

GROUNDING CLIMATE RESILIENT WASH ACTION IN SMALL TOWNS - CHIKKABALLAPURA

(Jointly convened by the District Urban Development Cell (DUDC), BORDA, FISH and TIDE)



Understanding the Climate Realities Shaping Urban WASH Resilience in Chikkaballapur district

Key Climate Trends Affecting the District

- Rising Heat & Longer Dry Spells**
 - The district falls in a drought-prone, heat-stressed zone (DDMP explicitly prioritises drought mitigation as the dominant hazard).
 - Increasing summer highs and more days above 32–35°C.
 - Heat-risk impact on sanitation workers, piped water infrastructure, livestock, and public health.
- Erratic, Short-Burst Rainfall**
 - Highly variable monsoon; rainfall deficit repeatedly recorded.
 - Short periods of intense rain → local flooding in low-lying urban pockets.
 - Extended inter-monsoon dryness → storage and recharge deficits.
- Groundwater Stress & Depletion**
 - Chikkaballapur is historically over-exploited for groundwater, with acute dependency on borewells.
- Frequency of Drought**
 - Drought is recognised as the primary district hazard with significant socio-economic impacts, affecting agriculture, livelihoods, and drinking water supply.

District Climate Hazards Summary (Based on DDMP HVCRA)

Primary Hazards

- Drought (most severe, recurring)
- Heatwaves
- Groundwater depletion
- Urban and flash floods (localised)

Secondary Hazards

- Water quality deterioration (fluoride, nitrate)
- Vector-borne diseases during rains
- Crop failure → livelihood insecurity
- DDMP identifies drought, flooding, groundwater pollution, and public health risks as major district hazards.

Draught affected talukas

Sl no.	Taluk/year	2018 - 19	2019 - 20	2020 - 21	2021 - 22	2022 - 23	2023 - 24	Frequently affected
1	Bagepalli	✓	✓	✓	✗	✗	✓	✓
2	Cheluru	✓	✓	✓	✗	✗	✓	✓
3	Chikkaballapur	✓	✗	✗	✗	✗	✓	✗
4	Chintamani	✓	✓	✓	✗	✗	✓	✓
5	Gouribidanur	✓	✗	✗	✗	✗	✓	✗
6	Manchenalli	✓	✗	✗	✗	✗	✓	✗
7	Gudibanda	✓	✓	✓	✗	✗	✓	✓
8	Sidlaghatta	✓	✗	✗	✗	✗	✓	✗

Background

Chikkaballapur district, located in the semi-arid Eastern Dry Zone of Karnataka, spans approximately 4,244 km² and is home to around 1.25 million people (2011). The district comprises several Urban Local Bodies, including Chikkaballapur and Chintamani CMCs, along with Sidlaghatta, Gudibanda, and Bagepalli and Gauribidanur TMCs and nearby Town Panchayats. Its economy is predominantly driven by agriculture, sericulture, and horticulture, sectors that remain highly vulnerable to climatic variations. The region faces significant resource stresses, notably groundwater over-extraction and the decline of surface water bodies. With rainfall that is erratic and concentrated mainly between May and October, combined with high daytime temperatures and prolonged heat periods, Chikkaballapur experiences increasing pressure on its water and livelihood systems.

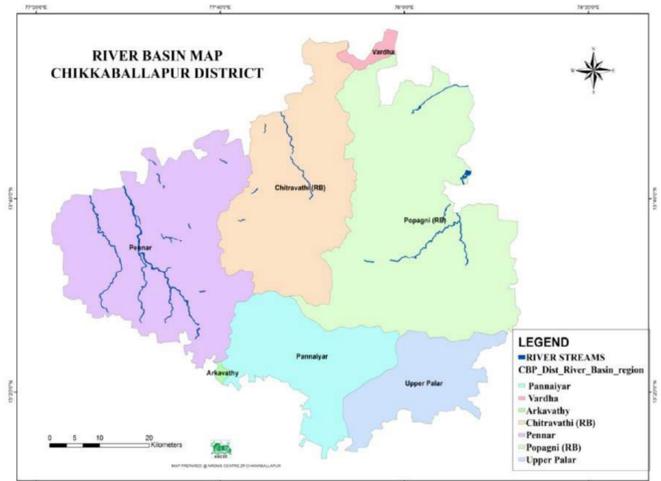
Water Resource

Surface Water

In Chikkaballapur District there are three river basins namely North Pennar, South Pennar and Palar basins.

- Under North Pennar basin there are Six sub-series namely Papagni river, Chitravathi river, Kushavathi river, Vandaman - Gulur sub-series, Kumadvathi river and North Pennar Gowribidanur sub-series
- In South Pennar basin there is one sub-series namely Vadigenahalli.
- Under Palar basin there is only one sub-series Yeduru sub-series.

These rivers are active during monsoon seasons only.



WASH Vulnerabilities in a Climate-Stressed District



Water Supply Risks

- Heavy reliance on borewells → declining yield and higher pumping costs
- Limited surface water storage capacity
- Seasonal water scarcity in Chintamani, Sidlaghatta, Bagepalli
- Non-revenue water issues and ageing distribution networks worsen reliability
- Heat intensifies evaporation losses from OHTs, lakes, and tanks



Sanitation System Risks

- ULBs mostly dependent on onsite sanitation (septic tanks, pits)
- Climate impacts include:
 - Overflow & contamination during heavy rains
 - Drying out of pits during extreme heat
 - Stress on desludging operations due to weather & worker exposure
- Vulnerable slum pockets face higher risk of ground and surface water contamination



Stormwater & Urban Flooding Risks

- Rapid runoff from rocky terrain & urbanised areas
- Inadequate drain network mapping → localised floods
- Silted, choked roadside drains; lake encroachments reduce natural buffers
- DDMP notes the need for multi-hazard preparedness, particularly for urban floods and drought cycles.

What This Means for Small-Town WASH Planning



Adaptation Imperative

- Small towns like Chikkaballapur must prioritise climate adaptation to protect WASH systems:
- Diversifying water sources
 - Recharging aquifers
 - Heat-resilient WASH infrastructure
 - Climate-proof sanitation services
 - Strengthening stormwater networks and green buffers.



Governance Needs

- Stronger inter-department coordination (CMC, KUWSD, DUDC)
- Climate-informed O&M norms
- Monitoring and early-warning integration



Finance Gaps

- High dependency on state schemes (AMRUT, grants, 15th FC)
- Need for low-cost, decentralised climate-resilient solutions

