

Water Crisis in Bundelkhand Region

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ABSTRACT

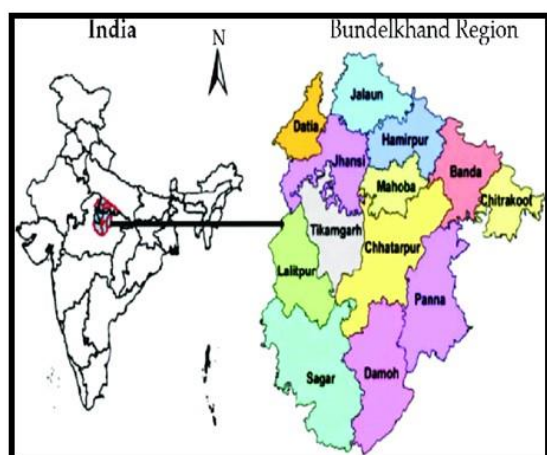
The Bundelkhand region receives over 1000 mm of rain on average annually, with major rivers draining nearly 90% of it during the months of July and August. However, this region is experiencing a water crisis as a result of growing agribusiness, a growing population, unpredictable rainfall, climate change, political unrest, poor water management, water overuse, disregard for environmental issues, and neglect of traditional water sources, among other factors. The current analysis identifies the problems associated with water scarcity and suggests corrective actions to enhance the water resources in this area. The study area's water situation will be lessened if these steps are appropriately carried out.

INTRODUCTION

Water is regarded as one of the necessities for human existence. Water that is safe to drink has

evolved into a basic human requirement. According to studies, drinking contaminated water is one of the factors that has been linked

to infant mortality (Amuka et al., 2024) More than a billion people are compelled to rely on contaminated sources of drinking water, according to a global estimate of water use. Although the Bundelkhand region's areal extension extends beyond this range, it is limited to the latitudes of $23^{\circ}10'$ and $26^{\circ}27'$ North and the longitudes of $78^{\circ}4'$ and $81^{\circ}34'$ East. A number of nearby districts are somewhat touched by it, including Gwalior, Bhind, Shivpuri, Morena, Narsinghpur, Hoshangabad, Guna and Jabalpur, Satna. It is surrounded by the Yamuna, Narmada, Chambal, and tons rivers in the North, South, West, and East, respectively, and is located in the central region of India.



Water crises in Bundelkhand region:

Although the problem has gotten worse in recent decades, Bundelkhand has been grappling with water scarcity challenges before independence. Water insecurity has increased due to deforestation, population growth, and the frequency of droughts. Bundelkhand saw 12 droughts in the 19th and 20th centuries, or one every 16 years (Inter Ministerial Central Team, 2008). However, recent research indicates that the frequency of droughts in Bundelkhand has grown to once every eight years (Alam et al., 2012). In 2013, there were about ten districts that experienced moderate to severe drought. There are three types of droughts that many areas in

Bundelkhand experience year-round: hydrological, meteorological, and agricultural (Nair and Singh, 2013).

Numerous factors contribute to the area's water scarcity issue. The principal one is the alteration in monsoon precipitation patterns. Apart from a decline in the mean quality of precipitation, the infrequent intense downpours eliminate the region's uppermost layer of soil, exposing the naked earth. The region is now more susceptible than it has ever been due to the neglect of traditional water collecting system that have evolved over that have evolved over the previous few centuries and the lack of more advanced methods for managing soil and water.

The current water issue in the Bundelkhand region can be attributed to the following factors, according to a through investigating of people's impressions gathered through fieldwork, interviews with eminent scientists and technologies, and study.

- 1. Geo-Meteorological Characteristics of Bundelkhand:** The Bundelkhand region experiences insufficient groundwater recharge as a result of rapid surface water runoff and mild precipitation during brief spells. high surface water evaporation as a result of barren plateau regions. The majority of the Bundelkhand region is made up of hard rocks, which are not suitable for utilizing the potential of groundwater.
- 2. Changing Public and Government Perceptions of the Conventional Water Harvesting System:** Traditional water conservation systems are completely ignored in the Bundelkhand regions and given very little consideration in government planning. It has been discovered that siltation caused by poor maintenance reduced the capacity of these conventional water collection devices. The spatial distribution of reservoirs is reduced

by human encroachment on both the catchment areas and the pond beds for commercial exploitation, including development projects like shopping centers or select affluent colonies. In addition, the misuse of water resources results in the growth of various aquatic weeds in ponds, the waste of water from artesian wells, the use of alternate usage tanks as landfills, etc., all of which worsen the quality of the water.

3. 3.Issues neglected at the Policy-Planning

levels: In this region, it is found water that there is total negligence of local resources and traditions water management system in the name of development. Illogical and blind policies for short-term monetary gains related to ests, mines, mountains, rivers, etc. also raise water crises in this region. Lack of suitable scientific study before implementing projects related to roads, forests, and tube wells. Decreasing agriculture and changing cropping-pattern demanding intensive water for irrigation.

4. The Neglect of Environment Related

Issues: Groundwater is being used irrationally and there isn't any long-term, environmentally responsible planning for the use of resources. Significant deforestation, careless and unregulated mining, and rising urbanization are all present. Centralized water supply systems are negatively impacting groundwater in the Bundelkhand region. The region's brackishness and soil salinity have increased due to the building of canals and dams. Water is wasted as a result of unregulated mining. Numerous health issues are brought on by water contamination in the Bundelkhand region.

5. Political Issues: The division of the area into the politically distinct two-states of Uttar Pradesh and Madhya Pradesh has a detrimental impact on resource management as well as a number of other political and administrative issues. In

certain ways, this disparate political culture has divided natural systems like hills, rivers, and watersheds. An all-encompassing strategy for addressing problems that hinder the fair distribution of natural resources, particularly water, and inflame tensions between the populations of the two republics is lacking.

Because of these circumstances, farmers are forced to use groundwater for their everyday agricultural and household requirements. However, only wealthy groups often have access to bore wells, which are used to extract groundwater. In 109 villages in MP and UP Bundelkhand, a 2016 Swaraj Abhiyan survey revealed that just 18% of the villages possessed an adequate number of working hand pumps; in UP-Bundelkhand, this figure dropped to just 5% (Drought in Bundelkhand Bordering on famine, 2016). Getting access to enough water for everyday requirements is a major concern for many people. Since women's traditional job is to gather water for domestic consumption, this task frequently falls on them (Srivastava, 2019).

Recommendation for solving existing water

crises: Bundelkhand region requires a significant amount of afforestation. The problem will be partially resolved with the construction of many small ponds and a few large tanks in each cluster of communities in the plateau's valley plains, alluvial regions, and pediments. Another approach that may be used to achieve success is the conversion of the Bavdis, Chohpras, etc. into Masonry Wells, recreating the old culture of Jal-mandirs with a new understanding. Water quantity and quality can also be increased by developing contour bunding on gently sloping terrain, shallow broad-area percolation tanks, narrow channels inside farms, appropriate rainfall harvesting, and artificial recharge systems based on hydro geological circumstances. Furthermore, there must be a concerted effort made everywhere to improve the soil's organic matter.

A multidisciplinary interministerial team's 2008 report included medium- and long-term drought mitigation strategies for Bundelkhand. It reflects the paradigm shift that the 2010 NIDM recommendations discuss—from emergency relief to risk management. The group suggested providing funding to Madhya Pradesh and Uttar Pradesh separately so they could manage their watersheds. It describes in detail the actions that can be taken by the government to increase conservation and water efficiency, such as land contouring and the repair of conventional water management infrastructure. The paper outlines several government development initiatives that ought to be consolidated into a unified process and recommends a special purpose vehicle for their execution. This study, more than others, identifies the shortcomings in governance and offers solutions.

It is determined that the Bundelkhand region is experiencing a water crisis as a result of the loss of water supplies, other environmental problems, and an increase in the demand for water for drinking, irrigation, and small-scale industry. The Bundelkhand region's water crisis will lessen and the socioeconomic standing of its residents will improve if the suggested corrective actions are put into action.

CONCLUSION:

The water crisis in the Bundelkhand region is a multifaceted challenge that demands urgent attention and comprehensive solutions. With its arid climate, erratic rainfall patterns, and overexploited groundwater resources, the region faces a grim future if immediate steps are not taken to manage and conserve water effectively. In addressing the challenges, a holistic approach is essential. First and foremost, there is a need for improved water management practices. This includes promoting efficient irrigation techniques such as drip irrigation and sprinkler systems to

reduce water wastage in agriculture. Government initiatives should focus on educating farmers about sustainable water use practices and incentivizing the adoption of water-saving technologies. Additionally, rainwater harvesting can play a crucial role in replenishing groundwater levels. Encouraging the construction of check dams, percolation tanks, and rooftop rainwater harvesting systems can help capture and store rainwater for use during dry periods. Community involvement in such initiatives is vital to ensure widespread adoption and sustainability. Furthermore, integrated watershed management approaches should be implemented to conserve and restore degraded ecosystems. Reforestation efforts and soil conservation measures can help enhance groundwater recharge and improve water quality. Protecting and restoring natural habitats such as forests and wetlands are also crucial as they act as natural water reservoirs and support biodiversity. Policy interventions at both the state and national levels are indispensable. Moreover, partnerships between government agencies, civil society organizations, and private stakeholders are essential for pooling resources, expertise, and innovative solutions to tackle the water crisis collaboratively. Empowering local communities through participatory approaches can ensure that interventions are context-specific and sustainable in the long term.

In conclusion, addressing the water crisis in Bundelkhand requires concerted efforts at various levels—individual, community, institutional, and governmental. It demands a paradigm shift towards sustainable water management practices, coupled with robust policies, investments, and community engagement. By adopting integrated water management strategies and leveraging technology and innovation, the region can build resilience against future water challenges while safeguarding livelihoods and



ecosystems. The time to act is now, with a collective commitment to securing water resources for current and future generations in Bundelkhand and beyond.

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