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**CHAPTER SEVEN**  
**Human Settlements**

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## CHAPTER SEVEN

### Human Settlements

#### POPULATION & POVERTY

7.1 The root cause of environmental degradation in India can be attributed to rapid growth of population. India has approximately 18 per cent of the world population but only 2 per cent of the geographical area. The application of medical knowledge and social care has lowered the death rate while the birth rate remains fairly constant. Dandekar has analysed the pattern of decline in the death rate and the birth rate for the period 1972-78 and 1979-1990 and observed that the death rate declined faster during the second sub-period (1979-90) than in the first sub-period (1972-78). However, in contrast to the decline in the death rate, the decline in the birth rate during the second sub-period was smaller than in the first sub-period. Due to this, poverty could not be eradicated, in spite of the fact, that poverty alleviation is on the national agenda for more than fifty years. In 1972, in the Stockholm Conference on Environment, the then Prime Minister of India, Smt. Indira Gandhi has said that poverty is a great pollutant. Twenty years later, in 1992, World Bank stated, "poor are the agents and victims of environmental degradation". The poor become agents of environmental degradation when they are victims of it.

7.2 Human development is also adversely affected by the environmental degradation. Two of the environmental indicators, viz. access to the safe drinking water and the sanitation are closely linked with two of the very important human development indicators, viz. an infant mortality rate and the life expectancy. Polluted air and poor and unhygienic conditions in settlements contribute to reduction in life expectancy and increase in infant mortality. Life expectancy in India is

still on very low ebb and an infant mortality rate is much more than desirable. The poor, therefore, take fertility decisions to compensate for all those factors and to avoid risks. Larger population leads to more poverty and worsens the environment, and creates vicious cycle.

#### HOUSING AND BASIC SERVICES

7.3 Access to safe drinking water and proper sanitation is both a right and a basic need. It has a significant bearing on the achievements of other Millennium Development Goals including poverty reduction, and gender equality. However, despite two decades of concerted efforts by national governments and international communities, equitable access to safe drinking water supply and improved sanitation for all remains elusive. It is a pressing development issue.

7.4 Almost two-third of the world's population without access to safe water and 80 percent without access to improved sanitation, lives in Asia. In the last decade of the 20<sup>th</sup> century, Asian countries invested about \$60 billion in water supply and about \$ 11 billion in sanitation. This enabled about 585 million people in both rural and urban areas to gain access to safe water supply, and the Johannesburg Summit goal of halving the number of people without access to improved sanitation by 2015, are to be achieved, about 1 billion people in Asia would have to obtain access to safe drinking water and another 1 billion people to improved sanitation.

7.5 Water is a finite resource. We are wasting too much. Conserving water is one way of ensuring that more is available for those who do not have it. The reduction of non-revenue water in Asia (currently

ranging from 25-70 per cent in most water utilities) will significantly lower capital requirements for new investments and conserve. It costs far less to reduce non-revenue water than to expand capacity and perpetuate system inefficiencies. Access can also be expanded by applying the results of research in new technologies that separate water use (e. g., for cooking, drinking, bathing, sanitation), and through natural means such as rainwater harvesting and storage. In conjunction, water quality must remain a key focus area.

7.6 We do not need only food, we also need potable drinking water, adequate system for disposal of excreta, good sanitation and personal hygiene to reduce prevalence of morbidity. Several studies carried out in our villages confirm that diarrhea and respiratory diseases are the most common and dangerous diseases among children. The majority of illness tends to synergies malnutrition both by demanding higher energy intake to meet the rise in BMR which accompany fever and by requiring higher intake of protein and other nutrients to form antibodies to fight the illness. It is this negative correlation that Japan used to formulate its policy in post war years to provide water for drinking, pit latrines to dispose of excreta, sanitation to control breeding of flies and mosquitoes, which in turn resulted an increase in life expectation of 12 years during the immediate post war decade.

### **SOLID WASTE AND HAZARDOUS MATERIAL MANANGEMENT**

7.7 Due to a rapid growth of urbanization, there is a substantial increase in generation of solid waste in both absolute and per capita terms. Surveys have been conducted to assess for solid waste generation, collection, treatment and disposal in 291 Class I cities and 345 Class II cities. It has been indicated that very little amount of waste generated is treated. The problems in management of wastes relate to

its collection, handling, transport and disposal. Segregation of solid wastes is not uncommon in India as much of recycling work is being done either by ragpickers or non-Governmental agencies in few areas. Proper sanitary landfilling sites need to be developed which are effective in keeping the surface and ground water free from leachates.

7.8 When this solid waste is not collected and disposed of efficiently and effectively, it attracts rodents and flies which then spread diseases. It also pollutes and degrades land and water resources. If these wastes are left untreated, they would ferment slowly and produce bio-gas which would be distributed in the atmosphere. The bio-gas contains 65-70% methane, gas which is a green house gas, have a global warming potential 34 times more than that of Carbon Dioxide. Therefore, development of suitable technologies for utilization of wastes is essential to minimize adverse health and environment consequences. Comprehensive guidelines are available with Central Pollution Control Board for Toxic Waste Management including hospital wastes.

### **STUDY ON SOLID WASTES IN DELHI**

7.9 As per the study conducted in 1999, to generate data on Solid Wastes produced in Delhi, it was found that an average daily generation of municipal solid wastes in Delhi is 5327 tons. Its physical analysis revealed that the wastes consist of about 47% of biodegradable component. The recyclable components include paper and cardboard (6.7%), plastics (4.17%) and metal (1%). Total revenues to be earned through selling out these recyclable components will be of the order of crores of rupees. Data revealed that a large amount of Municipal Solid Waste generated can be recycled and reused. Technique and technologies for the same are available. It is also economically attractive and commonly practised by many countries in the world.

## **PLASTICS WASTE MANAGEMENT**

7.10 Use of plastics have grown manifolds all over the world as it has many advantages. They are light, easy to mould, durable and easy to adopt to different user requirements. However, plastics are difficult to destroy and are classified as non-biodegradable. On the other hand, it is easy to recycle plastics.

7.11 In the Indian context, it is seen that the growth of the plastic industries is phenomenal. Polymer demand in India has consistently recorded double digit growth rates, trebling every 10 years. India's per capita consumption of 1.6 kg of plastics in 1998 was expected to rise to around 4 Kg by the year 2000. However, as compared to the world's statistics of per capita consumption of plastics, it is still far less. In the year 1998, the per capita consumption of

Western Europe was 60 Kg. that of Japan 70 Kg. and of USA 78 Kg. as against 1.6 Kg of India. Also, about 60% of the plastic wastes generated in India are recycled which is the highest in the world. However, the remaining 40 % of the plastic wastes remains uncollected, unsegregated, strewn on the ground, littered around in open drains or in unmanaged garbage dumps. The collection of such Soiled Waste including the one recycled three or even four times earlier, is not only uneconomical for recovery of material, but also unhygienic and undermines the environmental benefits of materials recycling. These indiscriminately disposed solid plastic wastes are of concern in view of causing chokage of municipal sewers, blocking of the storm water run-offs in drains particularly in hilly areas, causing deaths to many animals, like, cows which feed on the garbage food thrown in polythene bags.

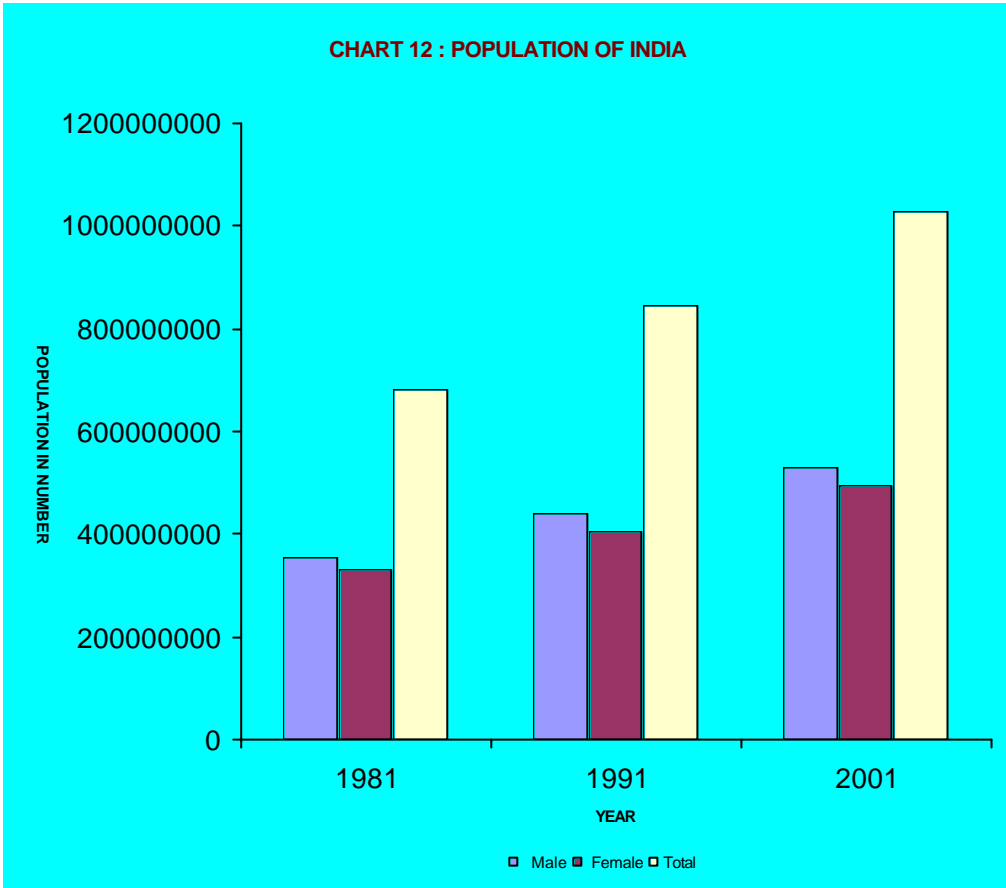
**Table 7.1.1: Population Totals - India and States***(Numbers)*

Sl. No.	States/U.Ts.	1981		1991		2001	
		Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7	8
	<b>States</b>						
1	Andhra Pradesh	27109616	26441410	33724581	32783427	38286811	37440730
2	Arunachal Pradesh	339322	292517	465004	399554	573951	517166
3	Assam	9444037	8597211	11657989	10756333	13787799	12850608
4	Bihar	35930560	33984174	45202091	41172374	43153964	39724832
5	Chhatisgarh++	..	..	..	..	10452426	10343530
6	Goa	510152	497597	594790	575003	685617	658381
7	Gujarat	17552640	16533159	21355209	19954373	26344053	24252939
8	Haryana	6909679	6012440	8827474	7636174	11327658	9755331
9	Himachal Pradesh	2169931	2110887	2617467	2553410	3085256	2991992
10	Jammu & Kashmir+	3164660	2822729	4014100	3704600	5300574	4769343
11	Jharkhand++	..	..	..	..	13861277	13048151
12	Karnataka	18922627	18213087	22951917	22025284	26856343	25877615
13	Kerala	12527767	12925913	14288995	14809523	15468664	16369955
14	Madhya Pradesh	26886305	25292539	34267293	31913877	31456873	28928245
15	Maharashtra	32414432	30368386	40825618	38111569	50334270	46417977
16	Manipur	721006	699947	938359	898790	1207338	1181296
17	Meghalaya	683710	652109	907687	867091	1167840	1138224
18	Mizoram	257239	236518	358978	330778	459783	431275
19	Nagaland	415910	359020	641282	568264	1041686	946950
20	Orissa	13309786	13060485	16064146	15595590	18612340	18094580
21	Punjab	8937210	7851705	10778034	9503935	12963362	11325934
22	Rajasthan	17854154	16407708	23042780	20963210	29381657	27091465
23	Sikkim	172440	143945	216427	190030	288217	252276
24	Tamil Nadu	24487624	23920453	28298975	27559971	31268654	30842185
25	Tripura	1054846	998212	1417930	1339275	1636138	1555030
26	Uttaranchal++	..	..	..	..	4316401	4163161
27	Uttar Pradesh	58819535	52042977	74036957	65075330	87466301	78586558
28	West Bengal	28560901	26019746	35510633	32567332	41487694	38733471
	<b>Union Territories</b>						
1	A&N Islands	107261	81480	154369	126292	192485	163280
2	Chandigarh	255278	196332	358614	283401	508224	392690
3	D&N Haveli	52515	51161	70953	67524	121731	98720
4	Daman & Diu	38298	40683	51595	49991	92478	65581
5	Delhi	3440081	2780325	5155512	4265132	7570890	6212086
6	Lakshadweep	20377	19872	26618	25089	31118	29477
7	Pondicherry	304561	299910	408081	399704	486705	487124
	<b>All India+</b>	<b>353374460</b>	<b>329954637</b>	<b>439230458</b>	<b>407072230</b>	<b>531277078</b>	<b>495738169</b>

Source : Office of the Registrar General, India

+ : The 1991 Census was not held in Jammu & Kashmir. The Projected Population of Jammu & Kashmir, is based on the Report of Standing Committee of Experts on Population Projections (October, 1989).

'++ : The States of Uttaranchal, Jharkhand and Chhattisgarh are carved out from Uttar Pradesh, Bihar, and Madhya Pradesh respectively, in 2001 Census.



**TABLE 7.1.2 : INFANT MORTALITY RATE**  
(Per Thousand Live Births)

Sl. No.	Year	Sex		Sector		Overall
		Female	Male	Rural	Urban	
1	2	3	4	5	6	7
1	1985	98	96	107	59	97
2	1986	97	96	105	62	97
3	1987	96	96	104	61	95
4	1988	94	96	102	62	95
5	1989	90	92	98	58	91
6	1990	81	78	86	50	80
7	1991 *	80	81	87	53	80
8	1992 *	80	79	85	53	79
9	1993 *	75	73	82	45	74
10	1994*	73	75	80	52	74
11	1995*	76	73	80	48	74
12	1996*	73	71	77	46	72
13	1997*	72	70	77	45	71
14	1998*	74	70	77	45	72
15	1999	70	71	75	44	70
16	2000	69	67	74	44	68
17	2001	68	64	72	42	66

Source : Office of the Registrar General, India, Sample Registration System

\* : Excludes Jammu and Kashmir due to non-receipt of returns.

Infant Mortality Rate(IMR) in India has significantly declined during 1970-80 and 1981-90, but the present IMR (66) is still very high in comparison to industrial (14) and even developing countries (64). The decline in the IMR was much greater during the second sub-period (1981-90) than during the first sub-period (1970-80) and this was entirely due to the decline in the IMR in the rural areas. In fact, in urban areas, the situation was reverse, the decline in the IMR was greater during 1970-80 than during 1981-90.

Kerala has recorded the minimum IMR of 16 which in fact is less than that of Costa Rica which is placed at third position among developing countries having lowest IMR. The variability

**CHART 13 : INFANT MORTALITY RATE (PER THOUSAND LIVE BIRTHS)**

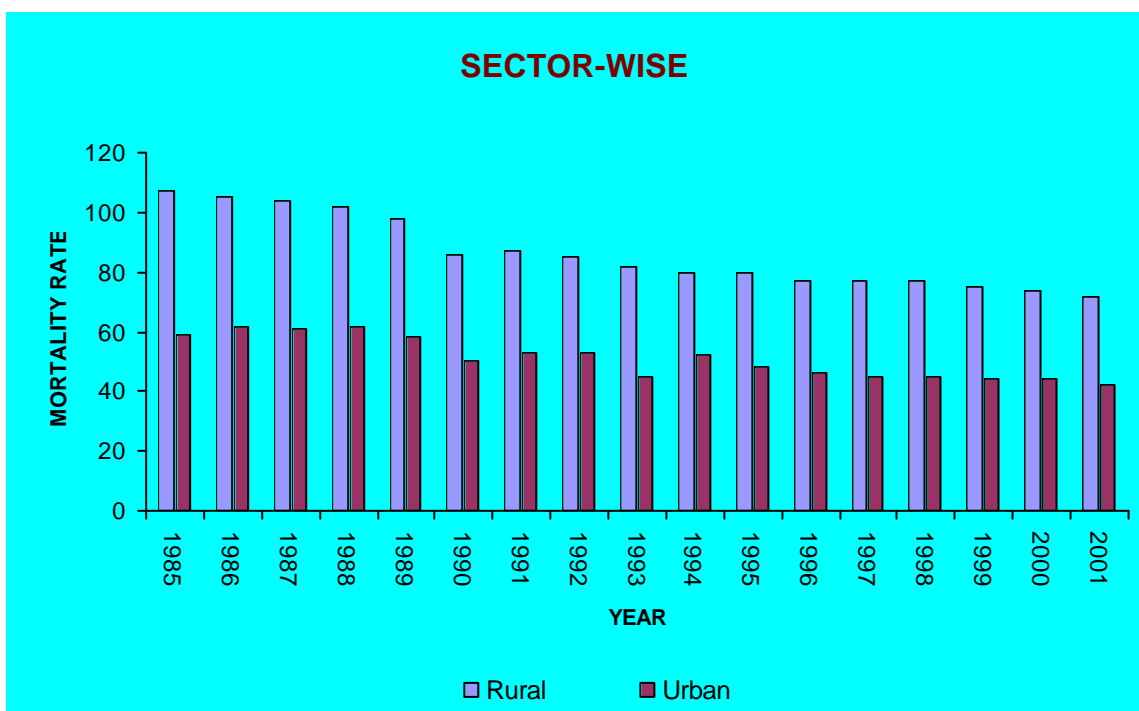
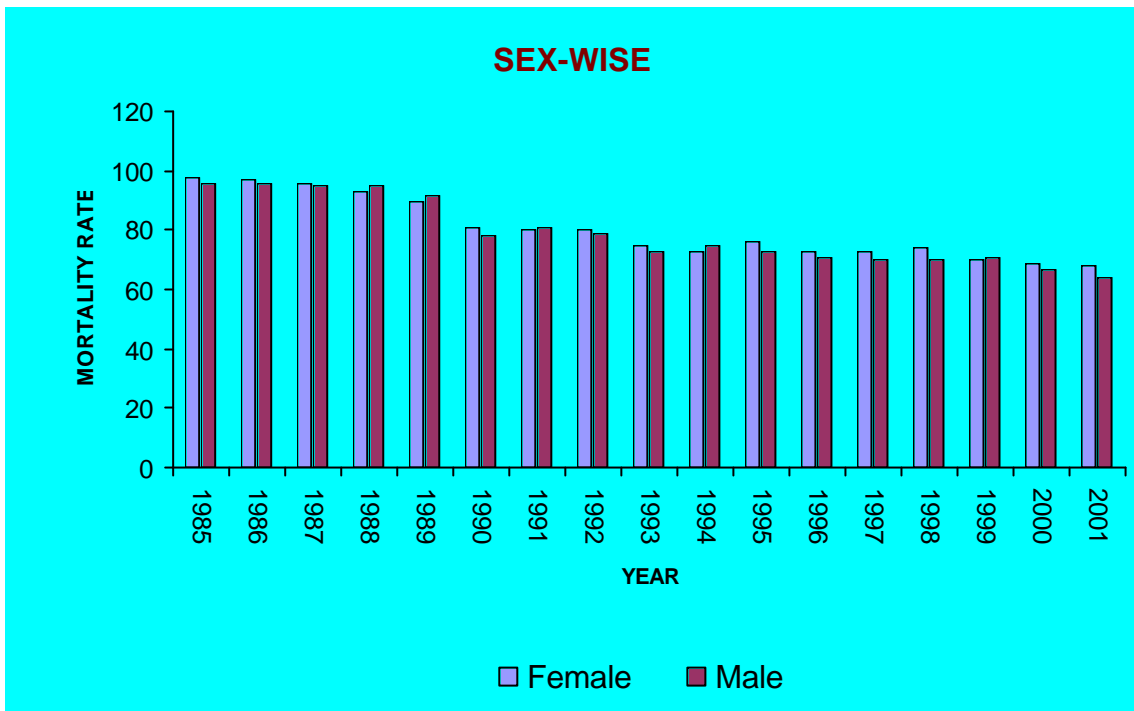




CHART 14 : EXPECTATION OF LIFE AT BIRTH

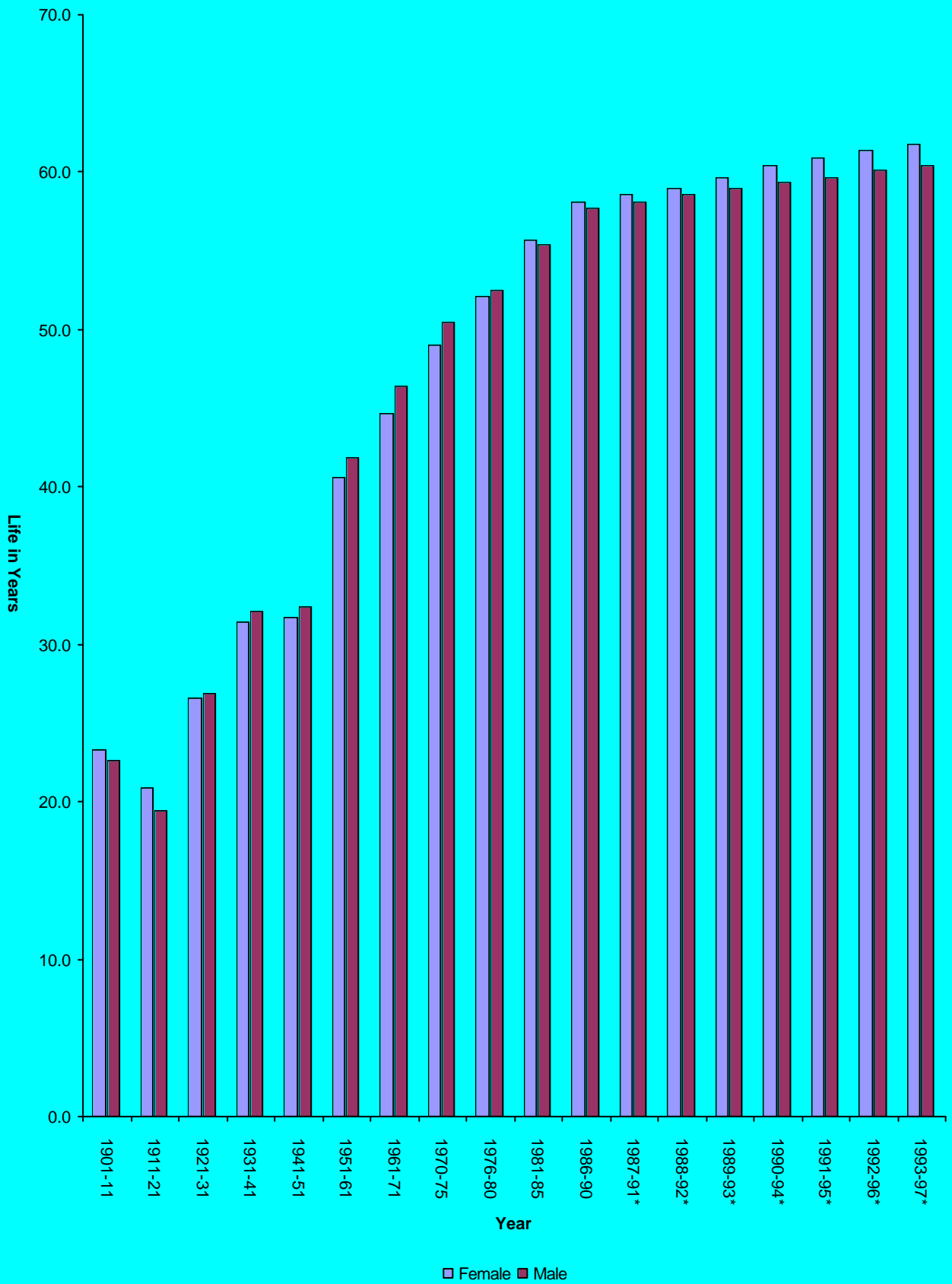
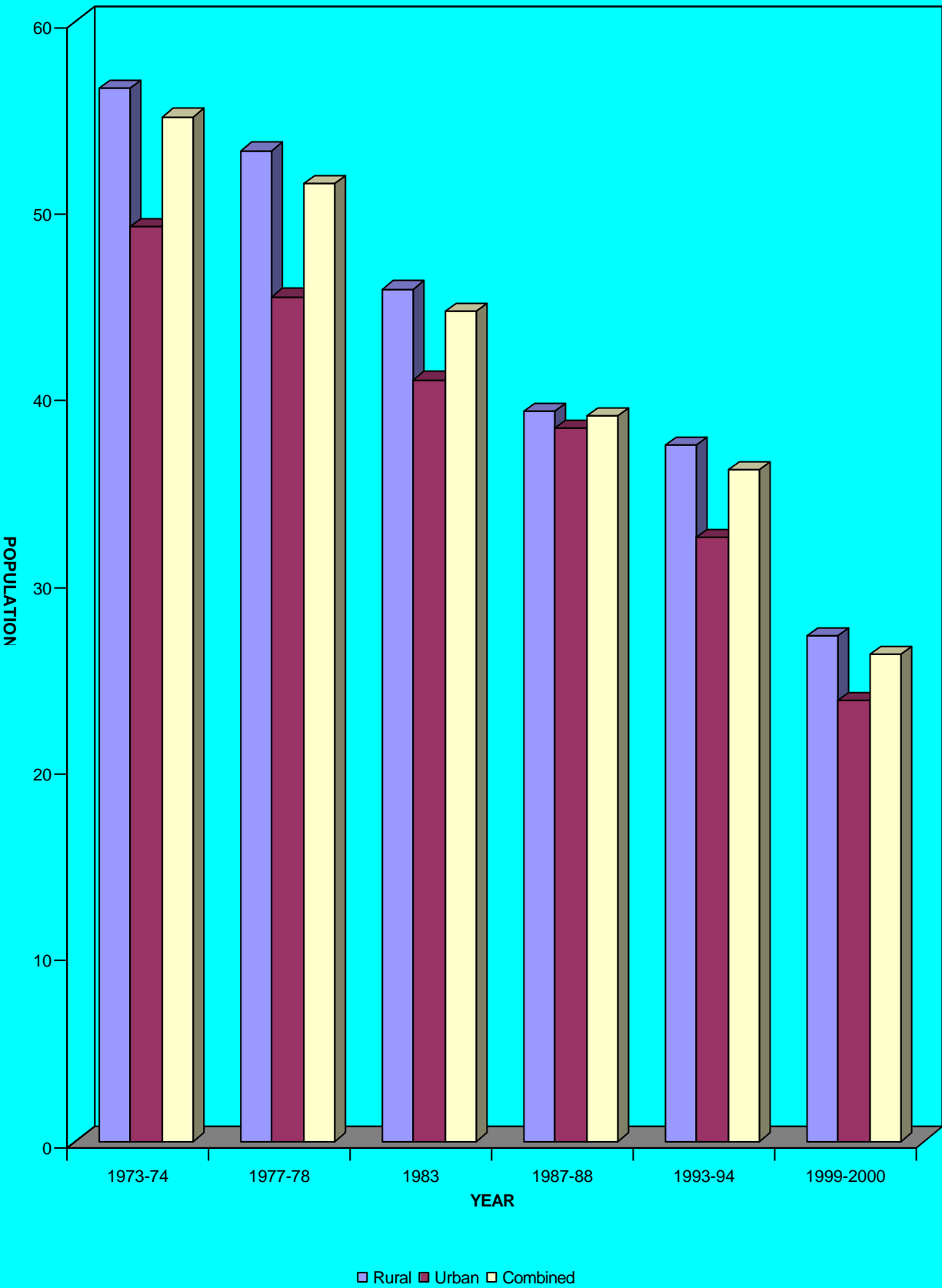


CHART 15 : PERCENTAGE OF POPULATION BELOW POVERTY LINE



**Table 7.1.3 : EXPECTATION OF LIFE AT BIRTH***(In Years)*

Sl. No.	Year	Female	Male	Combined
1	2	3	4	5
1	1901-11	23.3	22.6	22.9
2	1911-21	20.9	19.4	20.1
3	1921-31	26.6	26.9	26.8
4	1931-41	31.4	32.1	31.8
5	1941-51	31.7	32.4	32.1
6	1951-61	40.6	41.9	41.3
7	1961-71	44.7	46.4	45.6
8	1970-75	49.0	50.5	49.7
9	1976-80	52.1	52.5	52.3
10	1981-85	55.7	55.4	55.5
11	1986-90	58.1	57.7	57.7
12	1987-91*	58.6	58.1	58.3
13	1988-92*	59.0	58.6	58.7
14	1989-93*	59.7	59.0	59.4
15	1990-94*	60.4	59.4	60.0
16	1991-95*	60.9	59.7	60.3
17	1992-96*	61.4	60.1	60.7
18	1993-97*	61.8	60.4	61.1

Source : Office of the Registrar General, India.

Notes : Figures for 1901-11 to 1961-71 are based on Census Actuarial Reports and for 1970-75 onwards on the basis of estimate from Sample Registration System

\* : Excludes Jammu and Kashmir

The expectation of life at birth of female which was lower than that of male till 1980 has shown an upward trend during the decade 1981-90 and thereafter. This trend is similar in respect of almost all the states except in a few states i.e. Bihar and Orissa. This may be one of the reasons that in these States the combined expectation of life at birth is much lower than the National Average of 61.1(1993-97).

One of the major reasons for the decline in expectation of life in these states can be attributed to rapid growth of population and poverty, more than forty percent population living below the poverty line which is much more than National Average of 26.1 percent.

**TABLE 7.1.4 (a): STATE-WISE PERCENTAGE OF POPULATION BELOW THE POVERTY LINE -RURAL**

Sl. No.	States/Union Territories	1973-74	1977-78	1983	1987-88	1993-94	1999-2000
1	2	3	4	5	6	7	8
	<b>States</b>						
1	Andhra Pradesh	48.41	38.11	26.53	20.92	15.92	11.05
2	Arunachal Pradesh	52.67	59.82	42.60	39.35	45.01	40.04
3	Assam	52.67	59.82	42.60	39.35	45.01	40.04
4	Bihar	62.99	63.25	64.37	52.63	58.21	44.30
5	Goa	46.85	37.64	14.81	17.64	5.34	1.35
6	Gujarat	46.35	41.76	29.80	28.67	22.18	13.17
7	Haryana	34.23	27.73	20.56	16.22	28.02	8.27
8	Himachal Pradesh	27.42	33.49	17.00	16.28	30.34	7.94
9	Jammu & Kashmir	45.51	42.86	26.04	25.70	30.34	3.97
10	Karnataka	55.14	48.18	36.33	32.82	29.88	17.38
11	Kerala	59.19	51.48	39.03	29.10	25.76	9.38
12	Madhya Pradesh	62.66	62.52	48.90	41.92	40.64	37.06
13	Maharashtra	57.71	63.97	45.23	40.78	37.93	23.72
14	Manipur	52.67	59.82	42.60	39.35	45.01	40.04
15	Meghalaya	52.67	59.82	42.60	39.35	45.01	40.04
16	Mizoram	52.67	59.82	42.60	39.35	45.01	40.04
17	Nagaland	52.67	59.82	42.60	39.35	45.01	40.04
18	Orissa	67.28	72.38	67.53	57.64	49.72	48.01
19	Punjab	28.21	16.37	13.20	12.60	11.95	6.35
20	Rajasthan	44.76	35.89	33.50	33.21	26.46	13.74
21	Sikkim	52.67	59.82	42.60	39.35	45.01	40.04
22	Tamil Nadu	57.43	57.68	53.99	45.80	32.48	20.55
23	Tripura	52.67	59.82	42.60	39.35	45.01	40.04
24	Uttar Pradesh	56.53	47.60	46.45	41.10	42.28	31.22
25	West Bengal	73.16	68.34	63.05	48.30	40.80	31.85
	<b>Union Territories</b>						
1	Andman & Nicobar Islands	57.43	57.68	53.99	45.80	32.48	20.55
2	Chandigarh	27.96	27.32	23.79	14.67	11.35	5.75
3	Dadra & Nagar Haveli	46.85	37.64	14.81	67.11	51.95	17.57
4	Daman & Diu	NA	NA	NA	NA	5.34	1.35
5	Delhi	24.44	30.19	7.66	1.29	1.90	0.40
6	Lakshadweep	59.19	51.48	39.03	29.10	25.76	9.38
7	Pondicherry	57.43	57.68	53.99	45.80	32.48	20.55
	<b>All India</b>	<b>56.44</b>	<b>53.07</b>	<b>45.65</b>	<b>39.09</b>	<b>37.27</b>	<b>27.09</b>

Source : Planning Commission Estimates.

- Notes :
- Poverty Ratio of Assam is used for Sikkim, Arunachal Pradesh, Meghalaya, Mizoram, Manipur, Nagaland, and Tripura.
  - Poverty Line of Maharashtra and expenditure distribution of Goa is used to estimate Poverty Ratio of Goa.
  - Poverty Line of Himachal Pradesh and expenditure distribution of Jammu & Kashmir is used to estimate poverty ratio of Jammu & Kashmir.
  - Poverty Ratio of Tamilnadu is used for Pondicherry and A & N Islands.
  - Urban Poverty Ratio of Punjab used for both rural and urban Poverty of Chandigarh.
  - Poverty Line of Maharashtra and expenditure distribution of Dadra & Nagar Haveli is used to estimate Poverty Ratio of Dadra & Nagar Haveli.
  - Poverty Ratio of Goa is used for Daman & Diu.
  - Poverty ratio of Kerala is used for Lakshadweep.
  - Urban poverty ratio of Rajasthan for the Year 1999-2000 may be treated as tentative.
  - Poverty Ratio of Himachal Pradesh is used for Jammu & Kashmir for 1993-94.

**TABLE 7.1.4 (b) : STATE-WISE PERCENTAGE OF POPULATION BELOW THE POVERTY LINE- URBAN**

Sl. No.	States	1973-74	1977-78	1983	1987-88	1993-94	1999-2000
1	2	3	4	5	6	7	8
	<b>States</b>						
1	Andhra Pradesh	50.61	43.55	36.30	40.11	38.33	26.63
2	Arunachal Pradesh	36.92	32.71	21.73	9.94	7.73	7.47
3	Assam	36.92	32.71	21.73	9.94	7.73	7.47
4	Bihar	52.96	48.76	47.33	48.73	34.50	32.91
5	Goa	37.69	36.31	27.00	35.48	27.03	7.52
6	Gujarat	52.57	40.02	39.14	37.26	27.89	15.59
7	Haryana	40.18	36.57	24.15	17.99	16.38	9.99
8	Himachal Pradesh	13.17	19.44	9.43	6.29	9.18	4.63
9	Jammu & Kashmir	21.32	23.71	17.76	17.47	9.18	1.98
10	Karnataka	52.53	50.36	42.82	48.42	40.14	25.25
11	Kerala	62.74	55.62	45.68	40.33	24.55	20.27
12	Madhya Pradesh	57.65	58.66	53.06	47.09	48.38	38.44
13	Maharashtra	43.87	40.09	40.26	39.78	35.15	26.81
14	Manipur	36.92	32.71	21.73	9.94	7.73	7.47
15	Meghalaya	36.92	32.71	21.73	9.94	7.73	7.47
16	Mizoram	36.92	32.71	21.73	9.94	7.73	7.47
17	Nagaland	36.92	32.71	21.73	9.94	7.73	7.47
18	Orissa	55.62	50.92	49.15	41.63	41.64	42.83
19	Punjab	27.96	27.32	23.79	14.67	11.35	5.75
20	Rajasthan	52.13	43.53	37.94	41.92	30.49	19.85
21	Sikkim	36.92	32.71	21.73	9.94	7.73	7.47
22	Tamil Nadu	49.40	48.69	46.96	38.64	39.77	22.11
23	Tripura	36.92	32.71	21.73	9.94	7.73	7.47
24	Uttar Pradesh	60.09	56.23	49.82	42.96	35.39	30.89
25	West Bengal	34.67	38.20	32.32	35.08	22.41	14.86
	<b>Union Territories</b>						
1	Andman & Nicobar Islands	49.40	48.69	46.96	38.64	39.77	22.11
2	Chandigarh	27.96	27.32	23.79	14.67	11.35	5.75
3	Dadra & Nagar Haveli	37.69	36.31	27.00	-	39.93	13.52
4	Daman & Diu	NA	NA	NA	NA	27.03	7.52
5	Delhi	52.23	33.51	27.89	13.56	16.03	9.42
6	Lakshadweep	62.74	55.62	45.68	40.33	24.55	20.27
7	Pondicherry	49.40	48.69	46.96	38.64	39.77	22.11
	<b>All India</b>	<b>49.01</b>	<b>45.24</b>	<b>40.79</b>	<b>38.20</b>	<b>32.36</b>	<b>23.62</b>

Source : Planning Commission Estimates.

- Notes :
- Poverty Ratio of Assam is used for Sikkim, Arunachal Pradesh, Meghalaya, Mizoram, Manipur, Nagaland, and Tripura.
  - Poverty Line of Maharashtra and expenditure distribution of Goa is used to estimate Poverty Ratio of Goa.
  - Poverty Line of Himachal Pradesh and expenditure distribution of Jammu & Kashmir is used to estimate poverty ratio of Jammu & Kashmir.
  - Poverty Ratio of Tamilnadu is used for Pondicherry and A & N Islands.
  - Urban Poverty Ratio of Punjab used for both rural and urban Poverty of Chandigarh.
  - Poverty Line of Maharashtra and expenditure distribution of Dadra & Nagar Haveli is used to estimate Poverty Ratio of Dadra & Nagar Haveli.
  - Poverty Ratio of Goa is used for Daman & Diu.
  - Poverty ratio of Kerala is used for Lakshadweep.
  - Urban poverty ratio of Rajasthan for the Year 1999-2000 may be treated as tentative.
  - Poverty Ratio of Himachal Pradesh is used for Jammu & Kashmir for 1993-94.

**TABLE 7.1.4 (c): STATE-WISE PERCENTAGE OF POPULATION BELOW THE POVERTY LINE -COMBINED**

Sl. No.	States	1973-74	1977-78	1983	1987-88	1993-94	1999-2000
1	2	3	4	5	6	7	8
	<b>States</b>						
1	Andhra Pradesh	48.86	39.31	28.91	25.86	22.19	15.77
2	Arunachal Pradesh	51.93	58.32	40.68	36.22	39.35	33.47
3	Assam	51.21	57.15	40.47	36.21	40.86	36.09
4	Bihar	61.91	61.55	62.22	52.13	54.96	42.60
5	Goa	44.26	37.23	18.90	24.52	14.92	4.40
6	Gujarat	48.15	41.23	32.79	31.54	24.21	14.07
7	Haryana	35.36	29.55	21.37	16.64	25.05	8.74
8	Himachal Pradesh	26.39	32.45	16.40	15.45	28.44	7.63
9	Jammu & Kashmir	40.83	38.97	24.24	23.82	25.17	3.48
10	Karnataka	54.47	48.78	38.24	37.53	33.16	20.04
11	Kerala	59.79	52.22	40.42	31.79	25.43	12.72
12	Madhya Pradesh	61.78	61.78	49.78	43.07	42.52	37.43
13	Maharashtra	53.24	55.88	43.44	40.41	36.86	25.02
14	Manipur	49.96	53.72	37.02	31.35	33.78	28.54
15	Meghalaya	50.20	55.19	38.81	33.92	37.92	33.87
16	Mizoram	50.32	54.38	36.00	27.52	25.66	19.47
17	Nagaland	50.81	56.04	39.25	34.43	37.92	32.67
18	Orissa	66.18	70.07	65.29	55.58	48.56	47.15
19	Punjab	28.15	19.27	16.18	13.20	11.77	6.16
20	Rajasthan	46.14	37.42	34.46	35.15	27.41	15.28
21	Sikkim	50.86	55.89	39.71	36.06	41.43	36.55
22	Tamil Nadu	54.94	54.79	51.66	43.39	35.03	21.12
23	Tripura	51.00	56.88	40.03	35.23	39.01	34.44
24	Uttar Pradesh	57.07	49.05	47.07	41.46	40.85	31.15
25	West Bengal	63.43	60.52	54.85	44.72	35.66	27.02
	<b>Union Territories</b>						
1	Andman & Nicobar Islands	55.56	55.42	52.13	43.89	34.47	20.99
2	Chandigarh	27.96	27.32	23.79	14.67	11.35	5.75
3	Dadra & Nagar Haveli	46.55	37.20	15.67	67.11	50.84	17.14
4	Daman & Diu	NA	NA	NA	NA	15.80	4.44
5	Delhi	49.61	33.23	26.22	12.41	14.69	8.23
6	Lakshadweep	59.68	52.79	42.36	34.95	25.04	15.60
7	Pondicherry	53.82	53.25	50.06	41.46	37.40	21.67
	<b>All India</b>	<b>54.88</b>	<b>51.32</b>	<b>44.48</b>	<b>38.86</b>	<b>35.97</b>	<b>26.1</b>

Source : Planning Commission Estimates.

- Notes : 1. Poverty Ratio of Assam is used for Sikkim, Arunachal Pradesh, Meghalaya, Mizoram, Manipur, Nagaland, and Tripura.  
2. Poverty Line of Maharashtra and expenditure distribution of Goa is used to estimate Poverty Ratio of Goa.  
3. Poverty Line of Himachal Pradesh and expenditure distribution of Jammu & Kashmir is used to estimate poverty ratio of Jammu & Kashmir.  
4. Poverty Ratio of Tamilnadu is used for Pondicherry and A & N Islands.  
5. Urban Poverty Ratio of Punjab used for both rural and urban Poverty of Chandigarh.  
6. Poverty Line of Maharashtra and expenditure distribution of Dadra & Nagar Haveli is used to estimate Poverty Ratio of Dadra & Nagar Haveli.  
7. Poverty Ratio of Goa is used for Daman & Diu.  
8. Poverty ratio of Kerala is used for Lakshadweep.  
9. Urban poverty ratio of Rajasthan for the Year 1999-2000 may be treated as tentative.  
10. Poverty Ratio of Himachal Pradesh is used for Jammu & Kashmir for 1993-94.

The estimates of poverty have been released from the year 1973-74 onward using the full survey data on household consumption expenditure collected by the National Sample Survey Organization (NSSO) at an interval of approximately five years. The estimates are available for the year 1973-74, 1977-78, 1983, 1987-88, 1993-94 and 1999-2000. The methodology behind these estimates, often termed as "official methodology", has been outlined in the Appendix VI.

The results show that during the last three decades the percentage of population below poverty line has declined significantly in rural areas as well as in urban areas. The 1999-2000 survey results have revealed that 27.09% of rural population and 23.62% of urban population is living below the poverty line.

**TABLE 7.1.5 : PERCENTAGE DISTRIBUTION OF DEATHS BY MAJOR CAUSE GROUPS, INDIA (RURAL), DURING 1992-98**

Sl. No.	Code No.	Major Causes of Deaths	1992	1993	1994	1995	1996	1997	1998
1	2	3	4	5	6	7	8	9	10
1	R	Symptoms, Signs and Abnormal Clinical Findings not Elsewhere Mentioned	26.4	26.2	24.3	18.6	20.6	19.0	18.4
2	J	Diseases of the Respiratory System	14.4	14.4	15.1	16.6	17.8	16.4	17.2
3	A	Infectious and Parasitic Diseases	7.9	12.5	12.0	11.9	10.9	10.0	9.6
4	I	Diseases of Circulatory System	12.7	7.6	8.2	9.5	10.2	12.1	12.5
5	P	Conditions Originating in the Perinatal Period	8.9	10.0	9.0	9.2	7.9	8.7	7.9
6	X	With Venomous Animal Contact	4.5	4.7	5.0	6.0	5.6	5.9	6.7
7	G	Inflammatory Diseases of Central Nervous System	5.0	4.2	5.0	4.8	5.5	6.0	6.0
8	B	Viral Infection	3.2	4.2	4.4	4.7	3.9	3.1	2.4
9	C	Neoplasm	4.9	3.1	3.9	4.2	3.6	4.3	4.3
10	D	Diseases of the Blood and Blood Forming Organs	2.9	3.1	3.0	3.0	3.4	3.2	3.3
11	V	External Causes of Mortality	2.1	2.1	2.2	2.4	2.1	2.3	2.2
12	K	Diseases of the Digestive System	1.4	1.4	1.6	1.6	2.0	2.1	2.1
13	T	Injuries Poisoning and Other Consequences of External Causes	1.2	1.3	1.3	1.4	1.3	1.4	1.3
14	E	Metabolic Diseases	0.6	0.6	0.8	0.9	1.1	1.1	1.1
15	O	Pregnancy Child Birth and Puerperium	0.5	1.1	0.9	0.8	1.0	0.7	0.6
16	N	Diseases of Genitourinary System	0.9	0.5	0.6	0.7	0.8	1.0	1.2
17	F	Mental and Behavioural Disorders	0.4	0.6	0.4	0.5	0.7	0.5	0.6
18	W	Other External Causes of Accidental Injuries	0.3	0.5	0.5	0.5	0.6	0.6	0.7
19	Q	Congenital Malformations, Deformations and Abnormalities	0.4	0.5	0.3	0.3	0.5	0.4	0.4
		Other Medically Certified Deaths	1.4	1.4	1.5	2.4	0.4	1.2	1.7
<b>Total</b>			<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source :Office of the Registrar General of India



**TABLE 7.2.1 : URBAN-RURAL BREAKUP OF TOTAL POPULATION, NUMBER OF HOUSEHOLDS, LIVING QUARTERS AND AVERAGE SIZE OF HOUSEHOLDS AND PERSONS LIVING IN QUARTERS**

Sl. No.	Year	Total Population	No. of Households	No. of Living Quarters**	Av. Size of Households	Av. No. of Household Residing Per Living Quarters	Av. No. of Persons Per Living Quarter
1	2	3	4	5	6	7	8
1	1981*						
	Total	665287849	119772545	121782109	5.6	1.0	5.5
	Urban	157680171	28905949	29897491	5.5	1.0	5.3
	Rural	507607678	90866596	91884618	5.6	1.0	5.5
2	1991+						
	Total	838583988	152009467	159425666	5.5	1.0	5.3
	Urban	215771612	40418141	43518317	5.3	1.1	5.0
	Rural	622812376	111591326	115907349	5.6	1.0	5.4

Source : Office of Registrar General of India

\* : Excluding Assam

+ : Excluding J & K

\*\* : No. of Occupied residential houses + No. of Census houses vacant at the time of house listing.

**TABLE 7.2.2 : NUMBER OF HOUSEHOLDS, POPULATION AND LIVING QUARTERS WITH RURAL /URBAN BREAKUP**

Sl. No.		Number of Households	Population			No. of Houses Vacant at the Time of Houselisting
			Total	Male	Female	
1	2	3	4	5	6	7
1	1981*					
	Total					
	Housing units	119772545	665287849	343930423	321357426	121782109
	Conventional dwelling	119772545	665287849	343930423	321357426	
	Occupied	119772545	665287849	343930423	321357426	113735542#
	Vacant					8046567 \$
	Institutions		3790700	3116289	674411	
	Urban					
	Housing units	28905949	157680171	83876403	73803768	29897491
	Conventional dwelling	28905949	157680171	83876403	73803768	
	Occupied	28905949	157680171	83876403	73803768	27604947#
	Vacant					2292544\$
	Institutions		2377559	1956711	420848	
	Rural					
	Housing units					91884618
	Conventional dwelling	90866596	507607678	260054020	247553658	86130595#
	Occupied	90866596	507607678	260054020	247553658	
	Vacant					5754023\$
	Institutions		1413141	1159578	253563	
2	1991+					
	Total					
	Housing units	152009467	838583988	435216358	403367630	159425666
	Conventional dwelling					
	Occupied					147013766#
	Vacant					12411900\$
	Institutions		4252976	3351584	901392	
	Urban					
	Housing units	40418141	215771612	113936953	101834659	43518317
	Conventional dwelling					
	Occupied					39073337#
	Vacant					4444980\$
	Institutions		2406841	1893949	512892	
	Rural					
	Housing units	111591326	622812376	321279405	301532971	115907349
	Conventional dwelling					
	Occupied					107940429#
	Vacant					7966920\$
	Institutions		1846135	1457635	388500	

Source : Office of the Registrar General of India

# : No. of occupied residential houses

\$ : No. of census house

\* : Excluding Assam

+ : Excluding Jammu &amp; Kashmir

**TABLE 7.2.3 : OCCUPIED HOUSING UNIT BY NUMBER OF ROOMS PER HOUSING UNIT, TOTAL NUMBER OF ROOMS, AVERAGE SIZE OF HOUSING UNIT AND AVERAGE NUMBER OF PERSONS PER ROOM FOR RURAL AND URBAN AREAS AND MAJOR CITIES (urban agglomeration)**

	Total Occupied Housing Units	Occupied Housing Units by Number of Rooms						Total No. of Rooms for All Units	Av. Size (Room Per Unit)	Av. No. of Persons Per Room
		One Room Units	Two Room Units	Three Rooms Units	Four Room Units	Five or More Rooms Units	Unknown			
1	2	3	4	5	6	7	8	9	10	11
<b>1981*</b>										
Total	118614803	53046175	33948809	14496724	7482461	6852624	2788010	242795971	2.0	2.7
Rate	100.0	44.7	28.6	12.2	6.3	5.8	2.4			
Urban	28541877	13072617	7947026	3484741	1804721	1626979	605793	60924094	2.1	2.6
Rate	100.0	45.8	27.8	12.3	6.3	5.7	2.1			
Rural	90072926	39973558	26001783	11011983	5677740	5225645	2182217	181871877	2.0	2.8
Rate	100.0	44.4	28.9	12.2	6.3	5.8	2.4			
<b>1991+</b>										
Total	151032898	61154743	46180064	20910465	10791101	10608294	1388231			
Rate	100.0	40.5	30.6	13.8	7.2	7.0	0.9			
Urban	39493450	15620078	11992915	5852191	3070829	2751947	205490			
Rate	100.0	39.5	30.4	14.8	7.8	7.0	0.5			
Rural	111539448	45534665	34187149	15058274	7720272	7856347	1182741			
Rate	100.0	40.8	30.7	13.5	6.9	7.0	1.1			
Mumbai										
1981	1580095	1088460	267395	98185	30710	16770	78395	2234755	1.4	3.7
Rate	100.0	68.9	16.9	6.2	1.9	1.1	5.0			
1991	2663015	1886150	538090	170745	46260	21530	240			
Rate	100.0	70.8	20.2	6.4	1.7	0.8	0.01			
Calcutta										
1981	1713255	965255	413990	158000	70985	50800	54225	2992665	1.7	3.1
Rate	100.0	56.3	24.2	9.2	4.1	3.0	3.2			
1991	2150290	1185565	522980	225440	105325	106115	4865			
Rate	100.0	55.2	24.3	10.5	4.9	4.9	0.2			
Delhi										
1981	1116796	615415	291972	123108	52889	31755	1657	2072817	1.9	2.8
Rate	100.0	55.1	26.2	11.0	4.7	2.8	0.2			
1991	1689166	756596	456325	262271	122691	88363	2920			
Rate	100.0	44.8	27.0	15.5	7.3	5.2	0.2			
Chennai										
1981	831535	379660	248275	109140	55435	39000	25	1661270	2.0	2.6
Rate	100.0	45.6	29.9	13.1	6.7	4.7	N			
1991	1080695	445250	343435	163275	81595	46945	195			
Rate	100.0	41.2	31.8	15.1	7.6	4.3	0.0			

Source: Office of the Registrar General of India

\* : Excluding Assam Excluding houseless and Institutional Households

+ : Excluding J& K Excluding Institutional households

Note : Unknown also includes households with no exclusive rooms

**TABLE 7.2.4 : SHORTAGE OF HOUSING IN URBAN AREAS***(As on 01-03-91)*

Sl. No.	Name of the City	Total Households	No. of Houses	Housing Shortage*	Congestion Factor	Obsolescence Factor	Total Shortage	Shortage (In Million)
1	2	3	4	5	6	7	8	9
1	Greater Mumbai	2683855	2650850	78069	1282239	111336	317644	0.318
2	Kolkata	2163096	2138750	52150	103356	89828	245333	0.245
3	Delhi	1701338	1633300	227448	81293	68599	377339	0.377
4	Chennai	1084963	1071255	127261	51841	44993	224095	0.224
5	Hydrabad	695173	674090	44811	33216	28312	106339	0.106
6	Bangalore	798807	793310	34294	38168	33319	105781	0.106
7	Ahmedabad	666107	649005	31510	31828	27258	90596	0.091
8	Pune	493456	489775	13574	23578	20571	57723	0.058
9	Kanpur	358794	355360	15978	17144	14925	48047	0.048
10	Nagpur	301567	287825	26003	14409	12089	52501	0.053
11	Lucknow	300622	299090	17144	14364	12562	44070	0.044
12	Surat	286817	270350	27362	13705	11355	52421	0.052
13	Jaipur	267324	266410	8880	12773	11189	32842	0.033
14	Cochin	210582	206525	17419	10062	8674	36155	0.036
15	Vadodara	218627	187030	35936	10446	7855	54238	0.054
16	Indore	182438	180905	8516	8717	7598	24831	0.025
17	Coimbatore	232461	231540	9349	11107	9725	30181	0.030
18	Patna	165538	154270	19228	7910	6479	33617	0.034
19	Madurai	200058	198975	15867	9559	8357	33783	0.034
20	Bhopal	196232	193605	19374	9376	8131	36882	0.037
21	Vishakhapatnam	221048	219750	62498	10562	9230	82290	0.082
22	Ludhiana	165866	147805	20943	7925	6208	35076	0.035
23	Varanasi	133656	121270	13696	6386	5093	25175	0.025
<b>Total</b>		<b>13728425</b>	<b>13421045</b>	<b>927310</b>	<b>655966</b>	<b>563684</b>	<b>2146959</b>	<b>2.147</b>

Source : National Building Organization, Ministry of Urban Affairs &amp; Employment

\* : Without Congestion and obsolescence factor.

Notes :

1. These estimates are based on provisional data.
2. Due to non-availability of data, CONGESTION factor has been worked out on the basis of 1991 Congestion factor for urban area.
3. Dilapidation/OBSOLESCENCE Factor has been worked out based on this factor for urban areas.

**TABLE 7.2.5 : STATE-WISE URBAN HOUSING SHORTAGE PROJECTIONS DURING NINTH FIVE-YEAR PLAN (1997-2001)**

(In Million)						
Sl. No.	Name of State/ U.T.s	1997	1998	1999	2000	2001
1	2	3	4	5	6	7
	<b>States</b>					
1	Andhra Pradesh	1.01	0.98	0.96	0.93	0.89
2	Arunachal Pradesh	0.02	0.02	0.02	0.02	0.02
3	Assam	0.15	0.14	0.14	0.13	0.13
4	Bihar	0.41	0.40	0.39	0.38	0.36
5	Goa	0.01	0.01	0.01	0.01	0.01
6	Gujarat	0.32	0.31	0.30	0.29	0.28
7	Haryana	0.12	0.12	0.11	0.11	0.10
8	Himachal Pradesh	0.01	0.01	0.01	0.01	0.01
9	Jammu & Kashmir	0.11	0.11	0.11	0.10	0.10
10	Karnataka	0.42	0.41	0.40	0.39	0.37
11	Kerala	0.32	0.31	0.30	0.29	0.28
12	Madhya Pradesh	0.37	0.36	0.35	0.34	0.32
13	Maharashtra	0.78	0.76	0.74	0.72	0.69
14	Manipur	0.03	0.03	0.03	0.02	0.02
15	Meghalaya	0.01	0.01	0.01	0.01	0.01
16	Mizoram	0.01	0.01	0.01	0.01	0.01
17	Nagaland	0.01	0.01	0.01	0.01	0.01
18	Orissa	0.26	0.25	0.24	0.24	0.23
19	Punjab	0.16	0.16	0.16	0.15	0.15
20	Rajasthan	0.26	0.25	0.24	0.24	0.23
21	Sikkim	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	0.95	0.92	0.90	0.87	0.83
23	Tripura	0.03	0.03	0.03	0.02	0.02
24	Uttar Pradesh	0.88	0.86	0.84	0.81	0.77
25	West Bengal	0.52	0.51	0.50	0.48	0.46
	<b>Union Territories</b>					
1	Andaman & Nicobar Islands	0.00	0.00	0.00	0.00	0.00
2	Chandigarh	0.03	0.03	0.03	0.02	0.02
3	Dadra & Nagar Haveli	0.00	0.00	0.00	0.00	0.00
4	Daman and Diu	0.00	0.00	0.00	0.00	0.00
5	Delhi	0.33	0.32	0.31	0.30	0.29
6	Lakshadweep	0.00	0.00	0.00	0.00	0.00
7	Pondicherry	0.04	0.03	0.03	0.03	0.03
	<b>All-India</b>	<b>7.57</b>	<b>7.36</b>	<b>7.18</b>	<b>6.93</b>	<b>6.64</b>

Source : NBO/Working Group on Urban Housing for the 9th Five year Plan

**TABLE 7.2.6 : NUMBER OF HOMELESS HOUSEHOLDS AND POPULATION  
SEXWISE WITH RURAL/URBAN BREAK-UP**

Sl. No.		Numbers of Homeless households	Homeless Population		
			Total	Male	Female
1	2	3	4	5	6
1	<b>1981*</b>				
	Total	629929	2342954	1376512	966442
	Urban	209520	618843	406154	212689
	Rural	420409	1724111	970358	753753
2	<b>1991+</b>				
	Total	522445	2007489	1180368	827121
	Urban	216917	725592	471077	254515
	Rural	305528	1281897	709291	572606

Source: Office of the Registrar General of India

\* : Excluding Assam

+ : Excludes Jammu &amp; Kashmir

**TABLE 7.2.7 : SIZE/CLASS-WISE IDENTIFIED/ESTIMATED SLUM POPULATION IN 1991.**

*(Population in Lakh)*

Sl. No.	Size-class Category of Cities/Towns	No. of Cities/Towns	Total Population	Slum Population	Percentage to Total Population	Percentage of Total Slum Population
1	2	3	4	5	6	7
1	>10 Lakh population	23	709.966	188.659	26.6	41.3
2	5-10 lakh population	31	214.500	42.555	19.8	9.3
3	3-5 lakh population	39	151.239	28.596	18.9	6.3
4	1-3 lakh population	207	325.139	54.493	16.8	11.9
	<b>Total class-I</b>	300	1400.844	314.303	22.4	68.8
5	50,000 to 99,999 population	345	236.288	47.151	20	10.3
6	<50,000 population	3052	520.581	95.232	18.3	20.9
	<b>Total</b>	3697	2157.713 *	456.686 *	21.2	100

Source: A Compendium on Indian Slums, 1996, Town and Country Planning Organisation

\* : Excluding Jammu & Kashmir

The existence of slums is essentially manifestation of poverty, along with the economic growth and with industrial development, slums will continue to exist. In spite of the efforts to contain the number of slum dwellers, it has been increasing fast which is causing tremendous pressure on urban basic services and infrastructure. The Slum population in the country as on 1991 was of the order of 463 lakh constituting nearly 21 percent of the urban population. The distribution of urban population indicates the preponderance of slum dwellers in the 23 metropolitan cities of the country which accommodate about 26.6 percent of the total population of these centres. The sprouting of slums in urban areas is the direct outcome of better economic opportunities available in cities and towns.

**TABLE 7.2.8 : ALL INDIA AND STATEWISE SLUM POPULATION 1993-94 \***  
(Jan-Jun 1993)*(In Million)*

Sl. No.	Name of State/ U.T.s	Rural	Urban	Total
1	2	3	4	5
1	Andhra Pradesh	5.67	3.70	9.37
2	Arunachal Pradesh	---	---	---
3	Assam	0.02	0.10	0.12
4	Bihar	4.21	0.90	5.11
5	Goa	---	---	---
6	Gujarat	0.69	0.99	1.68
7	Haryana	0.21	0.58	0.79
8	Himachal Pradesh	---	0.02	0.02
9	Jammu & Kashmir	---	---	---
10	Karnataka	0.28	2.77	3.05
11	Kerala	0.08	0.12	0.20
12	Madhya Pradesh	0.21	1.41	1.62
13	Maharashtra	3.55	6.86	10.41
14	Manipur	---	---	---
15	Meghalaya	0.02	0.05	0.07
16	Mizoram	---	---	---
17	Nagaland	---	---	---
18	Orissa	1.43	0.66	---
19	Punjab	---	0.21	0.21
20	Rajasthan	---	0.43	0.43
21	Sikkim	---	0.01	0.01
22	Tamil Nadu	0.86	2.16	3.02
23	Tripura	0.01	---	0.01
24	Uttar Pradesh	0.87	1.16	2.03
25	West Bengal	0.30	3.70	4.00
26	Andaman & Nicobar Islands	---	---	---
27	Chandigarh	---	0.04	0.04
28	Dadra & Nagar Haveli	---	---	---
29	Daman and Diu	---	---	---
30	Delhi	---	2.03	2.03
31	Lakshadweep	---	---	---
32	Pondicherry	0.01	---	0.01
<b>All-India</b>		<b>18.42</b>	<b>27.90</b>	<b>44.23</b>

Source: NSS, 49th Round (Jan-Jun 1993)

\* Estimates of Slum population have been arrived at by multiplying the estimated no. of households in slums to be estimated household size as given by NSSO on the basis of its 49th round (Jan-Jun 1993) Survey.



**TABLE 7.2.9 : STATE-WISE IDENTIFIED/ ESTIMATED SLUM POPULATION***(Population in lakh)*

Sl. No.	State/Uts	1981			1991			2001		
		Urban Population	Identified Slum Population	% age	Urban Population	Estimated Slum Population	% age	Urban Population	Estimated Slum Population	% age
1	2	3	4	5	6	7	8	9	10	11
	<b>States</b>	<b>1528.805</b>	<b>260.202</b>	<b>17.0</b>	<b>2078.830</b>	<b>436.460</b>	<b>21.0</b>	<b>2769.377</b>	<b>580.669</b>	<b>21.0</b>
1	Andhra Pradesh	124.876	28.579	22.9	178.871	43.133*	24.1	249.654	60.166	24.1
2	Arunachal Pradesh	0.414	Nil	Nil	1.106	0.221	20.0	1.879	0.375	20.0
3	Assam	17.824	1.236	6.9	24.878	4.483+	18.0	32.367	5.826	18.0
4	Bihar	87.190	32.699	37.5	113.530	26.906	23.7	149.556	35.444	23.7
5	Goa	3.518	0.242	6.9	4.798	0.833	17.4	6.559	1.141	17.4
6	Gujarat	106.017	15.316	14.4	142.461	25.814*	18.1	189.993	34.388	18.1
7	Haryana	28.274	2.742	9.7	40.547	6.843*	16.9	59.572	10.067	16.9
8	Himachal Pradesh	3.260	0.761	23.3	4.492	1.258+	28.0	5.765	1.614	28.0
9	Jammu & Kashmir	12.604	6.270	49.7	18.394	5.922	32.2	24.173	7.783	32.2
10	Karnataka	107.296	5.745	5.4	139.078	12.934	9.3	190.989	17.761	9.3
11	Kerala	47.713	4.101	8.6	76.803	12.218	15.9	103.474	16.452	15.9
12	Madhya Pradesh	105.865	10.749	10.2	153.388	21.029	13.7	204.050	27.954	13.7
13	Maharashtra	219.936	43.149	19.6	305.416	78.724	25.8	416.155	107.367	25.8
14	Manipur	3.755	0.165	4.4	5.056	0.853	16.9	6.702	1.132	16.9
15	Meghalaya	2.413	0.660	27.4	3.300	0.833+	25.2	4.608	1.161	25.2
16	Mizoram	1.218	Nil	Nil	3.179	0.572	18.0	6.424	1.156	18.0
17	Nagaland	1.202	Nil	Nil	2.082	0.416	20.0	3.049	0.609	20.0
18	Orissa	31.103	2.820	9.1	42.350	8.432*	19.9	56.320	11.207	19.9
19	Punjab	46.478	11.668	25.1	59.932	14.144*	23.6	80.241	18.936	23.6
20	Rajasthan	72.105	10.252	14.2	100.671	24.000+	23.8	137.193	32.651	23.8
21	Sikkim	0.511	0.024	4.7	0.370	0.095+	25.7	0.479	0.123	25.7
22	Tamil Nadu	159.519	26.760	16.8	190.776	35.713*	18.7	233.080	43.585	18.7
23	Tripura	2.256	0.184	8.2	4.217	0.744*	17.6	5.078	0.893	17.6
24	Uttar Pradesh	198.991	25.800	13.0	276.059	58.391*	21.1	365.397	77.098	21.1
25	West Bengal	144.467	30.280	21.0	187.076	51.949	27.8	236.620	65.780	27.8
	<b>Uts</b>	<b>65.821</b>	<b>18.942</b>	<b>28.8</b>	<b>97.277</b>	<b>26.148</b>	<b>26.9</b>	<b>140.060</b>	<b>37.589</b>	<b>26.8</b>
26	A. & N. Island	0.496	Nil	Nil	0.750	0.349+	46.5	1.102	0.512	46.5
27	Chandigarh	4.228	Nil	Nil	5.758	1.612	28.0	7.618	2.133	28.0
28	Dadra & Nagar Haveli	0.069	Nil	Nil	0.117	0.023	19.7	0.199	0.039	19.6
29	Daman and Diu**	Nil	Nil	Nil	0.475	0.095	20.0	0.698	0.139	19.9
30	Delhi	57.682	18.000	31.2	84.716	22.480+	26.5	122.891	32.566	26.5
31	Lakshadweep	0.186	Nil	Nil	0.291	0.058+	19.9	0.362	0.072	19.9
32	Pondicherry	3.160	0.942	29.8	5.170	1.531	29.6	7.190	2.128	29.6
	<b>Grand Total</b>	<b>1594.626</b>	<b>279.144</b>	<b>17.5</b>	<b>2176.107</b>	<b>462.608</b>	<b>21.3</b>	<b>2909.437</b>	<b>618.258</b>	<b>21.3</b>

Source : A Compendium on Indian Slums ,1996, Town and Country Planning Organisation

+ : Figures of identified/estimated slum population have been furnished (for the state as a whole) by the respective State Governments.

\* : Slum population estimates are based on the information (for Class-I and Class-II cities/towns) received from the State/Ut's Government for the Year 1991.

\*\* : Figures of 1981 have already been included in Goa.

**TABLE 7.2.10 : STATE-WISE IDENTIFIED/ESTIMATED PERCENTAGE  
DISTRIBUTION OF SLUM POPULATION ACCORDING TO  
SIZE/CLASS CATEGORIES OF CITIES/TOWNS IN 1991**

Sl. No.	States/Uts.	Percentage Distribution			Total Slum Population (in lakhs)
		Class I	Class II	Others	
1	2	3	4	5	6
1	Andhra Pradesh	63.3	15.5	21.2	43.133
2	Arunachal Pradesh	-	-	100.0	0.221
3	Assam	62.5	16.1	21.4	4.483
4	Bihar	68.4	18.6	13.0	26.906
5	Goa	-	7.3	92.7	0.833
6	Gujarat	72.4	12.2	15.4	25.814
7	Haryana	52.5	22.4	25.1	6.843
8	Himachal Pradesh	27.2	-	72.8	1.258
9	Jammu & Kashmir	-	-	-	-
10	Karnataka	72.3	8.8	18.9	12.934
11	Kerala	50.4	2.7	46.9	12.218
12	Madhya Pradesh	48.5	16.1	35.4	21.029
13	Maharashtra	82.5	4.5	13.0	78.724
14	Manipur	25.0	-	75.0	0.853
15	Meghalaya	50.4	-	49.6	0.833
16	Mizoram	48.8	-	51.2	0.572
17	Nagaland	-	46.9	53.1	0.416
18	Orissa	43.0	15.4	41.6	8.432
19	Punjab	65.3	18.7	16.0	14.144
20	Rajasthan	51.2	5.5	43.3	24.000
21	Sikkim	-	-	100.0	0.095
22	Tamil Nadu	67.8	13.2	19.0	35.713
23	Tripura	33.6	-	66.4	0.744
24	Uttar Pradesh	53.9	14.8	31.3	58.391
25	West Bengal	87.2	4.1	8.7	51.949
	<b>Total States</b>	<b>67.1</b>	<b>10.8</b>	<b>22.1</b>	<b>430.538</b>
26	Andaman & Nicobar Islands	-	100.0	-	0.349
27	Chandigarh	100.0	-	-	1.612
28	Dadra & Nagar Haveli	-	-	100.0	0.023
29	Daman and Diu	-	-	100.0	0.095
30	Delhi	100.0	-	-	22.480
31	Lakshadweep	-	-	100.0	0.058
32	Pondicherry	76.9	14.4	8.6	1.531
	<b>Total Uts</b>	<b>96.6</b>	<b>2.2</b>	<b>1.2</b>	<b>26.148</b>
	<b>Grand Total</b>	<b>68.8</b>	<b>10.3</b>	<b>20.9</b>	<b>456.686*</b>

Source : A Compendium on Indian Slums, 1996, Town and Country Planning Organisation

\* : Excluding Jammu & Kashmir

**TABLE 7.2.11 : ESTIMATED SLUM POPULATION IN METROPOLITAN CITIES**

(Population in lakh)

Sl. No.	Name of City	1981			1991			2001*		
		Total Population	Slum Population	%age	Total Population	Slum Population	%age	Total Population	Slum Population	%age
		3	4	5	6	7	8	9	10	11
1	Kolkata UA	91.940	30.280	32.9	110.219	36.262 @	32.9	131.147	43.147	32.9
2	Greater Mumbai UA	89.887	30.831	34.3	125.962	43.205 @	34.3	170.701	58.550	34.3
3	Delhi UA	57.228	18.000	31.5	84.191	22.480	26.7	122.204	32.628	26.7
4	Chennai UA	42.893	13.769	32.1	54.220	15.251	28.1	69.823	19.620	28.1
5	Hyderabad UA	25.500	5.000	19.6	43.444	8.593	19.8	62.964	12.466	19.8
6	Bangalore UA	29.218	3.650	12.5	41.303	5.162	12.5	63.597	7.949	12.5
7	Ahmedabad UA	25.480	5.172	20.3	33.122	6.724 @	20.3	43.629	8.859	20.3
8	Pune UA	17.222	2.807	16.3	24.940	4.065 @	16.3	35.299	5.753	16.3
9	Kanpur UA	16.391	6.140	37.5	20.299	4.172	20.6	24.875	5.124	20.6
10	Lucknow UA	10.076	2.850	28.3	16.692	2.778	16.6	22.581	3.748	16.6
11	Nagpur UA	12.195	3.890	31.9	16.640	5.308 @	31.9	23.212	7.405	31.9
12	Jaipur UA	10.152	2.958	29.1	15.182	4.418 @	29.1	22.108	6.433	29.1
13	Surat UA	9.239	2.347	25.4	15.190	3.858 @	25.4	22.916	5.821	25.4
14	Coimbatore UA	9.204	0.801 +	8.7	11.007	0.958	8.7	13.283	1.156	8.7
15	Cochin UA	8.249	2.046	24.8	11.406	2.829 @	24.8	15.364	3.810	24.8
16	Vadodara UA	7.449	1.182	15.9	11.268	2.063	18.3	17.074	3.125	18.3
17	Indore UA	8.293	1.263	15.2	11.091	1.686 @	15.2	15.430	2.345	15.2
18	Patna UA	9.189	5.837	63.5	10.996	6.982 @	63.5	15.273	9.698	63.5
19	Madurai UA	9.077	1.634 +	18.0	10.859	1.953	18.0	13.134	2.364	18.0
20	Bhopal UA	6.710	0.568	8.5	10.628	1.487 **	14.0	15.327	2.145	14.0
21	Vishakhapatnam UA	6.036	1.520	25.2	10.571	2.664	25.2	16.683	4.204	25.2
22	Varanasi UA	7.972	2.600	32.6	10.309	2.074	20.1	13.314	2.676	20.1
23	Ludhiana	6.071	3.104	51.1	10.427	3.687	35.4	16.342	5.785	35.4
<b>Total</b>		<b>515.671</b>	<b>148.249</b>	<b>28.7</b>	<b>709.966</b>	<b>188.659</b>	<b>26.6</b>	<b>966.280</b>	<b>254.811</b>	<b>26.4</b>

Source : T.C.P.O., Ministry of Urban Affairs & Employment

@ : Based on the percentage identified slum population of 1981.

+ : Based on the percentage identified slum population of 1991.

\* : Estimated

\*\* : Based on the no. of identified Jhuggi collected by the State Govt. in 1991-92

Note

Classification of the size of cities is based on 1991 census.

**TABLE 7.2.12 : OCCUPIED HOUSING UNITS BY WATER SUPPLY SYSTEM AND TOILET INSTALLATION BY RURAL AND URBAN CITIES**

Sl. No		Total Occupied Housing Unit	Water Supply System With Piped Water			Toilet Installation	
			Total	Inside	Outside	With Toilet of Any Type	Without Toilet of Any Type
1	2	3	4	5	6	7	8
1	<b>1981*</b>						
	Total	118614803	27317532	12851006	14466526		
	Percentage	100.0	23.0	10.8	12.2		
	Urban	28541877	18049114	10302247	7746867	16596103	11945774
	Percentage	100.0	63.2	36.1	27.1	58.1	41.9
2	<b>1991+</b>						
	Total	151111383	48745490	23414175	25331315	35819780	115291603
	Percentage	100.0	32.3	15.5	16.8	23.7	76.3
	Urban	39523184	25713794	16691096	9022698	25236449	14286735
	Percentage	100.0	65.1	42.3	22.8	63.9	36.1
	Rural	111588199	23031696	6723079	16308617	10583331	101004868
	Percentage	100.0	20.6	6.0	14.6	9.5	90.5

Source : Office of the Registrar General of India

\* : Excluding Assam, Excluding Institutional and houseless households

+ : Excluding J&K

Access to safe drinking water remains an urgent need as only 65.1% of occupied housing unit in urban areas received organized piped water supply and rest have to depend on surface or ground water which is untreated. The situation in rural areas is much worst. In India, almost all surface water sources are contaminated and unfit for human consumption. The diseases commonly caused due to contaminated water are diarrhea, trachoma, intestine worms, hepatitis. Inadequate access to safe drinking water and sanitation facilities leads to infant mortality and intestinal diseases.

**TABLE 7.2.13 : STATEWISE PERCENTAGE DISTRIBUTION OF URBAN SLUM BY BASIC AMENITIES**

Sl. No.	State	Basic Amenities		
		Safe Drinking Water	Electricity	Toilet Facility
1	2	3	4	5
1	Andhra Pradesh	86.8	6.3	33.7
2	Assam	---	34.8	92.2
3	Bihar	88.5	54.2	---
4	Gujarat	64.2	48.1	53.1
5	Haryana	100.0	14.4	42.6
6	Himachal Pradesh	---	---	---
7	karnataka	95.2	72.5	17.6
8	Kerala	---	---	---
9	Madhya Pradesh	79.5	26.9	11.8
10	Maharashtra	98.3	21.0	76.6
11	Meghalaya	---	---	100.0
12	Orissa	89.7	13.1	---
13	Punjab	100.0	56.4	---
14	Rajasthan	100.0	21.5	38.0
15	Sikkim	---	---	100.0
16	Tamilnadu	73.0	31.9	16.9
17	Uttar Pradesh	93.5	5.4	27.7
18	West Bengal	100.0	20.8	82.8
19	Chandigarh	--	--	100.0
20	Delhi	100.0	4.6	57.5
<b>All India</b>		<b>91.5</b>	<b>26.1</b>	<b>45.2</b>

Source : Report No. 417, NSS 49th Round (Jan.-Jun 1993)

**TABLE 7.2.14 : POPULATION COVERED WITH DRINKING WATER AND SANITATION FACILITIES***(Jan.-June 1998)*

Sl. No.	State	Sanitation Facility		Drinking Water	
		(% of Population Using Latrine)		(% of Population Having Drinking Water Within the Premises)	
		Rural	Urban	Rural	Urban
1	2	3	4	5	6
1	Andhra Pradesh	11.5	69.2	18.2	42.7
2	Assam	75.3	98.0	52.8	80.9
3	Bihar	10.6	54.7	43.1	58.4
4	Gujarat	20.1	78.9	41.1	79.9
5	Haryana	15.5	67.1	30.0	83.2
6	Karnataka	11.1	70.0	18.9	59.0
7	Kerala	76.9	94.9	56.7	68.9
8	Madhya Pradesh	5.4	54.8	14.5	59.5
9	Maharashtra	14.2	84.2	30.3	77.5
10	Orissa	3.9	64.2	12.9	42.7
11	Punjab	32.1	85.2	83.4	93.8
12	Rajasthan	13.0	74.5	17.0	80.7
13	Tamil Nadu	11.5	67.5	17.5	49.7
14	Uttar Pradesh	9.4	71.8	51.1	76.5
15	West Bengal	23.9	84.8	26.3	48.9
16	North-East *	81.9	97.6	29.9	51.2
17	North-Western #	38.3	88.1	39.6	83.2
18	Southern @	32.7	72.1	43.7	72.7
<b>All-India</b>		<b>17.5</b>	<b>74.5</b>	<b>33.7</b>	<b>65.9</b>

Source : NSS 54th Round, January - June 1998

\* : North-Eastern Group : Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim &amp; Tripura

# : North-Western Group : J&amp;K, H.P., Chandigarh and Delhi

@ : Southern Group : A&amp;N Islands, Dadra &amp; Nagar Haveli, Goa, Daman &amp; Diu, Lakshadweep and Pondicherry

**TABLE 7.2.15 : STATE-WISE ESTIMATED ANNUAL REQUIREMENT OF WATER FOR DOMESTIC PURPOSES INCLUDING FOR CATTLE IN DIFFERENT STATES***(In BCM)*

Sl. No.	State/UT	Population		Water Requirement	
		1991	2001	1991	2001
1	2	3	4	5	6
1	Andhra Pradesh	66508008	75727541	2.50	3.20
2	Arunachal Pradesh	864558	1091117	0.03	0.05
3	Assam	22414322	26638407	0.84	1.13
4	Bihar	86374465	82878796	3.25	3.50
5	Chandigarh	642015	900914	0.02	0.04
6	Chhatisgarh	@	20795956	@	0.88
7	Goa	1169793	1343998	0.04	0.06
8	Gujarat	41309582	50596992	1.55	2.14
9	Haryana	16463648	21082989	0.62	0.89
10	Himachal Pradesh	5170877	6077248	0.19	0.26
11	Jammu & Kashmir	7718700	10069917	0.29	0.43
12	Jharkhand	@	26909428	@	1.14
13	Karnataka	44977201	52733958	1.69	2.23
14	Kerala	29098518	31838619	1.09	1.34
15	Madhya Pradesh	66181170	60385118	2.49	2.55
16	Maharashtra	78937187	96752247	2.97	4.09
17	Manipur	1837149	2388634	0.07	0.10
18	Meghalaya	1774778	2306069	0.07	0.10
19	Mizoram	689756	891058	0.03	0.04
20	Nagaland	1209546	1988636	0.05	0.08
21	Orissa	31659736	36706920	1.19	1.55
22	Punjab	20281969	24289296	0.76	1.03
23	Rajasthan	44005990	56473122	1.66	2.39
24	Sikkim	406457	540493	0.02	0.02
25	Tamil Nadu	55858946	62110839	2.10	2.62
26	Tripura	2757205	3191168	0.10	0.13
27	Uttar Pradesh	139112287	166052859	5.23	7.01
28	Uttaranchal	@	8479562	@	0.36
29	West Bengal	68077965	80221171	2.56	3.39
30	Andaman & Nicobar Islands	280661	356265	0.01	0.02
31	Dadra & Nagar Haveli	138477	220451	0.01	0.01
32	Lakshadweep	51707	60595	0.00	0.00
33	Pondicherry	807785	973829	0.03	0.04
34	Delhi	9420644	13782976	0.35	0.58
35	Daman & Diu	101586	158059	0.00	0.01
	<b>All India</b>	<b>846302688</b>	<b>1027015247</b>	<b>31.84</b>	<b>43.38</b>

Source : Central Water Commission

Estimated on the basis of the report of the Standing Sub-Committee for assessment of availability and requirement of Water for diverse uses in the Country, 2000.

BCM : Billion Cubic Metres

@ : Three States namely Jharkhand, Uttaranchal, and Chhatisgarh have been formed after 1991 as such their population as well as water requirement in year 1991 have been included in the respective States (i.e.) Chhatisgarh in MP, Jharkhand in Bihar and Utranchal in Uttar Pardesh.

TABLE 7.2.16 : PROGRESS OF COVERAGE OF PROBLEM VILLAGES WITH SUPPLY OF DRINKING WATER

HOUSING, SLUMS AND BASIC FACILITIES

Sl. No.	Name of State/UT	Total No. of Villages (1981 Census)	Villages with Drinking Water Facility as on 1-4-80	Problem Villages as on 1-4-80	Coverage of PVs during VI Plan	Problem Villages as on 1-4-85	Coverage of PVs during VII Plan (1985-90)	Problem Villages Balance as on 1-4-90	Coverage of PVs during (1990-91)	Coverage of PVs during (1991-92)	Coverage of PVs during (1992-93)	Coverage of PVs during (1993-94)	Coverage of PVs during (1994-95)	Problem Villages Balance as on 1-4-95
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Andhra Pradesh	27379	19173	8206	8094	15834	15834	0	0	0	0	0	----	0
2	Arunachal Pradesh	3257	1517	1740	1467	391	391	0	0	0	0	0	----	0
3	Assam*	---	6252	15743	8654	9570	9126	444	356	74	4	5	2	3
4	Bihar	67546	52352	15194	14172	9199	9155	44	37	7	0	0	----	0
5	Goa	386	334	52	57	31	31	0	0	0	0	0	----	0
6	Gujarat	18114	12796	5318	4492	4911	4812	99	47	24	17	2	----	9
7	Haryana	6745	3305	3440	2122	2314	2143	171	96	75	0	0	----	0
8	Himachal Pradesh	16807	8992	7815	4997	3539	2432	1107	310	460	337	0	----	0
9	Jammu & Kashmir	6477	1779	4698	2028	2959	2054	905	243	341	93	76	107	45
10	Karnataka	27028	11572	15456	15443	5410	5410	0	0	0	0	0	----	0
11	Kerala	1219	61	1158	1142	88	87	1	1	0	0	0	----	0
12	Madhya Pradesh	71352	46408	24944	23845	14714	14568	146	63	48	35	0	----	0
13	Maharashtra	39354	26419	12935	12016	5174	5076	98	46	13	17	0	----	22
14	Manipur	2035	823	1212	819	862	862	0	0	0	0	0	----	0
15	Meghalaya	4902	1975	2927	690	3658	2237	1421	406	240	491	210	20	54
16	Mizoram	721	507	214	127	595	527	68	68	0	0	0	----	0
17	Nagaland	1112	463	649	424	623	597	26	7	19	0	0	----	0
18	Orissa	46553	22937	23616	22357	14443	13123	1320	219	551	530	20	----	0
19	Punjab	12342	10575	1767	537	2254	1306	948	164	276	508	0	----	0
20	Rajasthan	34968	15165	19803	16043	7310	6910	400	261	50	25	51	----	13
21	Sikkim	440	144	296	212	121	114	7	7	0	0	0	----	0
22	Tamil Nadu	15831	9182	6649	6649	4882	4864	18	18	0	0	0	----	0
23	Tripura	856	1927	2800	2486	2893	2763	130	120	0	7	0	3	0
24	Uttar Pradesh	112566	84061	28505	27143	43906	42894	1012	563	187	154	108	----	0
25	West Bengal	38024	12781	25243	15628	5930	5930	0	0	0	0	0	----	0
26	Andaman & Nicobar Islands	491	318	173	173	40	40	0	0	0	0	0	----	0
27	Chandigarh	24	24	0	0	0	0	0	0	0	0	0	----	0
28	Dadra & Nagar Haveli	70	70	0	0	0	0	0	0	0	0	0	----	0
29	Lakshadweep	7	7	0	0	11	11	0	0	0	0	0	----	0
30	Pondicherry	291	173	118	111	53	53	0	0	0	0	0	----	0
31	Delhi	214	115	99	89	0	0	0	0	0	0	0	----	0
32	Daman & Diu	26	12	14	7	7	7	0	0	0	0	0	----	0
	All India	557137	352219	230784	192024	161722	153357	8365	3032	2365	2218	472	132	146

Source : Ministry of Rural Areas and Employment

Problem Villages : Problem villages means where drinking water is not available within a radius of 1.6 km in plain areas and within elevation difference of 100 m in hilly areas

\* : Census could not be held in 1981 due to disturbed conditions.

In India, about 78% of the urban population has access to safe drinking water and about 38% of the urban population has access to sanitation services. In the rural areas approximately 35% have access to water supply and about 12% have access to sanitation services. Monitoring done by CPCB for many rivers and wells in India has revealed that the total coliform count far exceeds the desired level in water fit for human consumption. Water for human consumption should usually contain zero fecal coliform per 100 milliliter sample, and bathing water and water for irrigation should contain less than 1000 fecal coliform per 100 milliliter sample. Almost all rivers however, do not meet the standards for safe drinking water (CPCB 1990). The impact of drinking water pollution is more severe on the poor.



**TABLE 7.3.1 : HAZARDOUS WASTE REGULATORY QUANTITIES**

Waste Category (Numbers)	Types of Wastes	Regulatory Quantities
1	2	3
1	Cyanide wastes	1 kilogram per year calculated as cyanide
2	Metal finishing wastes	10 kilograms per year the sum of the specified substance 'calculated as pure metal
3	Waste containing water soluble chemical compounds of lead, copper, zinc, chromium, nickel, selenium, barium and antimony	10 kilograms per year the sum of the specified substance 'calculated as pure metal
4	Mercury, arsenic, thallium, and cadmium bearing wastes	5 kilograms per year the sum of the specified substance 'calculated as pure metal
5	Non-halogenated hydrocarbons including solvents	200 kilograms per year calculated as non-halogenated 'hydrocarbons
6	Halogenated hydrocarbons including solvents	50 kilograms per year calculated as halogenated 'hydrocarbons
7	Wastes from paints, pigments, glue, varnish and printing ink	250 kilograms per year calculated as oil or oil emulsions
8	Wastes from dyes and dye intermediates containing inorganic chemical compounds	200 kilograms per year calculated as inorganic chemicals
9	Wastes from dyes and dye intermediates containing organic chemical compounds	50 kilograms per year calculated as organic chemicals
10	Waste oils and oil-emulsions	1000 kilograms per year calculated as oil and oil emulsions
11	Tarry wastes from refining and tar residues from distillation or pyrolytic treatment	200 kilograms per year calculated as tar
12	Sludge arising from treatment of waste water containing heavy metals, toxic organics, oils, emulsions, and spent chemicals and incineration ash	Irrespective of any quantity
13	Phenols	5 kilograms per year calculated as phenols
14	Asbestos	200 kilograms per year calculated as asbestos
15	Wastes from manufacture of pesticides, herbicides, and residues from pesticides and herbicide formulation units.	5 kilograms per year calculated as pesticides and their intermediate products
16	Acidic/alkaline/slurry wastes	200 kilograms per year calculated as acids/alkalies
17	Off-specification and discarded products	Irrespective of any quantity
18	Discarded containers and container liners of hazardous and toxic wastes	Irrespective of any quantity

Source : TERI Energy Data Directory and Yearbook 2002-2003

**TABLE 7.3.2 : TOTAL AMOUNT OF SOLID WASTE COLLECTED AND THE COLLECTION EFFICIENCY IN SOME TOWNS/CITIES IN INDIA**

Sl. No.	Town	Population (1981)	Solid Waste (Tonnes)		Collection Efficiency % age
			Generated	Collected	
1	2	3	4	5	6
1	Mumbai	8227332	3200	3100	96.9
2	Chennai	4276635	1819	1637	90.0
3	Bangalore	2913537	1800	1225	68.1
4	Ahmedabad	2515195	1200	1080	90.0
5	Kanpur	1688424	2142	1500	70.0
6	Pune	1685300	1000	700	70.0
7	Lucknow	1006538	600	500	83.3
	<b>Total</b>		11761	9742	82.8
1	Coimbatore	917155	175	113	64.6
2	Madurai	904362	310	160	51.6
3	Indore	827071	120	100	83.3
4	Baroda	744043	321	193	60.1
5	Cochine	685686	230	120	52.2
6	Bhopal	672329	321	300	93.5
7	Tiruchi	607815	130	60	46.2
8	Calicut	546060	200	75	37.5
9	Meerut	538461	120	70	58.3
10	Hubli-Dharwad	526493	75	60	80.0
11	Trivendrum	519766	120	75	62.5
12	Salem	515021	130	25	19.2
13	Mysore	476446	204	122	59.8
14	Thane	388577	350	200	57.1
15	Jamnagar	317037	149	89	59.7
16	Gulbarga	218621	10	8	80.0
17	Sambalpur	162190	60	36	60.0
	<b>Total</b>		<b>3025</b>	<b>1806</b>	<b>59.7</b>

Source : State of Environment, 1995, India.

There has been a significant increase in the generation of domestic, urban and industrial wastes in the last few decades. This is due to rapid population growth and industrialization. The problem of waste disposal from both domestic and industrial sources has become quite acute in some towns and cities, with disposal facilities lagging far behind the total quantity of wastes generated. Although, a major part of the waste generated is non-hazardous, substantial quantities of hazardous waste is also generated by industries, hospitals etc.

Leaching of hazardous wastes at dumping sites is not uncommon. This results in the contamination of surface and groundwater supply and is a potential risk to human health. Therefore, effective control of hazardous waste is of paramount importance for the maintenance of health, environmental protection and natural resource management.

In view of the proliferation of the chemical industry and the significant increase in hazardous waste generation, the Ministry of Environment & Forest, GOI, framed the hazardous wastes (management and handling) Rules, 1989. These rules provide an effective inventorisation and controlled handling and disposal of hazardous wastes through voluntary disclosures by the industry. Under these rules, it is mandatory for hazardous waste generators to provide information on the quality and type of hazardous waste produced. The industries generating hazardous wastes are required to apply for authorization for handling hazardous wastes from the concerned state pollution control boards. In addition, they are required to maintain records and report the accidents.

**TABLE 7.3.3 : COMPOSITION OF SOLID WASTES FROM CITIES**

Sl. No.	Cities	Characteristics (%)					
		Non-Degradable					Degradable
		Paper	Plastics	Metal	Glass	Ash & Earth	
1	2	3	4	5	6	7	8
1	Kolkata	3.18	0.65	0.66	0.38	34.00	47.00
2	Delhi	6.29	0.85	1.21	0.57	36.00	35.00
3	Nagpur	1.88	1.35	1.33	1.34	41.42	34.81
4	Bangalore	4.00	2.00		1.00	15.00	78.00
5	Mumbai	10.00	2.00	3.60	0.20	44.20	40.00

Source : India's Development Report, 1997

**TABLE 7.3.4 : MUNICIPAL SOLID WASTE (MSW) DATA FOR DELHI**

(Year : 1999)

1	2
Total quantity of MSW (Tonnes/month)	158469.6
Specific Weight of MSW (Tonnes/cu.m.)	0.504
Water Content (%)	32.1
General Chemical Formula of MSW	Ca Hb Oc Nd Se
Where :	
a : 447.32	
b : 687.11	
c : 246.99	
d : 18.94	
e : 1.00	

Source : Report on the Development of Statistics in the Environment Sector - Solid Waste by Indian Society of Environmental Management, New Delhi

**TABLE 7.3.4(a) : INDIVIDUAL COMPONENTS OF MUNICIPAL SOLID WASTE (MSW) IN DELHI**

Sl. No.	Components	Percentage (By Weight)	Weight (T/Month)
1	2	3	4
1	Food Waste	25.22	39966.03
2	Paper	3.62	5736.60
3	Card board	3.08	4880.86
4	Plastics	4.17	6608.18
5	Textiles	0.52	824.04
6	Rubber	1.83	2899.99
7	leather	0.37	586.34
8	Yard Waste	21.85	34625.61
9	Wood	1.72	2725.68
10	Glass	0.49	776.50
11	Tin	0.20	316.94
12	Aluminium	0.00	0
13	Other metals	0.25	396.17
14	Dirt, Ash	36.56	57936.48
<b>Total</b>		<b>99.88</b>	<b>158279.42</b>

Source : Report on the Development of Statistics in the Environment Sector - Solid Waste  
by Indian Society of Environmental Management, New Delhi

**TABLE 7.3.4(b) : RECYCLABLE COMPONENTS OF MSW IN DELHI**

Sl. No.	Components	Percentage (By Weight)	Weight (T/Month)
1	2	3	4
1	Paper	3.62	5736.60
2	Cardboard	3.08	4880.86
3	Plastics	4.17	6608.18
4	Glass	0.49	776.50
5	Tin	0.20	316.94
6	Aluminium	0.00	0.00
7	Other Metals	0.25	396.17
<b>Total</b>		<b>11.81</b>	<b>18715.25</b>

Source : Report on the Development of Statistics in the Environment Sector - Solid Waste  
by Indian Society of Environmental Management, New Delhi

**TABLE 7.3.4( c ) : FILLING COMPONENTS OF MSW IN DELHI**

Sl. No.	Components	Percentage (By Weight)	Weight (T/Month)
1	2	3	4
1	Dirt, Ash	36.56	57936.48

Source : Report on the Development of Statistics in the Environment Sector - Solid Waste  
by Indian Society of Environmental Management, New Delhi

**TABLE 7.3.4 (d) : BIODEGRADABLE COMPONENTS OF MSW IN DELHI**

Sl. No.	Components	Percentage (by Weight)	Weight (T/Month)	Carbon (T/month)	Nitrogen (T/Month)	C/N Ratio
1	2	3	4	5	6	7
1	Food Waste	25.22	39966.03	19183.70	1039.12	18.46
2	Yard Waste	21.85	34625.61	16551.04	1177.27	14.06
<b>Total</b>		<b>47.07</b>	<b>74591.64</b>	<b>35734.74</b>	<b>2216.39</b>	<b>16.12</b>

Source : Report on the Development of Statistics in the Environment Sector - Solid Waste by Indian Society of Environmental Management, New Delhi

**TABLE 7.3.4(e) : COMBUSTIBLE COMPONENTS OF MSW IN DELHI**

Sl. No.	Components	Percentage (by Weight)	Weight (T/Month)
1	2	3	4
1	Paper	3.62	5736.6
2	Cardboard	3.08	4880.86
3	Plastics	4.17	6608.18
4	Textiles	0.52	824.04
5	Rubber	1.83	2899.99
6	Leather	0.37	586.34
7	Wood	1.72	2725.68
<b>Total</b>		<b>15.31</b>	<b>24261.69</b>

**Energy contents of Combustible Components (Dry) : 23583.62 KJ/T**

Source : Report on the Development of Statistics in the Environment Sector - Solid Waste by Indian Society of Environmental Management, New Delhi

**TABLE 7.3.5: MUNICIPAL SOLID WASTE GENERATION IN MAJOR CITIES***(Kg Per Capita Per Day)*

Sl. No.	City	1971-73	1986/87	1994
1	Ahmedabad	0.24	-	0.59
2	Ajmer	0.24	0.44	-
3	Allahabad	0.20	0.50	-
4	Aurangabad	0.42	0.67	-
5	Bangalore	0.32	-	0.48
6	Baroda	0.29	-	0.39
7	Bhopal	0.26	-	0.51
8	Bikaner	0.29	-	-
9	Chandigarh	0.36	-	-
10	Chennai	0.32	-	0.66
11	Coimbatore	0.31	-	0.43
12	Delhi	0.21	-	0.48
13	Gorakhpur	0.21	0.64	-
14	Guwahati	0.24	-	-
15	Gwalior	0.27	-	-
16	Howrah	0.59	-	-
17	Hyderabad	0.33	-	0.40
18	Jabalpur	0.30	-	0.00
19	Jaipur	0.28	-	0.40
20	Jodhpur	0.20	0.45	-
21	Kanpur	0.55	-	0.64
22	Kochi	-	0.27	0.52
23	Kolkata	0.50	-	0.34
24	Kota	0.25	0.40	-
25	Kozhikode	0.15	0.16	-
26	Kurnool	0.20	-	-
27	Lucknow	-	-	0.62
28	Ludhiana	-	0.40	0.40
29	Madurai	0.38	-	0.39
30	Mumbai	0.49	-	0.44
31	Nagpur	0.22	-	0.27
32	Patna	0.48	-	0.36
33	Pune	0.24	-	0.31
34	Raipur	0.32	0.23	-
35	Rajkot	0.07	0.21	-
36	Sangli	0.23	0.30	-
37	Surat	0.15	-	0.60
38	Tata nagar	0.45	-	-
39	Thane	0.23	-	-
40	Tiruchirapalli	0.21	-	-
41	fhiruvanthapuram	0.12	0.34	-
42	Udaipur	0.14	-	-
43	Vadodara	-	-	0.39
44	Varanasi	-	-	0.40
45	Vijayawada	0.17	0.44	-
46	Visakhapatnam	-	0.31	0.40

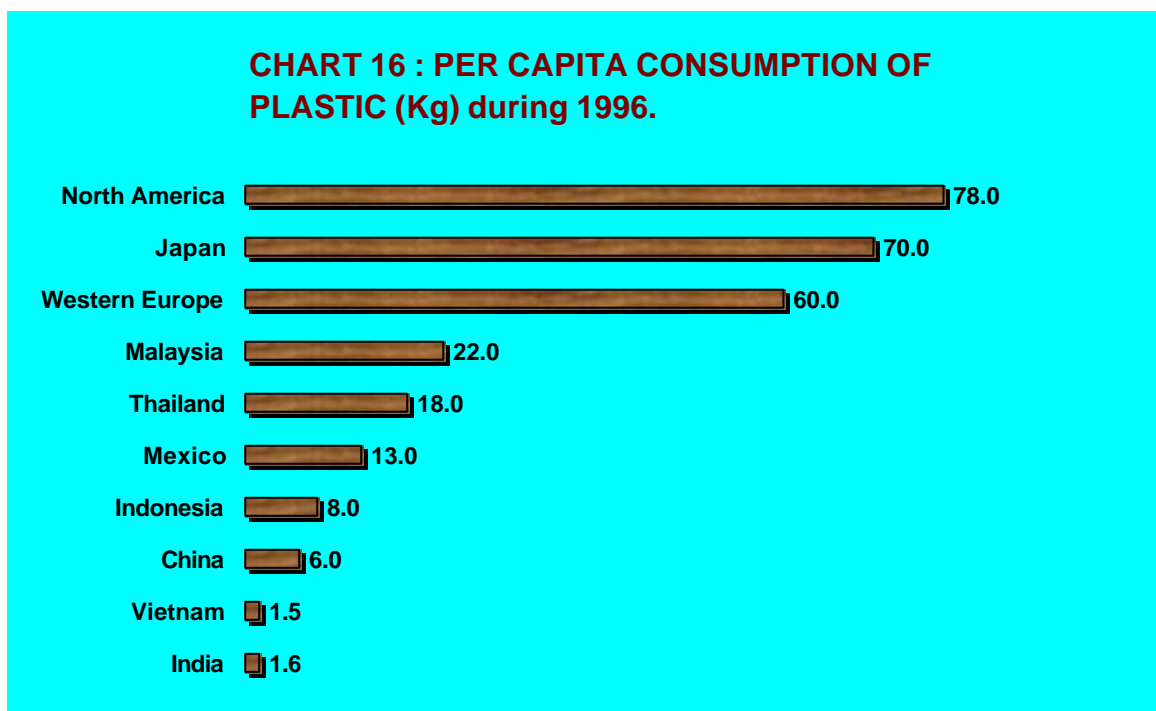
Source : TERI Energy Data Directory and Yearbook

**TABLE 7.3.6 : PER CAPITA CONSUMPTION OF PLASTIC IN SOME  
SELECTED COUNTRIES OF WORLD DURING 1996**

*(In Kg.)*

Sl. No.	Country	Per Capita Consumption
1	2	3
1	India	1.6
2	Vietnam	1.5
3	China	6.0
4	Indonesia	8.0
5	Mexico	13.0
6	Thailand	18.0
7	Malaysia	22.0
8	Western Europe	60.0
9	Japan	70.0
10	North America	78.0

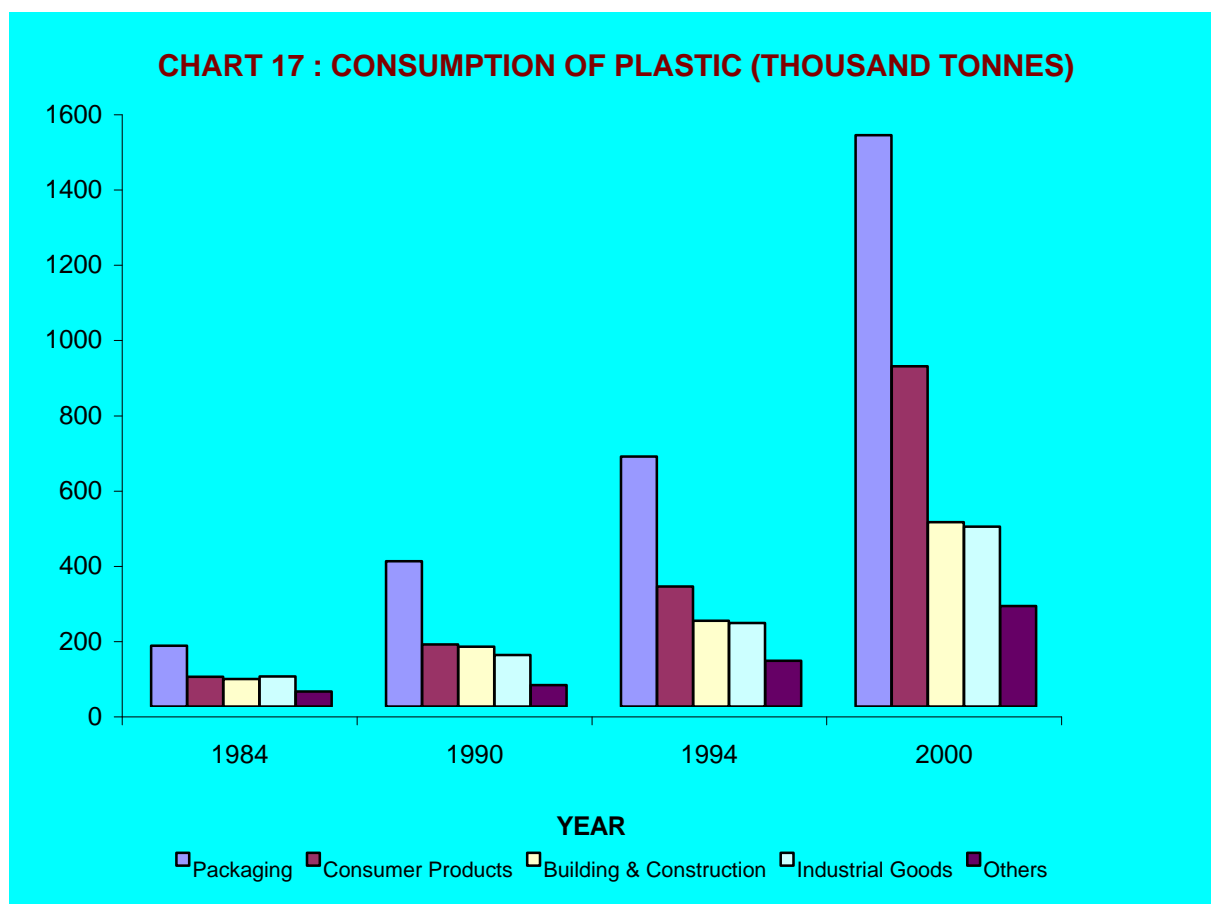
Source : Central Pollution Control Board



**TABLE 7.3.7 : CONSUMPTION OF PLASTIC IN PACKAGING AND CONSUMER PRODUCTS**  
(In Thousand Tonnes)

Sl. No.	Item	1984	1990	1994	2000
1	2	3	4	5	6
1	Packaging	162	386	664	1518
2	Consumer Products	79	165	319	904
3	Building & Construction	73	159	228	490
4	Industrial Goods	80	137	222	478
5	Others	40	57	122	267

Source : Parivesh Newsletter, Sept.1998, CPCB





**TABLE 7.3.8 : PLASTIC WASTE MANAGEMENT STATUS IN INDIA***(In thousand tonnes)*

Sl. No.	Item	1995-96	2001
1	2	3	4
1	Consumption of Plastic	1889	4374
2	Waste available for Recycling	800	2000
3	Total	2689	6374

Source : Parivesh Newsletter, Sept.1998, CPCB

**TABLE 7.3.9 : FIFTY YEARS OF WASTE GENERATION**

Sl. No.	Item	1947	1997
1	2	3	4
1	Urban Population (million)	56.9	274
2	Daily per capita waste generation (grams)	295	490
3	Total Waste Generated (million tonnes)	6	48
4	Area Under land fills (Thousand of ha)	0.12	20.2
5	Annual methane emission (tonnes) from landfill sites	0.87	7.1

Source : Central Pollution Control Board

The above data is from Report 'Looking Back to Think Ahead', Green India 2047, growth with Resource Enhancement of Environment and Nature, The Energy Research Institute (TERI), New Delhi, 1998.

**TABLE 7.3.10 : CHARACTERISTIC LAND - FILL LEACHATES**

Sl. No.	Parameters	Concentration (mg/l)
1	2	3
1	pH	3.7 - 8.3
2	Tot. Dis. Solid	725 - 55,000
3	Chlorides	2 - 11,373
4	Tot. Kj. Nitrogen	2 - 3,320
5	Lead	0 - 14.2
6	COD	50 - 99,000
7	BODS	0 - 19,500

Source : Central Pollution Control Board

Above characteristics of Leachate are typical characteristics of leachate {Ref. Datta, M. (1997) Generation and Control of Leachate and Landfill Gas P. 90. In waste Disposal in engineering Landfill. Narson Publishing House, New Delhi}

WASTE MANAGEMENT

**TABLE 7.3.11 : STATUS OF MUNICIPAL SOLID WASTE MANAGEMENT IN SELECTED METROCITIES**  
(As Per CPCB Survey of 1999)

Sl. No.	City	Bangalore	Kolkata	Chennai	Delhi	Mumbai
1	2	3	4	5	6	7
1	Area (Sq. Km)	226.16	187.33	174.00	1484.46	437.71
2	Population (Projected for 1999, in million)	5.31	6.00	0.00	12.20	12.50
3	MSW Generation (Tonne/day)	2200	3100	3050	6000	6000
4	MSW per capita (Kg/day)	0.414	0.517	0.610	0.492	0.480
5	Garbage pressure (tonne/sq.km)	9.728	16.548	17.529	4.042	13.708
6	Pressure on landfill	1400	2500	3050	5000	6000
7	Safai Karamchari	12600	12030	10130	40483	22128

Source : Central Pollution Control Board

**TABLE 7.3.12 : CURRENT STATUS OF MANAGEMENT OF MUNICIPAL SOLID WASTE**

Sl. No.	Cities	Class I	Class II
1	2	3	4
1	No. of Cities	299	345
2	Total Population	1281138655	22375588
3	Waste Generation (MT/d)	48134	1454
4	<b>Mode of Collection</b>		
	I. Manually	50%	78%
	II. Trucks	49%	21%
	III. Others	1%	1%
5	<b>Disposal</b>		
	I. Dumping	94%	93%
	II. Composting	5%	6%
	III. Others	1%	1%

Source : Central Pollution Control Board

**Note :** No. of cities and Total population are as per 1991 census and other data is for 1994-95.

**TABLE 7.3.13 : POLYMER DEMAND IN INDIA**  
(in thousand tonnes)

Sl. No.	Year	Demand
1	2	3
1	1965	44
2	1975	125
3	1985	523
4	1995	1780

Source : Parivesh Newsletter, Sept.1998  
Central Pollution Control Board

