



# A Study On Safe Drinking Water In Urban Odisha: A Critical Analysis

Gagan Malik

Ph.D. Research Scholar

Department of Geography

Utkal University, Vani Vihar

Bhubaneswar-751004

## Abstract:

The present paper attempts to study the availability of safe sources of drinking water in urban Odisha, 2011. The study is based on secondary data collected from the census of India 2011, Tables on Houses, Household Amenities and Assets, Odisha Series 22, Volume-1. Different safe sources of drinking water are tabulated, Composite Index on different sources has been attempted to ascertain the overall condition of safe sources of drinking water in urban Odisha.

## Key Words:

Safe drinking water, Accessibility, Urban households.

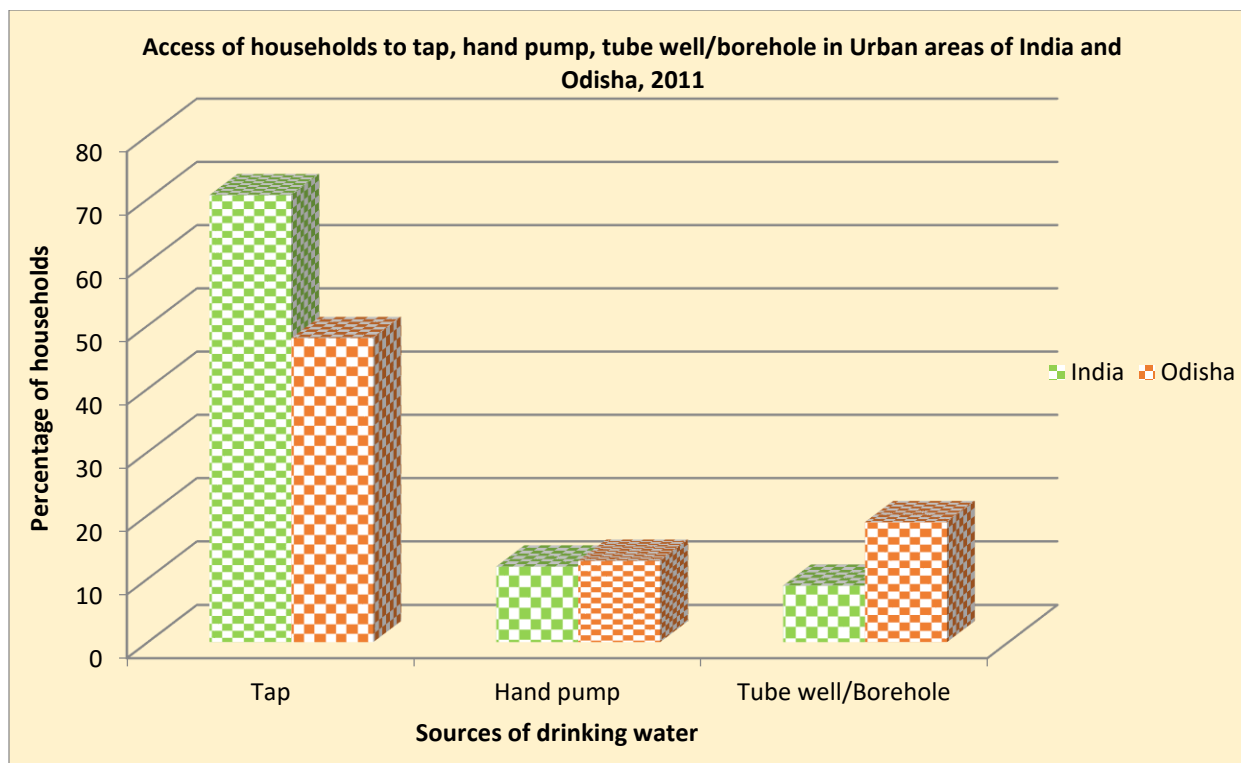
## Introduction:

Provision of basic amenities reflects the quality of life of the people living in any region, which is intrinsically associated with the process of urbanization and process of development. Due to high concentration of population in urban areas, there is a heavy demand on basic amenities. Among all next to air, drinking water is the most important necessity of life. It is the basic human right to have access to safe drinking water as available in census are tap, hand pump, tube well/borehole have been taken for the present study.

Globally, in 2012, 89 percent of people had access to water suitable for drinking. Nearly 4 billion had access to tap water while another 2.3 billion people had access to wells or public taps. 1.8 billion people still use an unsafe drinking water source which may be contaminated by faeces. This can result in diseases such as diarrhoea, cholera and typhoid among others.

Odisha is one of the least urbanized states in India, it constitutes only 16.7 percent of urban population to the total population of Odisha according to 2011 census. But some of the cities particularly in the coastal belt have witnessed tremendous growth in population during the recent past. This has put severe stress on drinking water in different urban centers in Odisha.

Government of Odisha brought out amendments to Odisha Water Works Rules by launching a programme called PIYUSH (AMRUT) with an objective of providing universal access to safe drinking water supply connection by paying Rs 500 only in five equal EMIs. This action is an evidence of State Governments commitments towards achieving Millennium Development Goals 7. To keep pace with the growing demand of urban people, the government has been taking effective steps for efficient management and supply of safe drinking water. The various types of safe drinking water as available in census are tap, hand pump, tube well/bore hole, well, river canal, tank/pond/lake, spring, any other safe source of drinking water is calculated by adding tap (both treated and untreated), hand pump, tube well and borehole.



### Objective:

- (1) To examine the spatial distribution and pattern of different sources of safe drinking water in Urban Odisha, district wise, 2011.
- (2) To study the relationship between levels of urbanization and overall access to safe drinking water.

### Data base and Methodology:

The present study is completely based on secondary source of data, collected from “Census of India 2011, Tables on Houses, Household Amenities and Assets, Odisha Series-22, Volume-1”. The data on different sources of safe drinking water like treated tap water, hand pump and tube well/bore hole for all the districts is collected from urban Odisha.

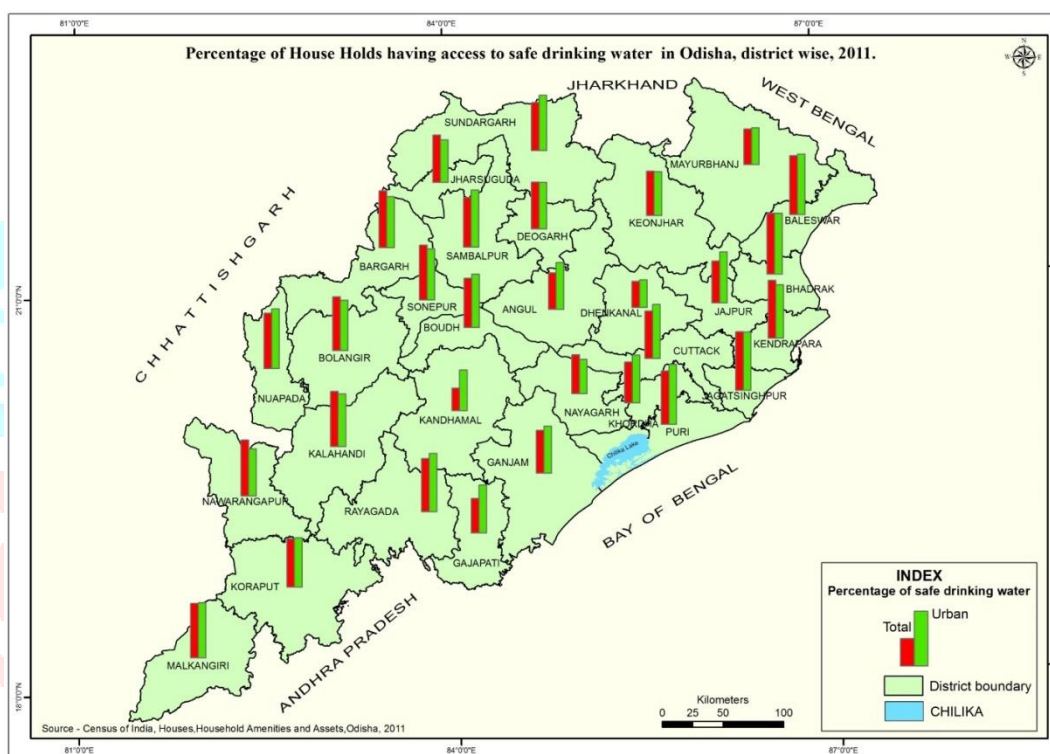
The analysis is done by calculating simple percentages, co-efficient variations, simple correlation and by constructing composite index.

Co-efficient Variation (C.V) =  $\frac{\text{Standard Deviation (S.D)}}{\text{Mean}} \times 100$

To construct Composite Index (C.I): CIJ

## Results:

In urban Odisha 73.82 percent of households living in urban areas is having access to any safe source of drinking water. There are 15 districts where a higher percentage of urban households are having access to any safe source of drinking water (table no.). Among all the thirty districts the highest percentage around 94 percent of urban households from Bhadrak district and the lowest percentage around 40 percent of urban households from Dhenkanal district are using any source of safe drinking water. Around 42 percentages of urban households in the state are using tap water is the main source of drinking water. District Cuttack reports the highest percentage i.e,60.11 percent of urban households who have the accessibility to treated tap water. Whereas district Bhadrak constitutes the lowest percentage i.e,7 percent of the households using treated tap water. There are 11 districts namely Boudh, Cuttack, Deogarh, Gajapati, Ganjam, Jagatsinghpur, Khurda, Koraput, Rayagada, Sambalpur and Sundargarh, where the percentage of households having access to treated tap water is higher than the state average.



The value of co-efficient variation i.e,39.25 percent shows a high degree of regional variation in Odisha. Only around 13 percentage of urban households in the state depend on hand pump as their main source of drinking water. There are 15 districts where a higher percentage of urban households are having access to hand pump than the state average. Among all districts Bhadrak with 63.45 percent reports the highest percent of urban households are using hand pump and district Angul only 5 percent of urban households is using hand pump as their main source of safe drinking water. However, the co-efficient variation value i.e,74.51 percent shows a very high degree of regional variation. The reports only 19 percent of urban households who depend on tube well/borehole. District Kalahandi secures the highest position with 38 percent of urban households and district Boudh occupies the lowest position with only 8 percent of urban households who use tube well/borehole as their main source of drinking water. The co-efficient variation value i.e,36.28 percent shows a high degree of regional variation in these.

Sl. no.	State/Districts	Percentage of Households			
		Total	Tap	Hand pump	Tube well/bore hole
	<b>Odisha</b>	<b>73.82</b>	<b>42.10</b>	<b>12.78</b>	<b>18.94</b>
1	Anugul	65.82	42.0	4.85	18.97
2	Bargarh	68.26	21.90	10.72	35.64
3	Bhadrak	93.66	7.08	63.45	23.13
4	Balasore	72.67	23.76	28.63	20.28
5	Bolangir	74.91	35.84	11.65	27.42
6	Boudh	83.38	57.99	17.20	8.19
7	Cuttack	81.82	60.11	6.44	15.27
8	Deogarh	73.02	44.81	12.99	15.22
9	Dhenkanal	40.27	22.88	3.28	14.11
10	Gajapati	62.12	45.12	6.27	10.73
11	Ganjam	65.5	49.94	4.64	10.92
12	Jagatsinghpur	87.05	48.30	23.60	15.15
13	Jajpur	70.4	30.95	27.69	11.66
14	Jharsuguda	61.92	30.48	6.06	25.38
15	Kalahandi	78.9	20.03	20.51	38.36
16	Kandhamal	62.26	28.03	18.30	15.93
17	Kendrapara	79.72	41.61	22.41	15.70
18	Keonjhar	65.15	40.08	7.18	17.89
19	Khurda	72.36	48.24	5.44	18.68
20	Koraput	74.44	48.43	5.66	20.35
21	Malkanagiri	81.6	27.51	33.89	20.20
22	Mayurbhanj	52.27	28.03	13.22	11.09
23	Nuapada	53.47	12.44	21.40	19.63
24	Nabarangpur	69.0	23.72	25.62	19.66
25	Nayagarh	45.2	13.50	12.28	19.42
26	Puri	91.96	33.74	34.91	23.31
27	Rayagada	82.65	53.89	10.35	18.41
28	Sambalpur	85.92	59.93	7.02	18.97
29	Subarnapur	77.97	37.14	32.13	8.70
30	Sundargarh	83.92	44.79	15.78	23.35
<b>Mean</b>		<b>71.91</b>	<b>36.07</b>	<b>17.11</b>	<b>18.72</b>
<b>S D</b>		<b>12.81</b>	<b>14.16</b>	<b>12.75</b>	<b>6.69</b>
<b>C V</b>		<b>17.81</b>	<b>39.25</b>	<b>74.51</b>	<b>36.28</b>

**Source:** Census of India, Houses, Household Amenities and Assets, Odisha, 2011

Spatial distribution and pattern of safe sources of drinking water in urban Odisha reveal that the coastal districts with high rate of urbanization report better accessibility. Even the Composite Index for the overall access of urban households to safe sources of drinking water reveals that Sambalpur, Jharsuguda, Khurda, Cuttack, Rayagada, Sundargarh, Kendrapara and Bolangir districts secure high value. The use of tap water is more in case of districts like Khurda, Cuttack, Anugul, Jharsuguda, Sambalpur, Sundargarh and Koraput. This shows basically two patches of districts where the households are using treated tap water as their main source of drinking water: one located in the coastal area and other is western upland of the state. So far as overall

accessibility of hand pump, tube well/borehole is concerned again coastal districts like Bhadrak, Balasore, Cuttack, Jagatsinghpur, Jajpur, Khurda and Puri present a better picture.

The urban households from Bhadrak, Balasore, Cuttack, Khurda and Puri districts are having good access to all three types like treated tap water, hand pump and tube well/borehole sources of drinking water. All these districts are not only located in coastal areas but also urbanized districts. Maximum urban households using only treated tap water is from the districts of Sundargarh, Anugul and Koraput, which are otherwise industrial districts.

#### Correlation between the levels of urbanization and Safe sources of drinking water (CI)

Districts	% Of urban house holds	Composite Index, CI	Districts	% Of urban house holds	Composite Index, CI
Anugul	16.20	0.08	Kandhamal	9.90	-3.41
Bargarh	10.10	0.43	Kendrapara	5.80	1.07
Bhadrak	12.30	0.16	Keonjhar	14.70	0.14
Balasore	10.90	0.38	Khurda	48.80	1.73
Balangir	12.00	1.01	Koraput	16.40	0.67
Boudh	4.60	-0.99	Malkanagiri	8.10	-0.80
Cuttack	28.00	1.54	Mayurbhanj	7.70	-1.64
Deogarh	7.20	0.17	Nuapada	5.60	-0.93
Dhenkanal	9.90	-1.75	Nabarangpur	7.20	0.26
Gajapati	12.20	-1.51	Nayagarh	8.30	0.00
Ganjam	21.80	0.89	Puri	15.60	0.48
Jagatsingpur	10.20	-0.35	Rayagada	15.20	1.43
Jajpur	7.40	-1.72	Sambalpur	29.60	1.93
Jharsuguda	39.90	1.81	Subarnapur	8.20	-0.22
Kalahandi	7.70	-2.17	Sundargarh	35.30	1.31
<b>R=0.636</b>					

Note: \*\*Correlation is significant at the 0.01 level

The correlation between levels of urbanization and composite index for access to safe drinking water among the districts of Odisha in 2011 is found to be significant at 0.01 level. Even the relation between levels of urbanization and different sources of safe drinking water (Tap, Hand pump, Tube well/borehole) reveals justified. The table shows that higher the levels of urbanization better is the availability of tap water. In the districts of the state the correlation between these two is significant at the 0.01 level. The correlation between the levels of urbanization and availability of hand pump to the households is though significant at the 0.01 level but negative. Whereas the correlation between the levels of urbanization and availability of tube well/borehole is significant at the 0.05 level.

**Conclusion:**

The spatial distribution of different sources of safe drinking water is concerned, the study reveals that around seventy-nine percent of the urban households in Odisha is having the access to any safe source of drinking water taking both treated and untreated tap water, hand pump and tube well/borehole as against the National average of ninety one percent. This implies that twenty percent of urban dwellers still do not have the access to safe drinking water in Odisha. Among all the districts, Bhadrak reports the highest percentage of households not only having access any safe source of drinking water but also in terms of the use of hand pumps. The same district occupies the lowest position in terms of access of households to tap water. District Cuttack occupies the highest position so far as the tap water is concerned. The regional variation is very high. Access to tube well/borehole is the highest in Kalahandi and lowest in Boudh. The regional variation in this case is very high.

The overall accessibility to all three sources of safe drinking water is found out by constructing Composite Index. The study concludes that the coastal districts like Khurda, Cuttack, Bhadrak, Balasore and Puri districts exhibit better accessibility to all three types of sources of safe drinking water like tap water, hand pump and tube well/borehole. The interrelation between the levels of urbanization and composite index of access to safe drinking water among the districts of Odisha in 2011 is found to be significant is 0.01 level. The study also reveals the higher the level of urbanization better is the accessibility to tap water which is significant at 0.01 level. The correlation between the levels of urbanization and accessibility of tube well/borehole is significant at 0.05 level.

**References:**

1. Abdullah, Yasar. (2011): "Women Perception of Water Quality and its Impacts on Health in Gangapur, Pakistan", Pakistan Journal of Nutrition 10 (7): 702-706.
2. Bajpai. P & Bhandari. L (2001): "Ensuring Access to water in Urban Households", Economic and Political Weekly, September 29, 2001.
3. Census of India (2011): Tables on Houses, Household amenities and Assets, Odisha, Series 22, Vol. 1, Census of India, New Delhi.
4. Chatterjee, S. (2033): "Status of Urban Water Supply and Sanitation in India-Challenges ahead" Indian Journal of Public Administration, vol. XLIX. no3, pp 389-403
5. Chaudhury, V (2002): "An Analysis of Groundwater Vulnerability and Water Policy Reform in India" Environment and Health, Vol-13, No-22002, pp-175-193.
6. Gupta, N. L. (1994): "Urban Water Supply", Rawat Publication, Jaipur.
7. Hassan, M. I. and Daspatanayak, P. (2008): "Quality of Life in Orissa: A Study of Basic Amenities" Nagarlok, vol. XL, no-1, pp25-39
8. Kundu, Amitabh (1991): "Micro Environment in Urban Planning: Access of Poor Water Supply and Sanitation", Economic and Political Weekly.
9. Mahadevia, D (2001): "Urban Poverty and Basic Services are of Prime Importance in Urban India" Oxfam India working paper series, April 2013, OIWPS-XVII
10. Rathore. M. S, Ramanathan. S & Reddy (1994): "Provision of Adequate Drinking Water to Urban Population in the Cities of Jaipur, Udaipur and Bharatpur in Rajasthan" Economic and political weekly, August 27, 1994.