicationcell@iips.net](mailto:publicationcell@iips.net)**

**Website: [www.iipsindia.org](http://www.iipsindia.org)**



# Prevailing Basic Facilities in Slums of Greater Mumbai

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## Introduction

Basic facility for survival includes housing; provision of safe, sufficient, acceptable and affordable water, especially drinking water; clean and hygienic sanitation; regular waste disposal and various other amenities. As opined by Ban ki Moon (2015), UN secretary general: “*Safe drinking water and adequate sanitation are crucial for poverty reduction, crucial for sustainable development and crucial for achieving any and every one of the Millennium Development Goals*” (UN, 2015). Recently, India is witnessing initiatives at policy front for better housing and improved urban living. ‘*Housing for All by 2022*’ or ‘*Pradhan Mantri Awas Yojna*’ (2015) has been launched on 25th June, 2015 along with few other schemes aiming to provide affordable homes to the homeless, urban poor and people belonging to the Economically Weaker Section (EWS) and Lower Income Group (LIG) in the next 7 years, i.e. up to 2022. Women, Scheduled Castes, Scheduled Tribes and economically weaker sections of the society will be the focal beneficiaries of the scheme under which the central government aims to grant a subsidy to buy a home. The current government has also approved the *Smart Cities Mission* and the *Atal Mission for Rejuvenation and Urban Transformation* of 500 cities (AMRUT). Under smart cities initiative, focus will be on core infrastructure services like adequate and clean water supply, sanitation and solid waste management, efficient urban mobility and public transportation, affordable housing for the poor, power supply, robust IT connectivity, governance, especially e-governance and citizen participation, safety and security of citizens, health and education and sustainable urban environment (PIB, 2015). The design of AMRUT is having twin objectives on meeting the challenges of growing urbanization in the country in a sustainable manner as well as ensuring the benefits of urban development to the poor through increased access to urban spaces and enhanced employment opportunities.

In the context of strong urban policy of development launched recently, let us have a look at the slums in Mumbai. A slum, as defined by Census 2011, is ‘*residential areas where dwellings are unfit for human habitation by reasons of dilapidation,*

*overcrowding, faulty arrangements and design of such buildings, narrowness or faulty arrangement of street, lack of ventilation, light, or sanitation facilities or any combination of these factors which are detrimental to the safety and health'*(Chandramauli, 2011). Mumbai, the most populated metropolis in India and the capital of the state of Maharashtra, is the city of sky scrapers and slums. Greater Mumbai Municipal Corporation holds 42% slum households to total urban households, the highest among all cities in India (Census 2011). Slums in Mumbai exist since the early 20th century due to job opportunities and huge influx of people in this port city. Though, there is ambiguity on the exact beginning of the slum development in Mumbai, some argue that its growth coincided with the beginning of the Bombay's industrial decline in the 1970's and 1980's whereas others say that the slums have a longer history and is intricately linked to its broader industrial development and economic prosperity since the mid 19th century. As Mumbai (Bombay) expanded due to various push and pull factors like rise of agricultural crises in the nearby districts, closing of cotton mills, growth of tertiary sectors, educational and job opportunities etc, slums became a convenient solution to the housing challenges that was faced by the increasing number of population. Later government started to integrate slum residents into the city's larger systems of power and politics. In the last century the population of Greater Mumbai has increased manifold. At present, slum dwellers constitute 54 % of the total population in Mumbai (World Bank 2010) and contribute many important activities, yet they are marginalized and their needs are not well attended. Urban poor are much more vulnerable than the rural poor (Chattopadhyay and Roy 2005; Chattopadhyay and Guruswami, 2011) for many reasons: limited living space, poor safety, high living costs, poor water and sanitation facilities, higher risk of pollution, health hazards and lack of social support in the cities. The poor of Mumbai is not an exception. Lack of affordable housing and crunching of land space are two major issues that need to be taken care in order to combat the problems of slum population.

After independence, the approach of the government was to protect the land and remove the slums. However, such effort was futile. The Maharashtra Slum Area (Improvement, Clearance & Redevelopment) Act, 1971 came into existence and after 1995 Slum Rehabilitation Authority (SRA) became instrumental for SRA housing. *Rajiv Gandhi Awas Yojna 2014 Jawaharlal Nehru National Urban Renewal Mission (JNNURM)* and *Housing for all by 2022* schemes may hopefully transform

the city space, helping the urban poor to enjoy a decent living. The Maharashtra state government proposed housing policy for achieving '*slum-free Mumbai and Maharashtra*' by 2022. The draft policy states that the Slum Rehabilitation Authority (SRA) would undertake a complete survey of all slums within Mumbai, including the number of slum dwellers eligible for rehabilitation. Large scale slum surveys in India are mainly for the intention of eviction or rehabilitation (Seikh and Banda, 2015). Furthermore, notified slums being a legal entity in terms of rights, misleads to understand the physical and infrastructural aspects of slums as a whole. Identified slums occupying highest proportion (37%) in census classification of slums in 2011, raises question on enumeration methodology of slums (Bhan and Jana, 2013). Such confusion creates further uncertainty on criteria of rehabilitation. Slums are also very heterogeneous in India and thus needs specific policy design to address basic needs of people (Goli, Arokiasamy and Chattopadhyay, 2011). In a huge metropolis like Mumbai, when 9 million people lives in slums (World population review, 2016), demands provision of at least basic amenities for fulfilling the essential needs and safety. It is well documented that health and living environment are highly associated covariates (see Nolan, 2015; Spears 2013, Gaur et al. 2013; Hazarika 2010; Gupta et al. 2009). Thus living environment i.e. sanitation, waste disposal, provision of safe drinking water, ventilated house, clean fuel use has profound impact on disease prevalence. Slum situation is even more severe when there is uncertainty among different health agencies for protecting and promoting the health of the poorest urban residents (Nolan et al. 2014). People living in slums are at constant risk of health hazards (Parkinson 2007). Many studies have pointed that not only slum dwellers have to deal with health problems like malaria, pneumonia, diarrhoea, and tuberculosis (Unger and Riley 2007), but child weight and height are negatively affected by the open defecation around the place (Deaton 2007; Spears 2013). And at large due to the stringent living conditions of these communities that give rise to burden of diseases, especially of those diseases that are preventable. Therefore, World Health Organization (WHO) developed the concept of healthy cities as a strategy to improve health status of the urban poor. This project was introduced in India in 1999 with a focus on public health and its various determinants to improve the living conditions of poor communities (Goli, Arokiasamy and Chattopadhyay, 2011). Additionally, the scarcity of health-related data from slums could lead to inappropriate and unrealistic allocation of health care resources by the public and private providers of any nation (Riley L. et al 2007).

The study assesses the quality of basic facilities in slums of greater Mumbai encompassing Mumbai city and Mumbai suburbs. Previous researchers looked into the situation of water and sanitation in Mumbai slums using secondary data, (see Nawab et al. 2006; Banda et al. 2007; Singh et al. 2013) etc. Living conditions and difficulties faced by slum dwellers in attaining basic facilities are also highlighted (Subbaraman et al. 2014, Bapat and Agarwal 2003). But there are very few studies that incorporated representative samples of slums, analysed data by type of slums and applied quantitative and qualitative insights on basic conditions of living, in the largest metro city in India.

In view of “*slum-free India*” and making cleaner and environment friendly cities, the paper highlights the basic amenities in slums of greater Mumbai.

### **Data and Methods:**

The paper highlights the present condition of slum dwellers in Greater Mumbai (i.e. Mumbai city and Mumbai Suburbs), irrespective of the status of slum as defined by the Census, 2011 (i.e. notified, recognised and identified), culling data from a recently published slum survey. Housing, Water, Sanitation (HWS) Survey of Slums in Mumbai, conducted by the Pop- Envis centre of the International Institute for Population Sciences (IIPS), Mumbai is funded by the Ministry of Environment-Forest and Climate Change (MOEF-CC). The survey classifies households as authorised and unauthorised on the basis of availability or non-availability of legal documents related to the household like; electricity, ration card, Aadhar (Unique Identity) etc. It is confusing to define slum as per census definition i.e. notified, recognised and identified as within the defined slum, authorised as well as unauthorised households do exist side by side. The survey was conducted in February- March, 2015 applying probability sampling method in selecting the surveyed households from systematically selected wards in greater Mumbai. Data from 1452 households are collected to represent the issues related to housing, drinking water, sanitation facility, fuel use, perceived and observed cleanliness, and reported morbidity. Adult female member who is well aware of household chores and economic matters are the respondents. Along with quantitative information, we collected substantial qualitative data through observation, in-depth interview and key informant interviews. There are many different ways in which slums are defined by researchers and in different data sets. The advantages and disadvantages of such large scale data are given in table1. The Housing Water



and Sanitation ( HWS) Survey in Mumbai (2015) comprises many aspects of living environment beyond the usual purview of Census and National Family Health Surveys ( NFHS) e.g. legality of the slum household (authorized vs unauthorized, ownership), household amenities and income, housing condition (poorly built, unhygienic environment, usually with inadequate infrastructure, material of roof), drinking water availability, accessibility and quality (drinking water facility available within the premises, quality of drinking water, distance and time taken to fetch water, timing of water availability, storage process, water treatment during rainy seasons), availability and quality of sanitation facilities (available within the premises, cleanliness, water availability in toilets, sufficiency of toilets, safety issues, payment to use toilets), fuel use (type of fuel use, sources), environmental cleanliness and waste disposal (hygiene and habits, presence of domestic animal, garbage disposal facility, collection of garbage by Municipality, regularity and timing of cleaning) and reported morbidity (respiratory problem, digestive problem, musculoskeletal problem, eye problem, skin problem, circulatory diseases, blood sugar) in the past one year (Table 1). We applied chi-square to understand the differences in living environment of authorised and unauthorised slums.

**Table 1: Details of data sources of Mumbai slums**

Characteristics	Census (2011)	NFHS – 3 (2005-06)	HWS (2015)
Legality	<p>1) All specified areas in a town or city notified as “Slum” by State/Local Government and Union Territory Administration under any Act, including a “Slum Act”; and/or</p> <p>2) All areas recognized as “Slum” by State/Local Government and Union Territory Administration, Housing, and Slum Boards, which may not have been formally notified as a slum under any Act</p>	<p>Slum definition of census is followed.</p> <p>Slum and non-slum areas designated by the NFHS-3 team supervisor at the time of the NHFS-3 fieldwork.</p>	<p>For identifying slums Census definition is followed.</p> <p>For clarity documentation of the house with respect to legal status have been checked and households have classified as :</p> <p>Authorized Households: having any legal document like electricity bill, Water Bill, Adhar card, Ration Card, passport.</p> <p>Unauthorized households:</p>

	3) A compact area of at least 300 population or about of about 60-70 households of poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lacking sanitary and drinking water facilities is termed as unidentified slums.	Total households for Mumbai slum = 1175	Having no legal documentations.  Total households for Mumbai slum = 1 452
Housing	Construction material of roof, wall and floor.	Construction material of roof, wall and floor and provision of separate kitchen.	Through observation identifying the construction materials; approximate area of the floor, number of rooms, kitchen, windows; observed adequacy of day light and ventilation; monthly rental charges.
Drinking Water	Source of drinking water	Source of drinking water; availability of drinking water within the premises, drinking water purification	Source of drinking water; location of water collection point, number of hours availability of drinking water, treatment of drinking water, average time spent for water collection, mean monthly expenses for drinking water; Quality of water
Sanitation	Type of toilet	Type of toilet; Owned or public toilet	Type of toilet; Owned or public toilet; distance to public toilet, adequacy of water, safety at night and cleanliness in public toilet, Women's use of public toilet at night, payment for using public toilet.
Reported Morbidity	-	TB, Diabetes, Asthma, Goitre	Respiratory diseases, Digestive Problems, Aches/Pain, Eye related problem, BP/ heart problems. Skin problem and Diabetes

**Sources:** *Census of India 2011* (Registrar General of India), *National Family Health Survey 2005-6* (International Institute for Population Sciences and Macro International; Ministry of Health and Family Welfare), *Housing, Water and Sanitation Survey 2015* (Pop-Envis and Ministry of Environment, Forest and Climate Change)

## Results and discussions:

We have discussed the living condition of slum dwellers in terms of their housing, sanitation and drinking water facility, with special reference to authorised and unauthorised slums and then touched upon the reported morbidity. Results highlight both quantitative measures and qualitative excerpts.

Majority of the residents interviewed in the survey stated that they are staying in the same community for more than 15 years (70 %). Only 7 % slum dwellers came recently, i.e., during last 5 years. About 71 % of the households reported that they earn from working in the informal sector. Roughly 60 % of the households are engaged in services, whereas around 19 % have their own business, 12 % are engaged as industrial labour whereas 4.3 % reported to be working in housekeeping work. Average household income is Rs.10445 (Approx. \$170) per month. Slums in Mumbai act as hubs of small manufacturing units. However, due to lack of finances and space required for the business set up, they continue to work from home. They are engaged in making of embroidery (*Zardosi work*), cloth stitching, printing, jewellery assembly, leather processing etc. These works generally are labour intensive and has potential of engaging women too. But due to stringent working conditions and informal nature of work, it tends to continue at a small scale with less profit.

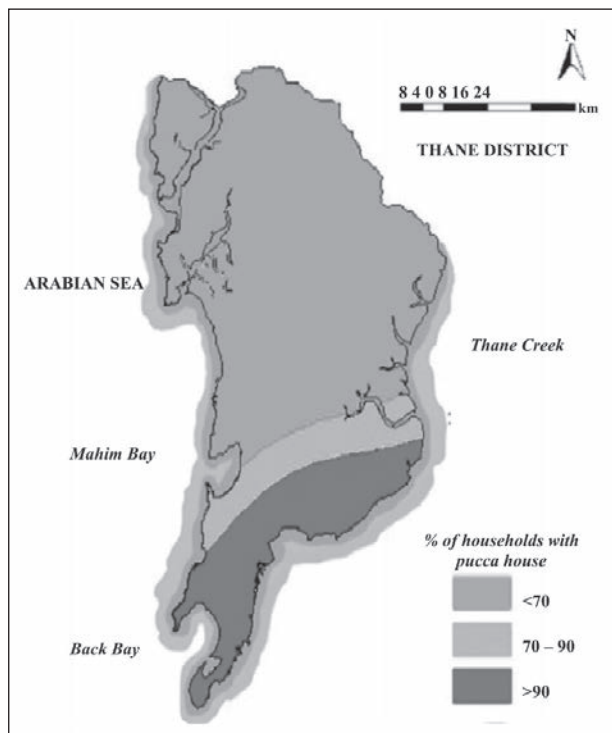
### Housing:

Housing aspects cover type of houses, ownership of house and quality of houses. About 80% of the slum dwellers have *Pucca* or concrete house made of sturdy material. Seventy-one percent have ownership of the house (Table 2, Figure 1). While those staying in rented house need to pay about Rs. 3200 (Approx. \$47) monthly rent. As observed from table 2, 20 % additional households in authorised slums are staying in *pucca* houses when compared to the non-authorized households (86 % vis-a-vis 66%), 83 % respondents of authorised households stays in own house against 35% in unauthorised households. About 38-40% of the households do not have any window. One out of each four households keep domestic animal indoor or very close to the house. The size of the authorised households is 141 square feet against 129 square feet of the unauthorised households (Table 2). Significant difference in housing characteristics is observed between authorised and unauthorised slums in Mumbai wherein the housing facilities are much better in the authorized households. However, the poor condition

of ventilation in the house (no window) and keeping domestic animals closer to houses are common in both types of slums. Qualitative insights suggest the reluctance and apprehensions about the slum rehabilitation scheme among the slum dwellers. They don't have much clarity about any housing program meant for them due to involvement of middlemen and political manipulation. Yet, they are hopeful to get better housing and other facilities in near future, as opined by one of the key informants:

*“people have a keen interest in resettling in the buildings as the surroundings will be clean and everyone can get water and attached toilets. But they are scared that it will be a loss for those who have a larger family size, as everyone will be allotted equal size of flat under the SRA scheme.....compensation is too less during our stay in transit camps, especially for those people who run business in their houses and it will be difficult for them to continue their business without their setup at the transit camps. Unemployment among youths in the slum is a big problem. These unemployed youths are graduates and are not willing to work in low paid jobs. Unemployed youths could be an asset in creating awareness on sanitation if properly trained.”*

**Fig 1.** Percentage of Households with Pucca House



### **Toilet Facility and waste disposal:**

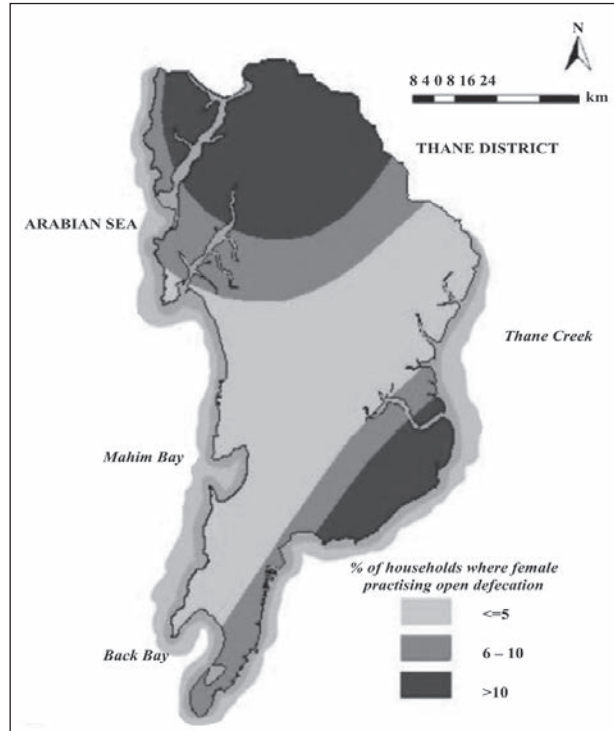
About 91% of the slum dwellers are using public toilets. Overall 12 % households reported that they do not have either public or private toilet facility and thus adult members use open space for defecation (Figure 2). This percentage is substantially high, that is 27 %, among unauthorized households, indicating that there is scarcity of public toilet facilities. Ninety percent unauthorized households' disposes of child's stool in open spaces and drains. On an average, this practise is observed among 58 % of the households in Mumbai slums. Perceived unsafe condition of public toilet at night is a major issue of concern, wherein 67 % authorized households and 87 % unauthorized households reported to have fear of being unsafe in public toilets. (Figure 3) Irregular water supply in the public toilets is very frequent, mentioned by 85 % of the households (Table 2).

Qualitative data excerpts indicate that usually 8 to 10 toilets are built within each public toilet facility. The men's and women's toilet are located adjacent to each other. It's dingy with very poor ventilation. The area around public toilet stinks and has dirty water. The condition of men's toilet is observed better than women's toilet. Tanks are kept outside men's toilet with connection of few plastic pipes inside toilets, whereas in women's toilet there is no water facility available. Garbage is thrown in and around the toilets.

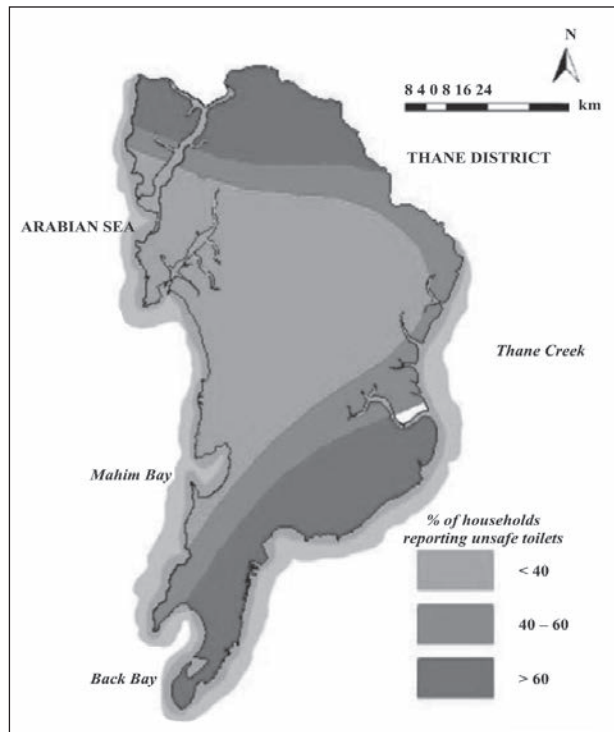
*As reported by a local key informant, 'the municipal corporation does not clean it regularly; it is the community who recruit a person to clean the toilets on payment basis. Generally, people contribute upto Rs. 30 to 40 (Approx. half a dollar) per month for keeping the toilets clean. On payment of Rs. 2 (less than a cent) a bucket of water, for toilet use is supplied. People do not take their children for defecation in these toilets; rather they take them to defecate on street sides'. A woman said "we are paying Rs. 30 (Approx. 45 cents) per month, but they clean it once in every two to three days. No matter how much we complain but they don't listen to us, they do it as per their wishes".*

Dustbins (*kachradabbas*) in the middle of the road are a common site where people throw their daily waste. Municipal workers come to pick it up every morning. But it gets full by evening and people have to throw waste around the dustbins. It starts littering and stinking.

**Fig.2.** Percentage of Households Where Female Practising Open Defecation at Night



**Fig.3.** Percentage of Households reporting Unsafe Toilets



It is evident from the survey that majority of the slum dwellers face the problem of space and unclean surrounding. Small houses, congested lanes, piled up garbage; unhygienic public toilets make slums a breeding ground for diseases. Sanitation is a major problem for the slum dwellers. Irregular cleanliness and maintenance along with inadequate water supply in the public toilets are some key concerns. Also the number of toilets per slum is too less to meet the requirements of the ever increasing population in expanding slums. This situation is more severe for women as they do not have support of external/private agency other than the municipality to keep the toilets clean. Such facility is generally channelized in men's toilet by some private party on payment basis. Women not only face problems of carrying bucket of water for their use but they do the same for their children and elderly members of the family. Lack of any dustbins or any facilities for disposal of sanitary napkins are also common problems found in the women's toilet. Along with poor infrastructure, due to lack of knowledge on cleanliness and poor personal hygiene, women are more prone to health problems than men. Since most of the women in the slums are illiterate and have migrated from areas where they used open fields to defecate, they find it difficult to adjust to unclean public toilets. Safety of women while using the public toilets at night is another great constraint that needs urgent attention.

Disposal of garbage is found to be organized in many slums. Private party cleans the garbage from the doorsteps of households every day. Slums have a public dustbin nearby. Municipal authorities are engaged in collecting the garbage daily, but still the waste generation from the households seems to be mounting. More number of garbage disposal bins can be placed by the Municipal authorities and garbage can be collected frequently from the households, may be twice a day.

### **Drinking water: Accessibility and Quality**

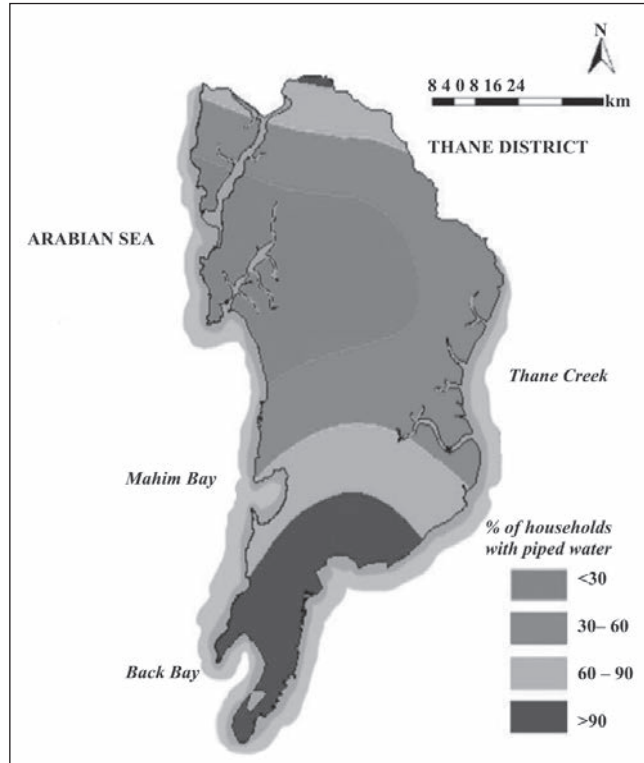
Two third of the slum households have access to piped water followed by public tap (31 %) (Figure 4). Nearly 84% have drinking water facility at or close to their house. Majority of them get water once a day for 3-4 hours. On an average, one and half hours are spent daily for collection of waters. The timing in collecting water varies between authorised and unauthorised households (1 hour 30 minutes *vis-a-vis* 1 hour 50 minutes). Qualitative findings suggest that due to restricted timing of water, women fail to get engaged in gainful activities away from home.

**Table 2: Access to basic facilities by Authorised and unauthorised households in slums of Mumbai**

Access /No access to basic facilities (%)	Total	Authorised households	Unauthorised households	Pearson Chi-Square
<b>Housing</b>				
Staying in <i>pucca</i> house	80.8	85.5	65.5	0.000
Staying in own house	71.3	82.6	34.5	0.000
House without window	38.6	38.0	40.4	0.242
Keeping domestic animals in/ very close to house	19.7	19.1	21.6	0.182
Mean area of the house (sq. Feet)	138.5	141	129	0.008
<b>Toilet Facility</b>				
No toilet facility, using open space for defecation at night by adult female members	12.4	7.7	27.1	0.000
Disposing child's stool in open space/drain	57.9	50.3	90.4	0.000
Perceived unsafe public toilet at night	71.8	67.1	86.7	0.000
No regular water supply at public toilet	84.6	84.9	83.6	0.000
<b>Drinking water</b>				
Access to piped water	65.6	69.6	52.4	0.000
Drinking water source away from home	15.9	11.7	29.7	0.000
Average time for water collection in a day ( minutes)	96.6	88	109	0.102
<b>Cooking</b>				
Using LPG for cooking	75.5	80.8	58.0	0.000
Monthly Income( Rs)	10454.2	10609	9956	0.000
<b>N</b>	<b>1447</b>	<b>1108</b>	<b>339</b>	



**Fig.4** Percentage of Households with Piped Drinking Water



From walk through observation, it is found that many households have taken extension of water pipe close to their homes from the main source of water. In such cases, water bill is shared by 10-12 households. When asked in the in-depth interview that why do people lock the tanks in which they store water, interestingly one of the community members replied that due to scarcity of water the incidence of water theft or dumping of waste in the water tanks are very common. Many respondents complained about inadequate flow of water due to low pressure of water. Water supply is inadequate in some slums of northern Mumbai, located near the forested hilly terrain. For instance, in one of such slums, there is only one tap for the entire community encompassing about 400 households. Though water supply is available throughout the day, it is difficult to fetch water in such inaccessible terrain. On an average, for filling 200 litres of water daily, it takes minimum 4 to 5 hours. Usually, women and children are engaged in fetching water. Dropping out of children from school is a common phenomenon in the northern hilly slum localities of Mumbai.

Quality of drinking water sourced through pipes (at source) is found safe and fulfilling as per Indian standard. Varying components of drinking water that are tested in the laboratory are given in Table 3.

**Table 3: Quality of Drinking Water at Source in Slums of Mumbai**

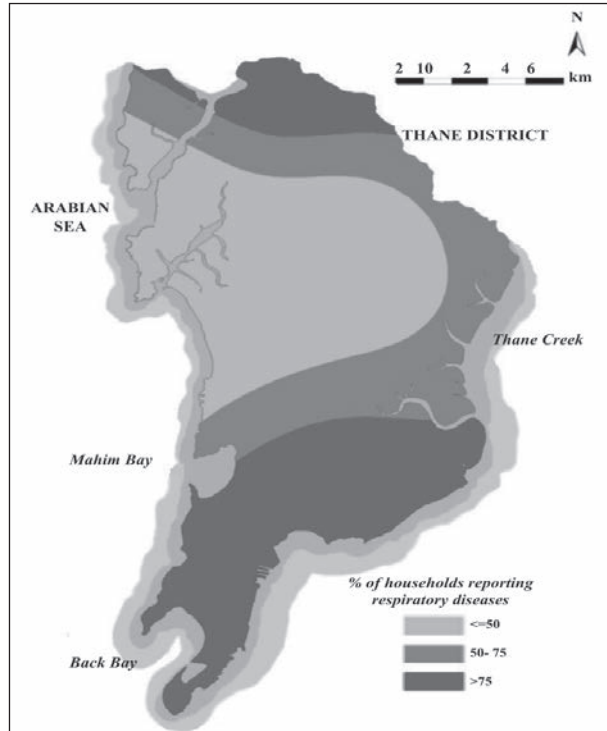
Sr. No.	Parameters	Acceptable Limit in India	Observed Mean Value	Island City	Western Suburbs	Eastern Suburbs
1.	pH Value	6.5-8.5	7.2	7.3	7.2	7.2
2.	Electrical Conductivity	Not Specified	130.6	138.1	129.6	129.3
3.	Total Dissolved Solids	Max 500	85.0	90.0	84.3	84.2
4.	Total Alkalinity	Max 200	23.8	36.4	143.0	27.7
5.	P-Alkalinity	Not Specified	< 1	< 1	<1	<1
6.	Total Hardness	Max 200	44.1	47.0	45.0	42.7
7.	Chlorides	Max 250	9.9	8.9	9.5	10.6
8.	Calcium	Max 75	9.7	11.2	9.8	9.3
9.	Magnesium	Max 30	4.8	4.6	4.9	4.7
10.	Sulphates	Max 200	1.5	2.3	1.7	1.4
11.	Reactive Silica	Not Specified	20.0	18	22.1	19.0
12.	Total Bacterial Count	Not Specified	10.8	14	10.6	10.2
<p><b>Notes:</b> 1) for Electrical conductivity the measurement unit is <math>\mu\text{S/cm}</math>            2) From sr no. 3 to 12 the measurement unit is mg/l            3) Ecoli and coli to mns are absent from all samples collected</p>						

It is good to reiterate that the quality of piped drinking water is found suitable in the slums of Mumbai. The parameters to test the quality of water are observed to be within the desirable limits. However, storage of water and keeping it safe (from both being stolen by somebody and also for fears of getting contaminated), stringent timings of water supply are common problems. Water is generally supplied during the afternoon or evening. This indirectly confines women to take up any economic opportunity outside home. Due to such limited supply of water; sanitation and cleanliness are also compromised.

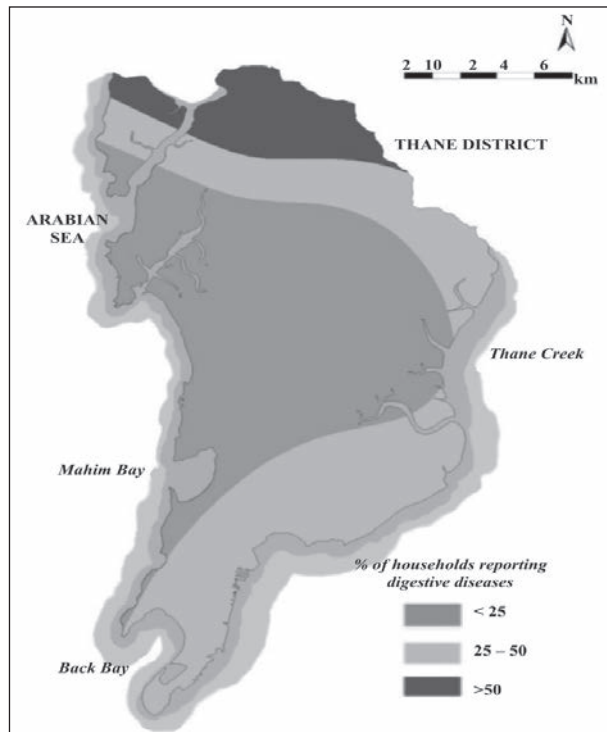
## Reported Morbidity

Health condition is a reflection of multiple factors, living environment being one of them. This paper highlights basic reported morbidity of the slum dwellers. As slum dwellers are involved in daily chores / works that require physical labour, they are vulnerable to physical, chemical, and biological risks. Use of tobacco, alcohol addiction can be observed widespread among the slum dwellers. As clinical examination is not done in our survey, here health problems in the past one year indicate the perceived as well as diagnosed health problems of the household members, as reported by our respondents. Table 4 and figure 5 reveals that the most common health problems are related with respiratory tract; mainly cough, cold, fever, breathing problem, respiratory allergy etc. Eighty-six to ninety percent households reported this problem. Malaria is quite common. Forty-two percent household reported digestive problems ranging from varying symptoms like diarrhoea, bloating, constipation, heartburn, nausea, incontinence, problems associated with liver and intestine etc. (Figure 6). Third major health problem of the slum dwellers is aches and pains, mainly reported by the households in the unauthorized slums. Aches and pains may be prevalent due to excessive physical activity, inflammation from any infection or muscle tension. One in every 5 households suffers from eye problem. Diabetes or high blood sugar levels are reported by 9 % slum households while 13 % households reported the problem of high blood pressure. There exists significant difference in the mean number of disease prevalence in authorized and unauthorized slums. Percentage of households suffering from health problems reported are markedly more in unauthorized slums, except respiratory and cardio-vascular problems that are relatively more in authorized slums.

**Fig. 5.** Percentage of Households reporting Respiratory Diseases



**Fig. 6.** Percentage of Households reporting Digestive Diseases



**Table 4: Percentage of households suffering from different morbidities in Mumbai Slums**

Morbidity*	Total	Authorised households	Unauthorised households	Pearson's (Chi Square)
Respiratory problem	89.6	90.8	85.8	0.007
Digestive problem	41.6	40.1	45.3	0.054
Musculoskeletal problem	37.8	34.4	49.4	0.000
Eye problem	20.7	19.2	25.7	0.006
Skin problem	12.5	11.7	15.1	0.060
Cardiovascular diseases	12.8	13.2	11.5	0.242
High Blood Sugar	9.0	8.1	12.4	0.013
Mean disease prevalence	2.3	2.2	2.5	0.000
<b>N</b>	<b>1444</b>	<b>1106</b>	<b>338</b>	

+Note: \*reference period for morbidity is past 1 year

### Policy suggestions:

Given the situation there is a call for policy action, both targeted for short and long run.

Long term policies are broad based, need to be framed for the development of rural areas. Small and medium sized cities turns to make them more attractive with residential and economic opportunities. It can reduce flow of people to large urban areas and thus reduce the burden on the existing infrastructure. This can be achieved by investing and creating job opportunities in the sectors of agriculture and manufacturing with agricultural and agro industrial reforms in the rural areas.

In short run, there is a need of effective policy framework for affordable housing along with easy micro credits availability, which can enable poor population to avail houses in affordable prices with all basic facilities of living. The housing policy for the slum dwellers should go hand in hand with urban poverty alleviation programmes. From the world wide experiences of settlement of the urban poor, it provides strong signals of undertaking development oriented poverty reduction programmes that can enable them to integrate with the society. For example, the

Jordan's National Strategy for Eliminating Poverty and Unemployment (UNDP, 2013) focused on improving living and environmental conditions, as well as promoting employment opportunities and vocational training. The policy helped to improve the living conditions for large number of slum dwellers. In India, though various poverty programmes are launched during the last twenty years, it has a segregated parallel approach for the development of urban poor. Therefore, in order to address such issues, there is a need for inter-sectoral mechanism.

In 2006-07 UN-Habitat identified India as 'at risk' on its performance towards the goal of achieving a significant improvement in at least 100,000 slum-dwellers by 2020 (UN-Habitat report, 2007). Our study reveals apprehensions about the slum rehabilitation scheme among the slum dwellers, in spite of best efforts of SRA programmes. This is probably due to lack of proper dissemination of information, presence of middlemen and contractors. Participatory method for planning is always beneficial. For instance, the Government of Morocco is now trying to bring in greater participation of the slum dwellers in the planning and implementation of slum upgrading projects (World Bank, 2013). Housing loans or subsidies does not help much to secure the life of urban poor. It is necessary to improve their employment abilities through requisite training and helping them to raise their livelihood. Even evidences from the global comparisons with cities having high density of slum population like Rio de Janeiro (Brazil), Dar es Salaam (Tanzania), Nairobi (Kenya), Cape Town (South Africa) and Bangkok (Thailand), shows that where there is an integration of broader set of social policies along with other infrastructure and rehabilitation programs, there is a notable leverage in the success towards better slum resettlements. In Cuba, self help community-driven construction through government sponsored "micro brigades" – has been broadly implemented in the last two decades, though the impact of these initiatives is yet to be examined (Coyula and Hamberg, 2003).

There is an immediate need to provide more number of public toilets with basic facilities like water supply, proper lighting, adequate ventilation and frequent cleaning, provision of more garbage bins and safety-security in public toilet. Maintenance of the existing public toilets and cleanliness of the slums can be taken up more sincerely by the municipal authorities. Even slum dwellers can invest some minimum amount of money for keeping their surrounding clean. Such investment can help in resolving the issues like renovating the toilets by fixing tube

lights and placing a pipe or drum for water storage inside the public toilets. Otherwise, out of compulsion, many residents of such slums are compelled to defecate in the open at the cost of their own sense of dignity and health risks. Presence of mafia in the slums who control the water and use of toilet facilities are observed in many slums. They are not only illegally controlling such public facilities but selling the services at a high price. Government must take strong action against such illegal activities. Even many slum dwellers are willing to pay for better services. Public private partnership can be built up for provision of low cost toilets. This would not only help on better maintenance and sustenance of the public toilets but can also reduce the burden on the limited number of public toilets. International agencies like Water.org along with local UNICEF'S WASH (Water, Sanitation and Hygiene) partners and finance partners have set successful examples in implementing water credit for urban poor in Dhaka, Hyderabad and Dar es Salaam and such actions helped many slum dwellers to manage their water resources and sanitation facilities at a much lower cost.

Quality of drinking water supplied to slums in Mumbai is fulfilling all Indian standard parameters. At the same time, it must be stated that slum dwellers need better access to water. Water supply in the slums comes for a limited time. Women and children need to spend a lot of time standing in the queue to collect and carry water. If water could be regularized and supplied at different time intervals and at different locations, women could save more time for economically productive work. Evidence from other countries like Jordan with its severe crisis of water in the slums has been successful by taking simple steps like reducing water losses through repairing the leakages, improving efficiency and increasing community involvement in managing demand of water by improving the customer service relation with the water suppliers (UNDP, 2013). A consumer based performance check of the municipality on issues related to maintenance and regularizing the water and sanitation facilities can also be an effective tool for efficient functioning of the government. As Mumbai receives a heavy rainfall for 4 to 5 months every year, rainwater harvesting can be another option of solving water shortage in the slums.

Awareness program related to hygienic sanitation like practices against open defecation, use of covered garbage bins to dispose the used sanitary pads, keeping the toilets clean and storing water only in covered containers, keeping

animals away from home through provision of animal shades, disposal of waste material in the garbage bins must be promoted. Examples from Nigeria and Malawi have shown that how effectively they have used awareness program as a tool to promote the WASH (Water, Sanitation and Hygiene program) strategies in the slums. Even in India under the component of Information, Education and communication (IEC) received a prime focus in Total Sanitation Campaign (TSC) to promote awareness on hygienic habits of sanitation, though the emphasis is given on rural areas. Similar programs could be very effective in the slums too. Another possible way to intervene is through active participation of Non-Government Organisation (NGO) and multiple stakeholders for behavioural trainings and providing doorstep dissemination of information in the slums on basic hygiene, cleanliness and health care.

The possible way of encouraging economic security that may automatically channelize betterment of living condition is to encourage entrepreneurs by provision of loans. Tremendous potential remains in almost every slum household to take active part in the economy. Most of the slum dwellers are engaged in small scale business such as leather processing, tailoring, stone work, jewellery making, shoe making, food products etc. Though they are involved in such activities for years, due to lack of negotiation skill and marketing knowledge, they do not get enough profit and employment opportunity throughout the year. In this regard, private public partnership can play a vital role in transforming the lives of the urban poor by forming self-help groups (SHG's) and involve them in various small scale activities. Health information and promotion can be an integral part of other developmental programmes. Slum dwellers should adequately be trained to practise self-care. Community health workers, community based organisations, NGO's and volunteers can play strong role in educating and empowering the urban poor.

Some innovative policies are required for millions of slum dwellers in a definitive manner targeted to make cities slum free and visualizing a better city space. Nonetheless, the "*Housing for All by 2022*", "*AMRUT*" and '*Make in India*' are good start towards this direction.



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**Prof. F. Ram**

Director & Senior Professor

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