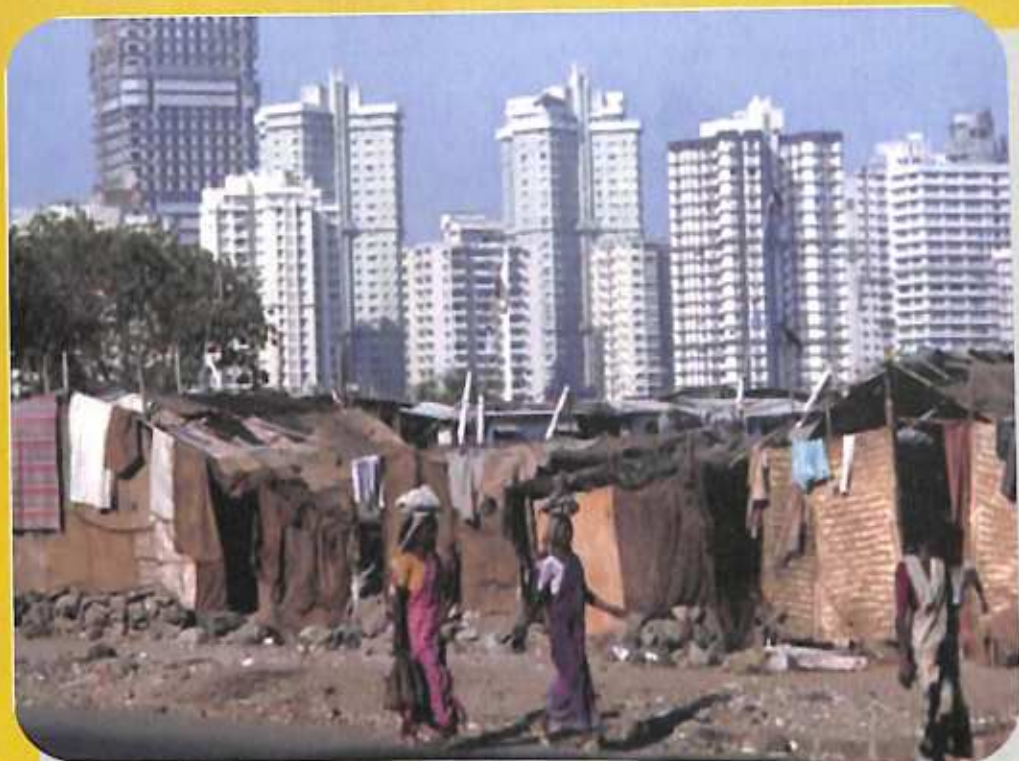




URBAN POVERTY AND SOCIAL EXCLUSION

DINESHA P.T.

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Edited by

DINESHA P.T

Centre for Study of Social Exclusion and Inclusive Policy
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Urban Poverty and Social Exclusion

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Demographic dimensions and problems of slums -A Case Study of Belagavi City

M.s.kurani1 Sri. Prasanna B. Joshi Dr. Abhay M. Patil

Introduction:

Urbanization is taking place significantly in numerous developing countries including India. The Urban population has increased by almost ten times between the years 1901 to 2001 and number of urban settlements has nearly doubled during this period from 1916 in 1901 to 5161 in 2001 in India. Although small towns are numerous, the 400 odd cities harbor two third of India's urban population. These urban centers offering diverse employment opportunities and means of livelihood are the main centers of attraction for migration, despite the facts that physical infrastructure in terms of housing drinking water supply; drainage etc, are inadequate (Register General of India, 2001).

Quality of life has suffered in these urban centers not only due to migration but more so due to expanding gap between the demand and supply of necessary services and other infrastructure facilities. Unchecked land prices and unaffordable housing has forced the poor to search for informal solutions resulting in mushrooming of slums and squatter settlements (Retnaraj, 2001) slums develops on peripheral and marginal lands on the outskirts of city, on hills, slopes and low lying areas, and also on the land which has little use to the owner in near future. They also developed on the land left unused by public bodies like railways, Municipal Corporation, port trust etc. (Nandia and Gupta, 1993)

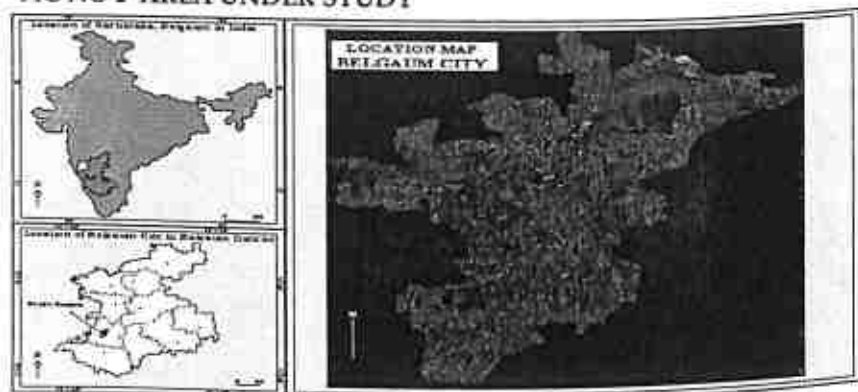
Today 3 billion people nearly half of the world's population lives in cities. One third of them are slum dwellers. Moreover, four out of ten inhabitants in the developing world are living in informal shelters. They experience manifold deprivations such as houses unfit for habitation but also lack of education, health and basic services. As such, slum improvement is not only a goal for a better quality of life but also provides a positive impact on the health burden and the economic development of a country. Slums in the world are the face of urban poverty in the new millennium (UN - HABITAT, 2003).

The phenomenon of slum is worldwide and no country or no city in any country is without slums even in Europe and America but the definition and type varies from place to place. As the capitalist mode of production started in 18th century, poverty, unemployment, lack of employment in rural areas and over population are the factors responsible for the existence of slums everywhere. No nation has ever been able to prevent the emergence of slums (Abrams, 1970). Slums are characterized by overcrowding, heterogeneous and ethnically multiracial population, largely inhabited by poor and social weaker section of the society. Local administration always failed to provide urban civil amenities and sewage facilities to them.

Study Area

Belagavi is referred to as "venugram" (bamboo village) in the early inscription of 12th and 13th centuries . It is located in south western part of Belagavi district and extended between 15 - 15' north latitude to 74 -31' east longitude at an height of 710 mtrs above the mean sea level . the total geographical area of the city is about 94.08 sq.kms , It is fifth biggest city among the cities of Karnataka state in terms of area and population and also district and divisional head quarters of the state

FIG NO 1 AREA UNDER STUDY



Objectives

The aim of the present investigation is to analyse the socio- economic status of slums and suggest possible measure for the improvement of the quality of life of slum dwellers in Belagavi city. The study has following objectives.

- To assess the demographic pattern of slums of Belagavi city

- To analyze amenities and infrastructure exist and also bring out the Deficiency in them.
- To study various problem associated with slum dwellers in the city.
- To suggest the planning for the improvement of environmental condition of slums of the city.

Methodology

- Belagavi Municipal corporation is divided into 58 wards in which there are 36 slums are notified by the KS CB and Municipal Corporation. Hence Data will be collected from both primary as well as secondary sources.
- The parameters for demarcating the slums are water supply conditions, sanitation amenities and infrastructure and housing conditions.
- To study of demographic pattern and problems of slums ,a primary survey was conducted through questionnaire , which was covered about 462 households in 36 different slums at Belagavi Municipal Corporation limit. 10% of the households from each slum pocket were interviewed on the basis of stratified random sample technique. This ten percent is considered on the basis of information on the total number of household collected from the leaders of each slum pocket.
- The secondary sources of data related to population, existing amenities & government policies and Programmes was collected from slums clearance Board Belagavi Municipal Corporation and BUDA etc.
- In the present investigation necessary statistical and cartographic techniques will be employed for tabulation, analysis and mapping of analyzed data.

Spatial Distribution Of Slums:

Table No (1) explains that there are 30 declared, and 16 undeclared slums in Belagavi city according Municipal Cooperation records 2005. The total population of declared slum is 38395 persons. The Banjar Colony (Nagar) is largest in population size and number of families than the other slum of in the city. Out of 56 slums only five slums i.e., Jadhav Nagar (5847 persons) Banjar Colony (3960 persons), New Gandhi Nagar (3245 Persons) Nazar Camp (2350 persons) and Kanabagi Ext (1290) have greater concentration of slum population. It is observed from the study that the slums ie Azad Nagar, Goodshed Road, Beldar Chavani, Matang Colony Railway Bridge Angol etc have very low population concentration.

Table No. 1.1: Distribution of population in slums 2015.

Sl No.	Slums Source: Municipal Corporation Belgaum.	Population
1	Beldar Chavani	450
2	Ganapat Bund Galli	374
3	Kasai Galli	558
4	Malaprabha Nagar	705
5	Indira Nagar Angol	520
6	Near Railway Bridge- Angol	320
7	Harijanwada- Angol	400
8	Waddar Galli	795
9	Laxmi Galli	795
10	Nazar Camp	2350
11	Godas Bavadi	515
12	Alwan Galli	878
13	Gayatri Nagar- Vadagon	493
14	Goodshed Road	353
15	Fulbag Galli	215
16	Matang Colony	237
17	Banjar Colony (Han)	3860
18	Markandy Nagar	386
19	Ashok Nagar Huts	641
20	Beldar Chavani	459
21	Ambedkar Nagar	1060
22	Ramnagar	517
23	Kanchikeri Colony	1013
24	Azada Nagar	350
25	Basavankol	1370
26	Kanchikeri Colony	1013
27	Azada Nagar	350
28	Basavankol	1370
29	Old Gandhi Nagar	450
30	Yamanpur	647

Population Characteristics Of Slums Of Belagavi City.

Economic well being of a region depends on the quality and number of inhabitants. The demographic factors not only influence the nature and quality of all factors of production but also determine the kinds of economic activity and development. There are 46 slums in the city, of which 32 are declared slums and 16 undeclared slums according to the Municipal Records 2011. The

total population of declared slums is about 38395 persons, which accounts for about 10 per cent of the total population of the city. Out of the total population the male population is 54: 10 per cent and rest are females.

Table No 1.2 Slums Classified According To Sex Ratio

Sl No	Sex Ratio (Females Per 1000 Males)	No Of Slums	% To Total
01	Less Than 950	02	5.12
02	950-960	17	43.58
03	Above 960	20	51.28
	Total	39	100.00

Age Composition Of Slum Dwellers

Age composition is one of the most important aspects of population study it influences the rate of growth and has profound effects on the socio-economic conditions and development. There are three basic determinants of age composition they are mainly as follows- i) fertility ii) mortality and iii) migration, these are interdependent, and they change from one city to another. Fertility and migration influence much on population growth and socio-economic development. The fertility rate that determines the proportion of population in different age categories. That is why, most of the countries of Asia, L. America and African countries experience the longevity and life expectancy. If we analyze the age groups (table no 1.3), 11.45 per cent belongs to the age group of 0-5 years, About 13.26 percent belong to the age group of 6-14 years and the percentage of population lying in the age group of 15-34 years is about 24 percent. The highest percentage is 39.76 belongs the age group of 35-60 years and only 10.61 percent lie in the age group of about above 60 years. Which indicates that about 35.00 per cent of the population surveyed households are dependent people.

Table No 1.3 Age Composition Of Slum Dwellers Of Belagavi City

SL NO	AGE GROUPS	PERCENTAGE
01	0-5	11.45 %
02	6-14	13.26%
03	15-34	24.00
04	35-60	39.76
05	ABOVE 60	10.61

Source- Field Survey

Religious And Caste Composition Of Slum Dwellers

A. Religious Composition

Religious composition of the population determines the type of human resources. India is land of diversity, and the same is reflected in the population characteristics which varies from one region to another. Religion plays an important role in formulating and preserving a culture system, which has been well recognized in the city. However there are many ways in which the religion may reflect its influence on the way of life of its institutions, political ethos and even the laws. For example the social institutions of marriage requires traditions and systems in every religion and each religion has its own codification. Islam permits polygamy while Christianity and Hinduism insist on monogamy.

Table No 1.4 Religious Composition Of Slum Dwellers (Figures Percentage)

Sex	Total Pop	Hindus	Muslims	Christians	Others
Male	54.1	37.27	12.62	2.2	1.31
Female	45.9	33.00	10.00	2.0	1.60
Total	100	70.27	22.62	4.2	2.91

Source: Field Survey And Percentage Is Computed By Researchers

It is observed from the table no 1.4 and figure no 1.4 that the Majority of sample respondents are the followers of Hindu religion. 70.27percent of sample respondents are Hindus. Of which 37.33percent male and 33.00 percent females About 22.62 percent of the respondents are Muslims, In which 12.62 male and 10 percent females. and 4.2 percent are Christians and remaining 2.91 percent are the people belongs to other religious groups(Jains,Sikhs,Buddhist,Parsi) etc

Caste Composition

Table No 1.5 Caste Composition Of Notified Slums

Sl No	Social Category	Total Popn	Percentage
01	Others	20518	72.09
03	Schedule Caste	7286	25.60
04	Scheduled Tribe	656	2.30
	Total	28460	100.00

Source -Office Of Ksdb And Percentage Is Computed By Researcher

A good number of slum dwellers belong to Scheduled Caste category. (table no-1.5) . As many as 25.60 percent of the slum dwellers belongs to Scheduled Caste and 15.00 and 2.30 percent of belongs to scheduled tribe. and more number of slum dweller ie-72.09 percent belongs to other social category groups, which includes backward classes ,minorities and others .

Occupational Structure

It is observed from the survey that a majority of the households are engaged in low-income occupations such as daily wages, rickshaw pulling, household industry, construction, wooden works furniture making and begging. About 28.16 per cent people are daily wagers. 8.10 per cent construction workers 12.0 per cent transport and communication 18.0 per cent wooden and furniture makers, 6.08 per cent industrial labours, 5.23% Beggars and 20.31 per cent other workers. (Table No. 1.6)

Table No.1.6 Occupational Structure of slum dwellers in Belagavi city.

Occupation	Percentage of households
Daily wagers	28.16%
Construction	8.10%
Rickshaw pullers	12.00%
Transport & Communication	2.07%
Wooden and Furniture	18.00%
Industrial Labors	6.08%
Begging	5.28%
Others	20.31%
Total	100.00%

Source: (Computed by researcher)

Problems of Slums:

Housing Condition : The basic frame of environment in which man lives in his house, housing condition not only reflect the material status of population but also the rate at which improvement or deterioration of general quality of life takes place. If we compare the housing conditions of slums of Belagavi city with either areas it can be considered as worst standard because about 70.18 per cent of houses are made up of roof with locally available materials like, grasses, mud etc, and about 20.38 per cent houses are thatched, rest of houses are asbestos or miscellaneous materials. The structure of wall and floor

are generally of almost mud and in general the conditions of houses are not suitable for habitation.

Water Supply And Electricity: Slum areas are very poor in terms of water and electricity supply. In this regard the situation of slum areas is not satisfactory. Spatial distribution of these facilities may at best be put as haphazard. Due to low income a majority of the population cannot afford these facilities. About 85 per cent of the slum people get their drinking water from municipality tap and about 82 per cent of the slum dwellers do not have electricity supply, they are using kerosene and oil, wood as a fuel.

Sewerage and Sanitation: The sewerage and sanitation facilities, one of the vital elements of the quality of the environment, are very unsatisfactory. Stagnant pools of water and flooding of low-lying slum areas by rain water are a common sight. Sewerage and sanitary conditions are extremely poor, especially in slum areas of Gandhinagar, Azadnagar, Zaptat colony, Gangawadi etc. The living conditions in these slums are unhygienic and inadequate.

Amenities And Infrastructure : Amenities and infrastructural facilities constitute an important part of the environment. These facilities in these slum areas are very poor both in quality and quantity. About 78.32 per cent of the slum dwellers do not have separate kitchen, separate bathroom, separate latrine and separate room to entertain their guest. Quality and size of the roads are not good in slum areas. 98 per cent of the total households in slum areas do not have telephone facilities, but they use mobiles.

Suggestions for Development:

The success of ensuring a healthy living in slums lies with the improvement by providing adequate facilities. The problems of one slum differ from another. From the observation made in the present survey, a few broad recommendations are outlined which may help in the improvement of the microenvironment in slums of Belagavi Municipal Corporation area. The slum dwellers should be allowed to stay in the respective pockets without any programme of rehabilitation unless and otherwise the situation compels. Further, the people living here may be given the chance of having ownership of rights of the land they are occupying. The provision of housing of the economically weaker section is to be taken under the minimum need programme.

Water Supply and Sanitation: The existing system of tap water supply is to be augmented to meet the minimum requirement. The water supply system in the slums. It is needed to be treated with integration of city supply system. To meet the immediate requirements deep tube wells be installed in suitable locations. The slums should be provided with drainage facilities i.e. integration with the master plan drainage system of the city. All Kaccha drains should be made pucca. During rainy season conditions of water logging is serious and that deteriorates the environment, which needs a permanent pumping system.

It is very much necessary to extend the facilities of cleaning the slums daily and to dispose of the garbage. It is desirable to provide Garbage pockets to each slums which can dispose of waste at least twice in a week. Further public toilets should be provided at suitable sites. The community organizers should take special care to convince the people the implication of unhealthy environment and insist on them to follow the practice of using toilets.

Electricity: It is observed from the study that, all slum pockets should be supplied with electric connections street light. The tube lights which are not functioning, properly they should be replaced immediately with new ones. The slums have approaches by earthen roads. These roads are to be provided with at least moron roads and the major roads should be provided with black top road.

Education: In order to increase the standard of living of the slum dwellers the expansion of educational facilities are very necessary Pre-primary education for children in the age group of 3-6 should be encouraged. Informal education facilities need to be extended to the adult members of the households. Special care should be taken to discourage the dropouts among the children.

Health: Improvement of health condition of the slum people is essential hence preventive measures are to be taken to arrest the incidence of common diseases in the slums than going for curative measures. Immunization programmes should be organized to arrest specific disease like T.B. polio, etc. Additional dispensaries and health center are required to be established at various centrally located areas. Health education programme is required to be conducted in slum so as to make the inhabitants understand the implications.

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14

Meeting Urban Environmental Challenges: A Case with Solid Waste Management

Abhay M. Patil, Prasanna B. Joshi, M.S.Kurani

Introduction:

Rapid urbanization, increasing industrialization rising incomes and a more sophisticated form of consumerism in developing countries are leading to an increase in the amount and toxicity of waste in middle-income Asian countries, especially in the cities. According to the World Bank, urban areas in Asia generate about 760,000 tons of municipal solid waste (MSW), or approximately 2.7 million cubic meters, per day. In 2025, this figure will increase to 1.8 million tons of waste per day, or 5.2 million cubic meters of waste. Municipal solid waste generation shows a positive correlation with the economic growth of people in terms of kg/capita/day as a consequence of improved life style and social status (Pradeep Kumar and Rajender Kumar Kaushal, 2015). Being the world's second most populous country the level of urbanization in India, has increased from 27.81% in 2001 to 31.16% in 2011. Municipal solid waste management (MSWM) is one of the most overlooked basic services provided by the Government of India. MSW generation rates range between 0.3 and 0.6 kg/capita/day in Indian cities and annual increase in MSW generation (volume) is estimated as 1.33 % per capita (Pattnaik and Reddy 2010). Municipalities, usually responsible for managing MSW in developing countries like India are facing a challenge in providing an effective and dynamic system to the society. They usually fail to attain this due to lack of appropriate collection system, lack of technical expertise and insufficient financial resources (Sujauddin et al. 2008; Guerrero et al. 2013). In developing countries, the cities barely spend 0.5 % of their per capita gross national productivity (GNP) on services for managing MSW (What a waste 1999).

Research Problem and Objective:

Belagavi City is situated in the northwest part of Karnataka state (15° 51' North Latitudes and 74° 51' East Longitude), which is well known for industries, commerce, medical, hospital, education, administration, and pleasant climate, it has attracted a huge number of the people from its hinterland and surrounding regions. The population of Belagavi city has increased sharply

from 83,483 in 1951 to 4,88,292 in 2011 with this the solid waste in the city has also greatly increased. It is projected that waste to be handled in 2020 would be 250 tons per day and which will continue to only increase in the days to come, which has become a great threat to the City Corporation and Cantonment board as well as to the city dwellers. Thus, the focus of this research paper is to analyze the present situation of solid waste and to evaluate the existing solid waste management in the City and to understand the level of success in these initiatives, it is necessary to carry out an audit or study.

Data Base

The present work has been carried out for Belagavi city through the collection of data (i.e. both primary and secondary data), which has been collected mainly from two departments, the City Municipal Corporation (MC) and Public Works Department (PWD) and interviewing stake holders and by field surveys. In addition, the researcher undertakes review of published materials and reports that also includes literature study of some examples for waste management in Indian situations, key informant interviews, applicable policies, laws (if any) pertaining to the research purpose.

Solid Waste Situation In Belagavi City:

Along with the population solid waste in the city has also increased greatly from 109 tons in 2001 to 180 tons per day in 2015. Per capita generation of solid waste has increased from 260 grams/day in 1995 to 369 grams/day in 2015 and shows an increasing trend in the years to come. Following are some of the important dimensions of solid waste in the city.

a. Growth and Pattern of Solid Waste in Belagavi City

According to the data collected, the per capita solid waste generation in Belagavi city ranges between 340 gm and 370 gm per day. The generation of solid waste in Belagavi city and Cantonment is around 1,80,000 kg per day. The city corporation and Cantonment lift about 1,40,000 kg every day approximately and leave about 40,000 kg behind which creates an unhealthy condition in the city.

b. Composition of Urban Solid Waste:

The municipal solid waste in Belagavi comprises of organic food and vegetable wastes, paper and cardboard products, plastic waste, rubber, rags and textile materials, broken glass and crockery, dead animals, bones, stones

etc. The following Table No. 6 shows the specific data on physical and chemical composition of municipal solid waste in Belagavi City.

The Growth Of Population And Solid Waste Generation (1995-2015)

Table No. 01

Year	Population In Lakh	Solid waste (in Kgs.)	Per Capita waste generate (Kg/day)	Year	Population In Lakh	Solid waste (in Kgs.)	Per Capita waste generate (Kg/day)
1995	3.20	83456	0.260	2006	4.16	117210	0.281
1996	3.23	84686	0.262	2007	4.18	124091	0.296
1997	3.33	87866	0.263	2008	4.25	130575	0.307
1998	3.43	91047	0.265	2009	4.31	137289	0.318
1999	3.54	93227	0.263	2010	4.43	143985	0.325
2000	3.65	95407	0.261	2011	4.51	149987	0.332
2001	3.70	97568	0.263	2012	4.63	155954	0.336
2002	3.87	99898	0.258	2013	4.71	162154	0.344
2003	3.90	101948	0.261	2014	4.82	175458	0.364
2004	3.95	104129	0.263	2015	4.88	180454	0.369
2005	4.06	109841	0.270				

* Source: Belagavi City Corporation

Average Waste Generation From Sample Ward - 2015 (Table No. 02)

Ward no. 6	Average MSW of 25 houses
Day 1	995.97 gms
Day 2	779.86 gms
Day 3	824.11 gms
Total average value	866.64 gms
Total no of residential houses	2313
Total waste generated	2004.6 kg

* Source: Data collected by researcher

Major Sources Of Solid Waste Generation - 2015 Table No. 3

Sl.No.	Sources of Waste Generation	Average Quantity of Waste Collected (Tons per day)
1	Households (Non Slum).	65.50
2	Slum Households	06.10
3	Shops, schools, temples etc	24.20
4	Hotels ,Choultries, etc.	30.60

5	Market ,Vegetable shops and meat shops	38.60
6	Hospitals and Clinics	04.60
7	Industries	03.40
8	Others	07.00
Total Solid Waste Generation		180.00

* Source: CCB

Details Of Non-Infectious Waste Generated At K.L.E's Hospital - 2015

Table No. 4

Sl. No.	Non -infectious waste	Appro. Kgs/day
1	Card Board Boxes	30
2	Paper/office, General Waste	320
3	Kitchen Waste	1600
Total		1950

* Source: City Corporation Belgaum

Details Of Bio-Medical Waste Generated At K.L.E's Hospital - 2015

Table No. 5

Sl. No	Bio- Medical Waste	App. kgs/day	Color coding	Percent
1	Solid waste (cotton, pad etc)	180	Yellow	57
2	Blood and Anatomical Waste	25		
3	Other infected (Rubber, Plastic Tubes)	90		
4	Saline Bottles Shredded	8	Blue	13
5	All other plastics	10		
6	Empty glass Bottles	40		
7	Needles	5		
Total		358		100%

* Source: City Corporation Belgaum

Average Physical And Chemical Composition Of Solid Waste - 2015

Table No: 6

Physical Characteristics of Solid Waste		Chemical Characteristics of solid waste	
Item	Percentage	Item	Percentage
Paper	4.76%	Moisture Content	25.05%
Plastics	0.59%	Organic Matter	22.21%
Metals	0.39%	Carbon	12.55%

Glass	0.34%	Nitrogen	0.61%
Ash and fine dust	39.97%	Phosphorus	0.71%
Total Compostable Matter	39.76%	Potassium	0.73%
Other	14.19%	C/N	20.73%
--	--	Others	17.41%
Total	100%	Total	100%

* Source: City Corporation Action Plan Report * Note : Percentage is computed by Author

As far as the C/N ratio is concerned, it is 0.73 per cent. It means that C/N ratio is less, which indicates that there is least scope for recycling of organic waste in Belagavi Municipal Corporation.

c. Other Problems:

Other problems of solid waste like spread of waste around the bins, which is not collected in paper or polythene bags but instead directly thrown out of the domestic dustbins into the roadside containers, sometimes the waste is also discarded just outside the bin as the area around the bin is unhygienic due to garbage spread by the animals like cows, dogs, cats etc. The situation only worsens in the rainy season. As the waste is directly disposed into the open bins, at times of heavy rains the bins get flooded and leads to seeping of the waste out of the bins

Msw Management Practices And Challenges Ahead:

The study of the existing situation will make the picture clearer for problem analysis and design considerations for future proposals. Solid waste management in the city can be divided into two parts namely: Solid waste management in formal sector and informal sector. The formal solid waste management is managed by Belagavi Municipal Corporation and the informal solid waste management is managed by rag pickers, waste pickers, buyers and waste recycling industries. Belagavi has been operating on a conventional system of solid waste management. The waste generators put the waste into primary collection receptacles consisting of round RCC bins and masonry bins. Sweeping is done on a day-to-day basis and the sweepings are also transferred to the bins. They are manually emptied into the trucks, these trucks are then directed to the Turmuri disposal site where the waste is dumped. The cantonment board has its own collection and transport facility, which is outside the purview of the city corporation. The following section gives the details of various components of SWM, its working pattern and

distribution of the work amongst the different levels of employees concerned with the management of solid waste.

Components and Working Pattern Of Swm In The City

A. Staffing Pattern of SWM : The following table shows the staffing pattern of SWM.

Deployment Of Staff In Solid Waste Management Department (2015) -

Table No. 7

Sl. No.	Staff	Deployed
1	Health Officer	1
2	Environmental Engineer	1
3	Deputy Health officer	1
4	Senior Health Inspector	4
5	Junior Health Inspector	9
6	Supervisors	22
7	Pourakarmikas (Sweeping)	309
8	Helpers as loaders	66
9	Drivers	15
Total		428

*** Source: City Corporation Belagavi**

B. Privatisation of solid waste management

In Belagavi city, there are 59 wards out of which solid waste management of 30 wards has been outsourced to a Hyderabad based company, Ramky Environ Engineers. The terms of the contract include providing full service, which includes sweeping, collection, transport and maintaining the area clean.

C. Collection and transportation of Solid Waste

I. Primary collection

- **Primary collection and coverage:**

The total number of households with door-to-door (D2D) collection in CCB area is 57,376 (49%). Manually driven tricycles are used for door-to-door collection. All the household wastes, bulk generator wastes and street sweeping wastes is disposed of in community bins. Municipal solid waste is not mixed with hospital and industrial waste.

- **Primary collection by Street Sweeping :**

The road sweeping is undertaken by sweepers. The sweeping waste is collected in small heaps and gets disposed of to community bins. The city corporation collects the waste using tippers, tractors and dumper placers. The

following table shows the length of the roads for the street sweeping and the waste collected from it.

II. Secondary Collection.

The waste from primary collection is transferred to secondary collection i.e. metal containers. The collection of waste from D2D and corporation has given 11 auto tipper, 30 tricycles and 128 push carts for various SHG's & RWA's. At present Belagavi City Corporation has 309 pourakarmikas for sanitation work. For regular monitoring of secondary transportation corporation also has installed GPRS system in all CCB vehicles.

III. Waste Transported Per Trip

It is estimated that Belagavi generates about 180 tons of wastes per day. Out of this about 77 per cent is collected and transported out daily. A weighing of the waste carried per trip is made for each of the vehicles, the approximate weight carried by each vehicle is about 4.15 to 4.25 tons. The waste transported per day is estimated to be 140 - 160 tons. The entire garbage of the city is transported to the landfill site with the help of 10 twin dumper placer, 2 compactors, 12 trippers and 8 tractors.

D. Waste bin description

There are about 1237 bins and 87 containers in Belagavi city. The average quantity of waste generated in a bin comes to be around 145 kg/bin, and the waste carrying capacity of a bin is 375 kg. So the waste generated is nearly half of the waste carrying capacity of the bin, but as there is an uneven waste generation in the city the collection of waste in the bins may vary from one bin to another. There might be some bins which get filled on a daily basis whereas some bins may take even less time. To avoid open dumping of garbage on the street corners and other places as per the MSW rules, the City Corporation of Belagavi has procured closed metal containers of size 4.5 cum and 3.00 cum. The Bin-Population Ratio for Belagavi city is 1 : 318. This shows that only 1 bin serves 318 people in Belagavi city. It is a clear indication that the Bin-Population ratio is very low, the people have been demanding more bins to be installed for effective disposal of waste into the bins.

E. Multiple handling of the waste and Segregation:

The waste is not properly segregated at the pickup points and leads to multiple handling. This non-segregated waste is filled into open trucks and transported for disposal. It is to be noted that in Belagavi City there is no

provision for these waste segregation plants. However, a lot of recyclable dry waste is not segregated and is thrown on the streets by the people along with domestic, trade or other wastes. Such waste is usually picked up by the poor waste pickers for their livelihood.

F. Manual handling of the waste

The waste is collected from the municipal bins manually with the help of shovel, basket and handcart. The workers use these equipments to collect and throw the waste from the municipal waste bins into the trucks manually. The workers are also required to collect the waste that is littered round the bins.

G. Support of NGO's

City Corporation Board also takes help of NGOs to educate people on cleanliness and hygiene. These NGOs go door to door distributing pamphlets and explaining about the importance of keeping the city clean.

H. Sewer cleaning machines

The Corporation has also procured two sweepers from Kam-Avida for cleaning the main roads and highways. For cleaning the sewer, the corporation has JCB's gutter/sewer cleaning machine.

SATISFACTION WITH SWM SYSTEM

a. Service Level Benchmarking Indicators

Primary surveys indicate that majority of both slum and non-slum households rate the collection system as bad. This clearly indicates the inefficient methods of SWM practices. About 23 per cent of the slum HHs and 50 per cent of the non-slum HHs rate the system as "Average", only a very minor percentage of the remaining HHs rate the system as "Good".

Service Level Indicators And Benchmarks (2015) Table No.8

Sl.No.	Indicators	Benchmarks	Status
1	Household level coverage of Solid Waste Management Services	100 %	90 %
2	Efficiency of Collection of Municipal Solid Waste	100 %	80 %
3	Extent of Segregation of Municipal Solid Waste	0 %	0 %
4	Extent of Municipal Solid Waste recovered/recycled	60 %	60 %
5	Extent of Scientific Disposal of Municipal Solid Waste	100 %	100 %
6	Extent of Cost Recovery in Solid Waste Management Services	100 %	0 %

7	Efficiency in Redressal of customer complaints	80 %	59 %
8	Efficiency in Collection of user charges	90 %	70 %

* Source : SLB Notification of Karnataka ULB's 2011

b. Advantage from the Recyclable waste

The recyclable waste situation is a bit tolerable as compared to the organic waste. But as there is no segregation of the recyclable waste there is no idea about its quantity and generation details. There was some idea about the waste generation trends and the citizen's attitude in dealing with the recyclable waste from the questionnaires answered by the citizens in the survey. The observations made from the questionnaire survey shows that there is a positive contribution of the recyclable waste buying businessmen. Every resalable waste which has even the smallest resale value in the market is bought by them. They collect most of the recyclable waste from the houses and sell it to the recycling industry. It is a good contribution from private businessmen who help to reduce the workload by means of collecting the recyclable waste and earn a profit by selling it to the recycling industry.

Conclusion:

Since India is developing country and have large resources of techniques and facilities but due to lack of awareness, political issues, lack of attention toward the duties which assign to the govt. officers, etc are some of the hurdles due to which India is not able to cope up in waste management as compared to other countries. The present system of MSWM in Belgaum city is satisfactory based on MSW (M & H) Rule 2000 in spite of that more emphasis needs to be laid on segregation and collection of waste at door step. Segregation of recyclable material from mixed waste not only is tedious but also wasteful, therefore the residents should be sensitized towards the importance of segregation of wastes at source. Rather than considering the municipal solid waste simply as residue to be thrown away, it should be recognized as resource materials for the production of energy, compost and fuel depending upon the techno-economical viability, local condition and sustainability of the project on long term basis. In order to encourage the citizens, municipal authority shall organise awareness programmes for segregation of wastes and shall promote recycling or reuse of segregated materials. The municipal authority shall undertake phased programme to ensure community participation in waste segregation for this purpose, regular meetings at quarterly intervals shall be arrange by the municipal authorities with representatives of local resident

welfare associations and non-governmental organisations. In this way some effective measure can be taken lots of things should be done for the growth and development of the society such as proper recycling of waste, making goods from solid waste by proper treatment, which rises employment for unemployed peoples. A part from these stringent laws should be passed in this regard for proper disposal and treatment of waste.

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