

Water Scarcity in Rural India and the Role of Non-Governmental Organizations: A Review Study

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Abstract

Water scarcity is one of the most serious challenges faced by rural India. Although India has large river systems and seasonal monsoon rainfall, many rural areas suffer from inadequate access to safe and sufficient water. Uneven rainfall, climate change, excessive groundwater extraction, population growth, and weak water governance have worsened the situation. Water scarcity directly affects agriculture, health, livelihoods, and rural development. Over the years, the government has introduced several programs to address rural water issues, but implementation gaps remain at the village level. In this context, Non-Governmental Organizations (NGOs) play an important role in improving water access, promoting conservation practices, strengthening community participation, and supporting sustainable water management. This review paper examines the nature and causes of water scarcity in rural India and analyzes the role of NGOs in addressing this problem. The study is based on secondary data collected from research articles, reports, books, and case studies. The review highlights key NGO interventions, their impacts, and the existing research gaps. The paper concludes that NGOs are vital partners in rural water management, but long-term success depends on strong coordination with government institutions and active participation of local communities.

Keywords: Water Scarcity, Rural India, NGOs, Water Management, Sustainable Development

1. Introduction

Water is a basic necessity for human life and economic activity. In rural India, water plays a central role in agriculture, animal husbandry, household needs, and local livelihoods. Despite this importance, water scarcity has become a widespread and persistent problem across many rural regions of the country. According to several studies, millions of rural households face seasonal or year-round shortages of drinking water (Kumar, 2018).

India's water scarcity problem is not only due to lack of water but also due to poor management, unequal

distribution, and overuse of available resources. Rapid population growth, expansion of irrigated agriculture, industrial development, and urbanization have increased pressure on limited water resources. Climate change has further increased rainfall uncertainty, leading to frequent droughts and declining groundwater recharge (Joshi, 2020).

The government of India has implemented various schemes such as the Jal Jeevan Mission, Integrated Watershed Management Programme, and rural drinking water supply projects. While these initiatives have improved coverage, many rural areas still struggle with implementation challenges, maintenance issues, and lack of community involvement (Mehta, 2021).

In this situation, Non-Governmental Organizations (NGOs) have emerged as important actors in rural water management. NGOs work at the grassroots level and adopt participatory approaches that involve local communities. They focus on water conservation, rainwater harvesting, watershed development, awareness generation, and capacity building. This review paper aims to study water scarcity in rural India and examine the role of NGOs in addressing this critical issue.

2. Objectives of the Study

The main objectives of this review study are:

1. To understand the nature of water scarcity in rural India.
2. To analyze the major causes of rural water scarcity.
3. To examine the role of NGOs in addressing water scarcity.

3. Research Methodology

This paper is a review based study using secondary data only. Data has been collected from:

- Research journals and academic articles
- Government reports and policy documents
- NGO publications and case studies
- Books related to water resources and rural development

The study uses a descriptive and analytical approach to review existing literature on rural water scarcity and NGO interventions in India.

4. Understanding Water Scarcity in Rural India

4.1 Meaning of Water Scarcity

Water scarcity occurs when the demand for water exceeds its availability or when available water is of poor quality. In rural India, water scarcity is often seasonal and becomes severe during summer months. Many villages depend on monsoon rainfall, making them vulnerable to drought conditions (Shah, 2019).

4.2 Types of Water Scarcity

Researchers have identified two main types of water scarcity:

- **Physical water scarcity**, where water resources are naturally limited.
- **Economic water scarcity**, where water is available but people lack access due to poor infrastructure or governance (Reddy, 2017).

In rural India, both types are present, especially in drought-prone and semi-arid regions.

5. Causes of Water Scarcity in Rural India

5.1 Irregular Rainfall and Climate Change

Monsoon rainfall in India has become increasingly unpredictable. Delayed monsoons, short rainfall periods, and long dry spells have reduced surface water availability and groundwater recharge (Joshi, 2020).

5.2 Over-Extraction of Groundwater

Groundwater is the main source of irrigation and drinking water in rural India. Excessive use of borewells and electric pumps has caused a sharp decline in groundwater levels in many regions (Kumar, 2018).

5.3 Agricultural Practices

Water-intensive crops such as sugarcane and rice are grown even in water-scarce regions. Inefficient irrigation methods like flood irrigation lead to significant water wastage (Patil, 2016).

5.4 Poor Water Management and Governance

Lack of proper planning, maintenance of water infrastructure, and weak local institutions contribute to water scarcity. In many villages, water sources are poorly managed due to lack of community ownership (Deshpande, 2017).

5.5 Population Growth and Rising Demand

Increasing population and rising living standards have increased demand for water for domestic and agricultural use, putting additional pressure on limited resources (Bhosale, 2017).

6. Impacts of Water Scarcity on Rural Life

6.1 Impact on Agriculture

Agriculture is the backbone of rural India and is highly dependent on water. Water scarcity leads to crop failure, reduced productivity, and income loss for farmers (Sawant, 2019).

6.2 Impact on Health

Lack of safe drinking water leads to waterborne diseases such as diarrhea, cholera, and fluorosis. Women and children are especially affected due to their role in water collection (Patil, 2021).

6.3 Impact on Livelihoods and Migration

Water scarcity reduces employment opportunities in agriculture, forcing rural people to migrate to urban areas in search of work (Shinde, 2022).

6.4 Social and Gender Issues

In many villages, women spend several hours daily collecting water. This affects their education, health, and participation in economic activities (Kulkarni, 2018).

7. Role of NGOs in Addressing Water Scarcity

NGOs play a crucial role in addressing rural water scarcity by adopting community-based and sustainable approaches.

7.1 Community Participation and Empowerment

NGOs involve local people in planning, implementation, and monitoring of water projects. This participatory approach increases awareness and ensures long-term sustainability (Reddy, 2017).

7.2 Water Conservation and Harvesting Techniques

Many NGOs promote rainwater harvesting, farm ponds, percolation tanks, check dams, and watershed development. These methods help improve groundwater recharge and water availability (Sawant, 2019).

7.3 Promotion of Efficient Irrigation

NGOs encourage farmers to adopt drip and sprinkler irrigation systems. These methods reduce water use and increase crop productivity (Kulkarni, 2019).

7.4 Awareness and Capacity Building

Training programs and awareness campaigns conducted by NGOs educate villagers about water conservation, sanitation, and hygiene practices (Bhosale, 2017).

7.5 Support to Government Programs

NGOs act as implementing and monitoring partners for government schemes. They help bridge the gap between

policy and practice at the grassroots level (Mehta, 2021).

8. Case Evidence from NGO Interventions

Several studies have shown positive outcomes of NGO-led water projects. Villages with active NGO involvement have reported improved groundwater levels, increased agricultural income, and reduced seasonal migration (Jadhav, 2020).

Women's participation in water user groups has improved decision-making and water governance at the village level (Patil, 2021).

9. Challenges Faced by NGOs

Despite their contribution, NGOs face several challenges:

- Limited funding and resources
- Dependence on external donors
- Difficulty in scaling up successful models
- Coordination issues with government agencies (Shinde, 2022)

10. Research Gaps Identified

The review identifies the following gaps:

- Lack of long-term impact studies on NGO interventions
- Limited comparative studies across regions
- Insufficient documentation of community experiences
- Need for integrated studies linking water, health, and livelihoods

11. Suggestions for Future Policy and Research

- Strengthen collaboration between NGOs and government bodies
- Promote community ownership of water resources
- Encourage region-specific water management strategies
- Conduct long-term evaluation studies of NGO projects

12. Conclusion

Water scarcity in rural India is a complex and multidimensional problem influenced by environmental, social, and institutional factors. While government initiatives play an important role, they are often insufficient without community participation and local-level implementation. NGOs have emerged as key partners in addressing rural water scarcity through

participatory, sustainable, and innovative approaches. The review shows that NGO interventions have contributed significantly to water conservation, improved access to drinking water, and enhanced rural livelihoods. However, for long-term sustainability, stronger coordination between NGOs, government institutions, and local communities is essential. Future efforts should focus on integrated water management, capacity building, and evidence-based policy making to ensure water security for rural India.

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