EPRA International Journal of Socio-Economic and Environmental Outlook (SEEO) ISSN: 2348-4101
Volume: 13 | Issue:1 |January 2026 | SJIF Impact Factor (2025): 8.645 | Journal DOI: 10.36713/epra0314 |Peer-Reviewed Journal

A STUDY ON SANITATION AND IMPROVED DRINKING-WATER CONDITIONS IN KARNATAKA

Dr. Manoj Dolli[1], Basavaraj A K[2]

[1]*Professor, Department of Economics, Karnataka University, Dharwad*

[2]*Research Scholar, Department of Economics, Vijayanagara Shri Krishnadevaraya University, Ballari*

Article DOI: https://doi.org/10.36713/epra25810
DOI No: 10.36713/epra25810

ABSTRACT

Water is a precious commodity. Clean drinking water, sanitation and clean environment are essential for better health and longevity. Like drinking and sanitation is a basic human requirement. A Sanitation and hygienic development are very essential for the society to grow. The study examining inter-district variations in improved drinking-water and sanitation across Karnataka, using reliable using NFHS-4 and NFHS-5 dataset, thereby providing policy-relevant insights for targeted interventions and region-specific planning.

KEYWORD: *Sanitation, improved drinking-water, Karnataka*

INTRODUCTION

Access to safe drinking water and improved sanitation is fundamental to public health, socio-economic development, and overall well-being (SDG-6). Karnataka has made significant progress in enhancing access to safe drinking water and sanitation through initiatives such as Jal Jeevan Mission and Swachh Bharat Mission. A vast majority of households now enjoy improved water sources, with rural sanitation coverage seeing considerable growth. However, challenges persist in water quality, functional infrastructure, equitable distribution, and sustainable management, which impact public health. Achieving a safe and reliable water supply, along with effective sanitation practices for all demographics, is crucial as the state aims to meet the Sustainable Development Goals (SDGs) by 2030.

According to the National Family Health Survey-5, 95.3% of Karnataka's population has access to improved drinking water sources such as piped water, public taps, and protected wells. Yet, only 57% of rural habitations have complete drinking water coverage, providing a minimum of 40 litters per capita per day. More than half of rural households lack piped water, and urban areas also face significant challenges (Nitte). Over 30% of the population may consume contaminated water, particularly with high fluoride levels exceeding safety standards. Recent water quality testing showed that about 8.5% of samples from rural Belagavi were unsafe for drinking (FAN). Additionally, in northeastern Karnataka, over 35% of government-installed Reverse Osmosis units are non-functional, hampering access to clean water in fluoride and arsenic-affected regions. Groundwater is crucial during dry seasons, with Karnataka's groundwater extraction at 58.4%, which is generally viewed as safe (Times of India 2024). However, certain districts, especially urban and peri-urban areas such as Kolar and Bengaluru Urban, face severe overexploitation of groundwater, with extraction rates far surpassing recharge rates.

LITERATURE REVIEWS

Karnataka is grappling with significant sanitation issues characterized by stark contrasts between urban and rural regions, coupled with enduring practices of open defecation. A study by Geeta V. Bathija et al. (2017) revealed that only 64.18% of households in Karnataka have access to independent toilets, with urban areas at 87% and rural areas at a mere 44.6%. The prevalence of open defecation is notably high, with 63% of rural residents and 21% of urban slum dwellers still engaged in this practice. Seshaiah et al. (2017) highlighted the main barriers preventing toilet usage: water scarcity, inadequate space, entrenched cultural practices, and poor maintenance of existing facilities. Although Sheethal Mp et al. (2016) noted that 82% of rural households possess sanitary latrines, critical infrastructural deficits persist, particularly concerning the availability of water and soap.

In addition to sanitation challenges, the safety of drinking water in Karnataka is concerning, marked by widespread contamination and significant variability in quality across different regions. A study by Sharanya Kaniambady et al. (2017) indicated that 31.5% of households rely on protected dug wells, and 75.3% lack alternative sources of

water, which points to precarious water supply conditions. Furthermore, only 14% of households employ water treatment methods regularly, and a staggering 92% do not clean their water storage tanks frequently. Urban-specific findings from Nimbannavar et al. (2022) show that 76.58% of households use piped corporation water and 75.36% own individual toilets; however, only one-third of the population treats their drinking water. Purohit (2012) emphasized that these sanitation and water challenges are exacerbated by broader state-level disparities, especially impacting districts like Bagalkot, Kolar, and Uttar Kannada. This indicates a pressing need for targeted interventions to address the significant sanitation and safe drinking water issues facing Karnataka. Based on these across studies, this study examining inter-district variations in improved drinking-water and sanitation across Karnataka, using reliable secondary data, thereby providing policy-relevant insights for targeted interventions and region-specific planning.

RESULT AND DISCUSSION

Table 1: Population living in households that use an improved sanitation facility (%) in Karnataka

Sl. No	District	NFHS-5	NFHS-4	% of Change
1	Bagalkot	51.3	23	28.3
2	Bangalore	90.4	88.4	2
3	Bangalore Rural	88.8	77.7	11.1
4	Belgaum	67.7	44	23.7
5	Bellary	64.1	39.7	24.4
6	Bidar	56.5	28	28.5
7	Bijapur	44.8	22.6	22.2
8	Chamarajanagar	75.2	36.3	38.9
9	Chikkaballapura	84.9	52.5	32.4
10	Chikmagalur	92.3	63	29.3
11	Chitradurga	63.1	43.4	19.7
12	Dakshina Kannada	97.1	93	4.1
13	Davanagere	83.3	63.1	20.2
14	Dharwad	79.3	63.2	16.1
15	Gadag	55.2	30.3	24.9
16	Gulbarga	36.5	30.2	6.3
17	Hassan	87.9	66.9	21
18	Haveri	68.9	56	12.9
19	Kodagu	93.9	85.2	8.7
20	Kolar	89.2	60.9	28.3
21	Koppal	58.8	46.9	11.9
22	Mandya	86.7	58.3	28.4
23	Mysore	86.4	65	21.4
24	Raichur	53	27.6	25.4
25	Ramanagara	89.6	64.3	25.3
26	Shimoga	85.4	74.5	10.9
27	Tumkur	86.1	52.6	33.5
28	Udupi	94.5	89.8	4.7
29	Uttara Kannada	89.6	68.1	21.5
30	Yadgir	37.4	18.9	18.5

Source: NFHS-5

The above table 1 represents the percentage of the population in various Karnataka districts living in households with improved sanitation facilities, comparing data from NFHS-4 and NFHS-5. Notably, every district in Karnataka demonstrated an increase in improved sanitation facilities over the two survey periods. Significant growth was observed in several districts, notably Chamarajanagar (38.9%), Tumkur (33.5%), and Chikkaballapura (32.4%), all achieving over 30% growth. In districts with already high coverage rates such as Bangalore (88.4%

to 90.4%) and Dakshina Kannada (93% to 97.1%), the increases were more marginal, reflecting their already strong sanitation infrastructures.

In contrast, Bagalkot experienced a substantial rise from 23% to 51.3%, and Bidar saw an increase from 28% to 56.5%, indicating remarkable improvements in districts that initially had very low sanitation coverage. According to the data, Dakshina Kannada (97.1%), Udupi (94.5%), and Kodagu (93.9%) exhibit the highest percentages of households with improved sanitation. Conversely, Gulbarga (36.5%), Yadgir (37.4%), and Bijapur (44.8%) are the only districts reported where less than half the population has access to improved sanitation facilities.

The report highlights that the Kalyana Karnataka region, particularly districts like Gulbarga and Yadgir, may see slower progress due to persistent issues such as water scarcity essential for effective water-borne sanitation systems and the challenging rocky terrain, which elevates the costs associated with pit construction. Additionally, the southern districts generally benefit from a stronger economic foundation and higher household incomes, enabling greater private investment in sanitation services compared to the less economically developed districts of Kalyana Karnataka.

Table 2: Population living in households with an improved drinking-water source (%) in Karnataka

Sl No	District	NFHS-5	NFHS-4	% of Change
1	Bagalkot	99.2	98	1.2
2	Bangalore	99.2	97.8	1.4
3	Bangalore Rural	97.9	99.6	-1.7
4	Belgaum	94.4	99	-4.6
5	Bellary	94.7	97.8	-3.1
6	Bidar	98.9	98	0.9
7	Bijapur	92.5	92	0.5
8	Chamarajanagar	99.9	98.9	1
9	Chikkaballapura	98.1	98.6	-0.5
10	Chikmagalur	95.7	91.1	4.6
11	Chitradurga	97.8	99.1	-1.3
12	Dakshina Kannada	88.6	86.3	2.3
13	Davanagere	97.5	99.6	-2.1
14	Dharwad	87.9	98.1	-10.2
15	Gadag	95.5	93.9	1.6
16	Gulbarga	92.5	99.1	-6.6
17	Hassan	96.8	97.4	-0.6
18	Haveri	99.1	98.2	0.9
19	Kodagu	89.2	84.3	4.9
20	Kolar	98.5	98.7	-0.2
21	Koppal	96	97.2	-1.2
22	Mandya	98.4	98.1	0.3
23	Mysore	95.4	98.1	-2.7
24	Raichur	94	88.5	5.5
25	Ramanagara	98.3	97.6	0.7
26	Shimoga	94.6	84.3	10.3
27	Tumkur	96.2	98.8	-2.6
28	Udupi	81.5	65.3	16.2
29	Uttara Kannada	84.8	69.9	14.9
30	Yadgir	95.2	92.4	2.8

Source: NFHS-5

Above the table 2 represents the Improved Drinking-Water Source in Karnataka. In Karnataka, the analysis of improved drinking-water sources reveals a contrasting picture compared to sanitation, which already had high coverage in NFHS-4. According to NFHS-5, drinking water coverage has exhibited notable volatility. In particular, districts like Bagalkot (99.2%) and Chamarajanagar (99.9%) have achieved near-universal access to drinking water. The most significant positive developments have been observed in districts with lower initial coverage; for instance, Udupi experienced an increase from 65.3% to 81.5%, marking a rise of 16.2%. Similarly, Uttara Kannada saw an increase from 69.9% to 84.8% (+14.9%), and Shimoga rose from 84.3% to 94.6% (+10.3%). These districts, characterized by their coastal and hilly terrains, face logistical challenges that often hinder the development of piped water infrastructure. Conversely, 11 out of 30 districts reported a decline in access to improved water sources between the two survey periods, with Dharwad experiencing the most significant drop of 10.2%, decreasing from 98.1% to 87.9%. Other districts that saw negative changes include Gulbarga (-6.6%), Belgaum (-4.6%), and Bellary (-3.1%).

CONCLUSION

The data highlights a notable statewide improvement in sanitation in Karnataka, where districts report double-digit increases in coverage. However, a geographic disparity remains evident; Southern and Coastal districts are approaching saturation, with over 85-90% of the population having access to sanitation facilities. In contrast, Northern districts, including Yadgir, Gulbarga, and Bijapur, lag significantly, with less than half the population accessing improved sanitation despite overall progress. Successful interventions in districts such as Chamarajanagar illustrate the potential for rapid change, yet targeted efforts are essential in the northern regions to achieve comprehensive sanitation coverage.

Regarding safe drinking water, Karnataka demonstrates strong accessibility, though the data reveals inconsistencies across regions. Notable improvements in Udupi and Uttara Kannada suggest effective government interventions, particularly in challenging areas. Conversely, declines in water accessibility in Dharwad and minor drops in Northern Karnataka (Gulbarga, Belgaum) indicate pressing sustainability challenges that must be addressed alongside the establishment of new infrastructure. The transition from merely providing access to ensuring sustainability presents a significant hurdle for Karnataka moving forward. With the foundation of physical infrastructure in place, future efforts should prioritize environmental recharging and altering community habits to secure these advancements for future generations.

REFERENCES

1. *Geeta V.Bathija, Rana Sarvar. (2017). Defecation practices in residents of urban slums and rural areas of hubballi, Dharwad: a cross sectional study. International Journal of Community Medicine and Public Health, DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20170747..*
2. *M. Seshaiah, L. Nagesh, H. Ramesh. (2017). Sanitation challenges of the poor in urban and rural settings: Case studies of Bengaluru City and rural North Karnataka. Environmental Science, Sociology.*
3. *Madhusudhan, N. (2011, January 2). Karnataka: 'Drinking water not safe in state'. Fluoride Action Network (FAN), Indian Express.*
4. *Nitte, S. (n.d.). CLEAN WATER AND SANITATION. https://nitte.edu.in/naac/2022/THE_IMPACT/SDGREPORTS/6%20chapter.pdf.*
5. *Purohit, B. C. (2012). Health Impact of Water Borne Diseases and Regional Disparities in India. nvironmental Science, Medicine, Pp135-152.*
6. *Sharanya Kaniambady, D. Vasu, Annarao Kulkarni. (2017). A community based cross sectional study to assess the drinking water handling and management practices, sanitary practices at the household level in Sullia taluk, Karnataka. International Journal of Community Medicine and Public Health, DOI:10.18203/2394-6040.IJCMPH20171783.*
7. *Sheethal Mp, Shashikantha Sk. (2016). A cross-sectional study on the coverage and utilization of sanitary latrine in rural field practice area of a tertiary care hospital in Southern Karnataka, India. nternational Journal of Community Medicine and Public Health, DOI:10.18203/2394-6040.IJCMPH20161624.*
8. *Smita M Nimbannavar, Vijaykumar P Mane. (2022). Analysis of Water, Sanitation and Hygiene in an Urban Community of Koppal, Karnataka, India: A Cross-sectional Study. Journal of Clinical and Diagnostic Research, Vol-16(11): LC01-LC05.*
9. *India, T. T. (2024, October 19). 8.5% water samples in Belagavi Rural areas*