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A Geographical Review of Tubewell Irrigation in Dharashiv District

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Abstract

A small reservoir of water is complete at the outlet of the Tube well. This reservoir is used for different usage of water by the local population. A well consisting of an iron pipe with a solid steel point and lateral perforations near the end, which is driven into the earth until a water-bearing stratum is reached, when a suction pump is applied to the upper end. Device for obtaining water from beneath the underground, consisting of a wrought iron or fibre pipe armed with a sharp point, and having a series of holes at the lower end overhead the point. Tubewell irrigation has played a transformative role in the agrarian dynamics of semi-arid regions like Dharashiv (formerly Osmanabad) in Maharashtra. This paper explores the spatial distribution, environmental impact, socio-economic dependencies, and policy implications of tubewell irrigation. The overexploitation of groundwater, resultant water stress, and shifting irrigation patterns are critically examined to offer sustainable interventions.

Keywords: *Tubewell Irrigation, Groundwater Depletion, Agricultural Geography, Dharashiv District, Sustainable Water Management, Semi-Arid Region, Spatial Distribution, Policy Intervention.*

Introduction

Dharashiv District, characterized by its basaltic Deccan Plateau terrain and semi-arid climate, relies heavily on groundwater for irrigation. The introduction of tubewells as a primary irrigation method has brought significant agricultural gains but also substantial ecological strain, notably groundwater depletion. Tubewell irrigation has emerged as a vital lifeline for agricultural development in the semi-arid regions of Maharashtra, especially in Dharashiv District (formerly Osmanabad). Located within the drought-prone Marathwada region, Dharashiv's agrarian economy relies heavily on groundwater extraction for irrigation. Over the past three decades, tubewells have increasingly replaced traditional surface and open well systems due to their capacity to extract deeper aquifer water. However, the rapid and largely unregulated proliferation of tubewells has led to serious concerns over groundwater sustainability, environmental degradation, and socio-economic disparities. This proposal aims to conduct a geographical review of tubewell irrigation in the district to understand its spatial dynamics, environmental impacts, and policy implications.

Objectives:

The core objective is to investigate the patterns and implications of tubewell irrigation across different tehsils of Dharashiv District.

Methodology:

This study will adopt a mixed-method approach involving both qualitative and quantitative research. Field surveys, interviews with local farmers, and stakeholder consultations will supplement secondary data from governmental sources such as the Central Ground Water Board (CGWB), GSDA Maharashtra, and agricultural departments.

Study Area:

Dharashivis one of the 8 district of Marathwada region. The district lying between 17° 35' N to 18° 40' North Latitude and 75° 16' E to 76° 40' East longitude situated in Balaghat plateau region. It has total geographical area of 7512.4 Sq. Km. the district of Dharashivhas following sub-divisions like Osmanabad, Tuljapur, Omerga, Paranda, Kalamb, Boom, Lohara and Washi. It is bounded by Sholapur District to the South-west, Ahemadnagar to the North West, Beed to the North, Latur to the East and North -East, Bidar & Gulbarga district of Karnataka state to the South.

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The rainfall in the district in 71.2cm which is very negligible so the district is drought prone area, Dharashivis still not developed to change agricultural backwardness.

Distribution of tube wells in Dharashiv District:

Water stress, reviewing tubewell irrigation from a geographical perspective is both timely and crucial. Dharashiv's case reflects broader challenges in groundwater governance across India's dryland belts. This study will bridge data, policy, and local knowledge to recommend actionable strategies for sustainable agricultural futures.

The various water resources facilities in the district are shown In the Table-3.7 indicate the trends of water resources facilities in the district since 1991 to 2017. Tube Wells In 1991 there were 3636 (100%) Tube Wells in the district and in 1991 highest number of Tube Wells were recorded 729 (20.05%) in the Kalamb tehsil and not recorded Tube Wells in Lohara and Washi tehsil and Remaining tehsils Bhoom 365 (10.04%), Tuljapur 633 (17.41%), Omerga 725 (19.94%), Paranda 475 (13.06%) and Dharashiv709 (19.50) Tube Wells were recorded. Tube Wells in 2001 there were 4470 (100%) Tube Wells in the district and in 2001 highest number of Tube Wells were recorded 758 (16.96%) in Paranda tehsil and Lowest Tube Wells recorded in Washi tehsil 347 (7.76%) and remaining tehsils Bhoom 521 (11.66%) Tube Wells, Lohara 416 (9.31%) Tube Wells, Tuljapur 651 (14.56%) Tube Wells, Omerga 742 (16.60%) Tube Wells, Kalamb 425 (9.51%) Tube Wells and Dharashiv610 (16.65) Tube Wells were recorded in these tehsils.

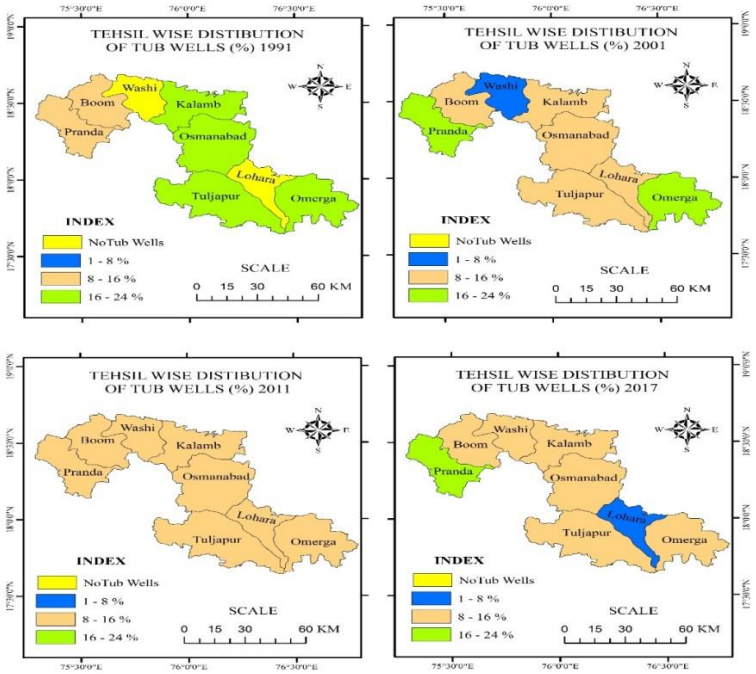
Tube Wells in Dharashiv District

Sr.no	Tehsil	1991		2001		2011		2017		Changes	
		No.	Per.	No.	Per.	No.	Per.	No.	Per.	No.	Per.
1	Paranda	475	13.06	758	16.96	583	12.72	717	16.15	242	1.51
2	Bhoom	365	10.04	521	11.66	592	12.92	638	14.37	273	1.75
3	Washi	0	0.00	347	7.76	424	9.25	398	8.97	398	100
4	Kalamb	729	20.05	425	9.51	452	9.86	514	11.58	-215	-0.71
5	Osmanabad	709	19.50	610	13.65	600	13.09	612	13.79	-97	-0.86
6	Tuljapur	633	17.41	651	14.56	644	14.05	649	14.62	16	1.03
7	Lohara	0	0.00	416	9.31	558	12.18	269	6.06	269	100
8	Omerga	725	19.94	742	16.60	730	15.93	642	14.46	-83	0.89
Total District		3636	100	4470	100	4583	100	4439	100	803	1.22

Source: 1. *Socio-Economic Review and District Statistical Abstract. DharashivDistrict. 1991, 2001, 2011,2018.*
2. District booklet showing the progress and current status of all irrigation schemes of Dharashivdistrict 1991,2001,2011,2018.

In 2011 there were 4583 (100%) Tube Wells in the district and in 2011 highest number of Tube Wells were recorded 644 (14.05%) in Tuljapur tehsil and Lowest Tube Wells in Washi tehsil 424 (9.25%) and Remaining tehsils Bhoom 592 (1272%), Lohara 558 (12.18%) ,Kalamb 452 (9.86%), Omerga 730 (15.93%), Paranda 583 (12.72%) and Dharashiv600 (13.09%) Tube Wells were recorded. In

Distribution of Tube Wells in DharashivDistrict



2017 there were 4439 (100%) Tube Wells in the district and in 2017 highest number of Tube Wells were recorded 642 (14.46%) in Omerga tehsil and Lowest Tube Wells were recorded in Lohara tehsil 269 (4.70%) and Remaining tehsils Bhoom 638 (14.7%), Washi 398 (8.97%) ,Kalamb 514 (11.58%), Dharashiv612 (13.79%) ,Paranda 717 (16.15%) and Tuljapur 649 (14.62%) Tube Wells were recorded.

In the districts 1991 to 2017 Tube Wells were increased 803 Tube Wells and highest changes in Tube Wells in Washi tehsil were increased 398 Tube Wells and lowest changes in Kalamb tehsil decrease 215 Tube Wells and remaining tehsils Bhoom 242 Tube Wells, Dharashiv97 Tube Wells, Lohara 269 Tube Wells, Paranda 242 Tube Wells, Omerga -83 Tube Wells and Tuljapur 16 Tube Wells increases tehsils in

Conclusion:

Tubewell irrigation in Dharashiv symbolizes both promise and peril. While it has enabled agricultural growth, the unchecked and unregulated expansion has created an unsustainable ecological footprint. A combined approach involving community participation, policy intervention, and sustainable practices is critical.

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Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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