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Understanding Water Scarcity And Community Disintegration In Rural Maharashtra: A Case Of Poladpur

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Abstract:

The dearth of water is now one of India's main issues as it develops. The rapidly growing population is also driving up demand. Even though India receives a lot of rainfall each year, which could help fulfil the water needs of its expanding population, much of the rainwater ends up as surface runoff due to poor infrastructure, a lack of awareness, and insufficient legislation.

This paper focuses on the villages of Poladpur Taluka in Raigad district, a region with high annual rainfall, yet it faces persistent water scarcity. The study investigates the region's historical evolution, topography, and current water conditions, along with its socio-cultural fabric and traditional practices. By analyzing the intricate relationship between environmental conditions and community life, the paper explores how water scarcity has led to agricultural decline, weakened social structures, and triggered migration. These factors are deeply interconnected, as the loss of water security not only disrupts livelihoods but also erodes local customs, festivals, and collective identity. This research shows how water is not just a resource but also a key factor influencing the ecological equilibrium, longevity of culture, and social durability of the area through this multidisciplinary approach.

Index Terms - Water Scarcity, Rainwater Runoff, Rural Maharashtra, Environment, Migration, Cultural Erosion.

I. INTRODUCTION

The Western Ghats, which unfold along India's western coast and experience some of the nation's highest yearly rainfall, are a World Heritage Site recognized by UNESCO and one of the eight "hottest hotspots" of natural diversity in the world (UNESCO, n.d.). Ironically, during the summer, there is severe water scarcity in numerous parts of the Western Ghats, especially in Maharashtra. One such area is Poladpur Taluka in Raigad district, which, despite experiencing high rainfall, suffers from severe seasonal water shortages. Steep terrain causes rapid surface runoff, and when combined with poor water retention infrastructure and the neglect of traditional practices, it leads to acute seasonal shortages (Gupta R. &., 2019)

This research utilizes secondary data from government reports, hydrological studies, and newspaper archives, supplemented by maps and visual documentation, to analyse the multifaceted impacts of water scarcity in Poladpur. This analysis is further supported by surveys and interviews conducted with residents.

II. Region Profile

A taluka in Maharashtra's Raigad district, Poladpur is situated in tandem with the banks of the Savitri River in the Sahyadri mountain range. It is roughly 17 kilometers from Mahad and has good access to Mahabaleshwar via the picturesque Ambenali Ghat. In accordance with the 2011 census, the taluka is made up of 245 wadis and 86 settlements. The taluka, that has a population of around 39520, is administered by 47 gram panchayats.

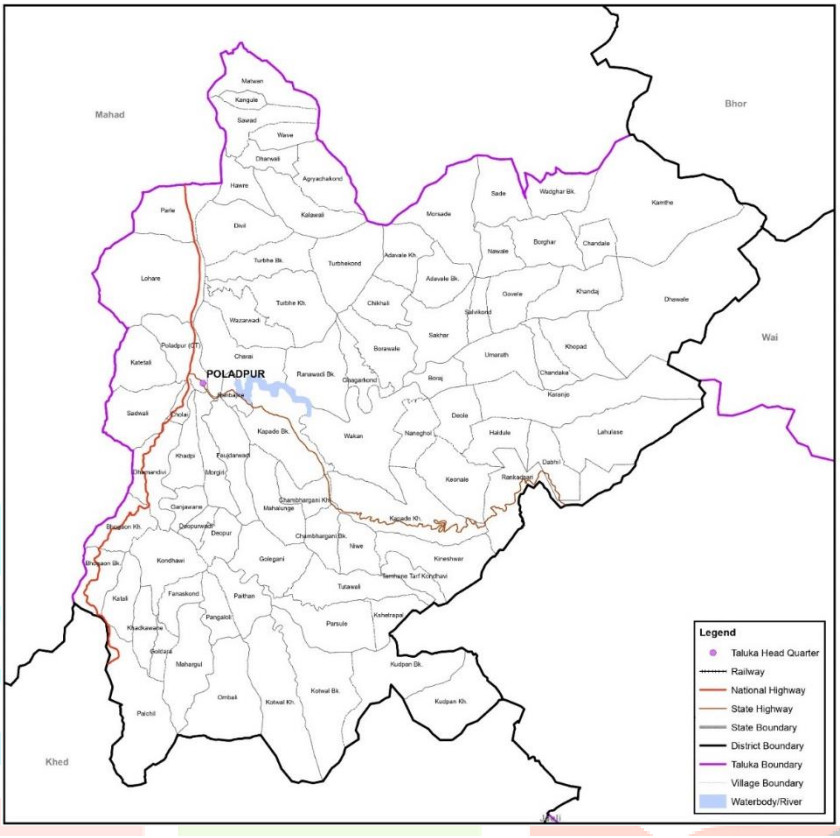

Figure 1 : Poladpur Political map

Source: researchgate.net

The region is conveniently accessible from Pune, Mumbai, and Goa because of its prime location on the Mumbai-Goa national highway (NH-10). (National Highway Projects in Maharashtra, 2020). Taluka is situated in the Konkan division and has a total area of 1523 square kilometers (Bombay Presidency Gazetteer). The region is located at an elevation of about 88 meters above mean sea level and features a rugged, rocky terrain typical of the Western Ghats. The region is characterized by steep hills, dense vegetation, and a generally undulating topography, all of which contribute to its ecological diversity and challenges with water retention. Its year-round tropical climate is characterized by high humidity and warm temperatures. Throughout the year, it has a tropical climate, which is defined by warm temperatures and high humidity. The average temperature ranges from 17.7°C at the lowest to 31.8°C at the highest. (S. Gupta, 2013). According to Talukawise wet Days & Total Rainfall (2013), there are 122 wet days on average and 5858 mm of rainfall.

Microclimates are produced in the area by Poladpur's varied topography, which includes hills, valleys, and river systems. Higher elevation regions frequently see more precipitation and colder temperatures than the lower valleys. Overall climatic conditions in Poladpur support lush vegetation and a diverse ecosystem, making it a crucial area for agriculture in the Konkan region (Gazetteer of Bombay Presidancy). Agriculture here is predominantly monsoon-dependent, with rice being the primary Kharif crop, cultivated extensively due to the seasonal rainfall and terrain suitability.

Because of its beautiful scenery, advantageous location, and ecotourism opportunities, Poladpur has plenty of potential. Uneven development, however, undermines community cohesion and increases regional stress. While undeveloped regions force residents to migrate, training urban centres and eroding the fabric of rural communities, rapid, uncontrolled growth in some areas, fueled by initiatives like the Mumbai-Pune National Highway, damages the environment.

III. WATER SYSTEM

Poladpur Taluka is part of the Savitri River basin, with the Savitri River being the principal river flowing through the region. Originating from the Mahabaleshwar hills in the Western Ghats, the Savitri River flows westward through Poladpur, playing a vital role in the Taluka's ecology, agriculture, and cultural traditions. Along its course, it is joined by several smaller seasonal streams and tributaries, such as the Dasgaon Nadi, Kaal River, and numerous monsoon-fed nallahs that activate during heavy rains. These minor watercourses help sustain agriculture during the monsoon but are mostly non-perennial and dry up during the summer.

Despite a lot of precipitation, Poladpur still has a serious water shortage. The region's rivers and streams, which see a dramatic drop in flow from June to September and remain dry for the rest of the year, depend heavily on the monsoon season. Rainwater quickly runs off the surface instead of into the ground due to the region's steep terrain, which is the main cause of this contradiction. This seasonal and unreliable water availability severely affects agriculture, the mainstay of the local economy, and contributes to widespread migration, as residents seek better opportunities in cities, ultimately placing additional pressure on already stressed urban water systems.

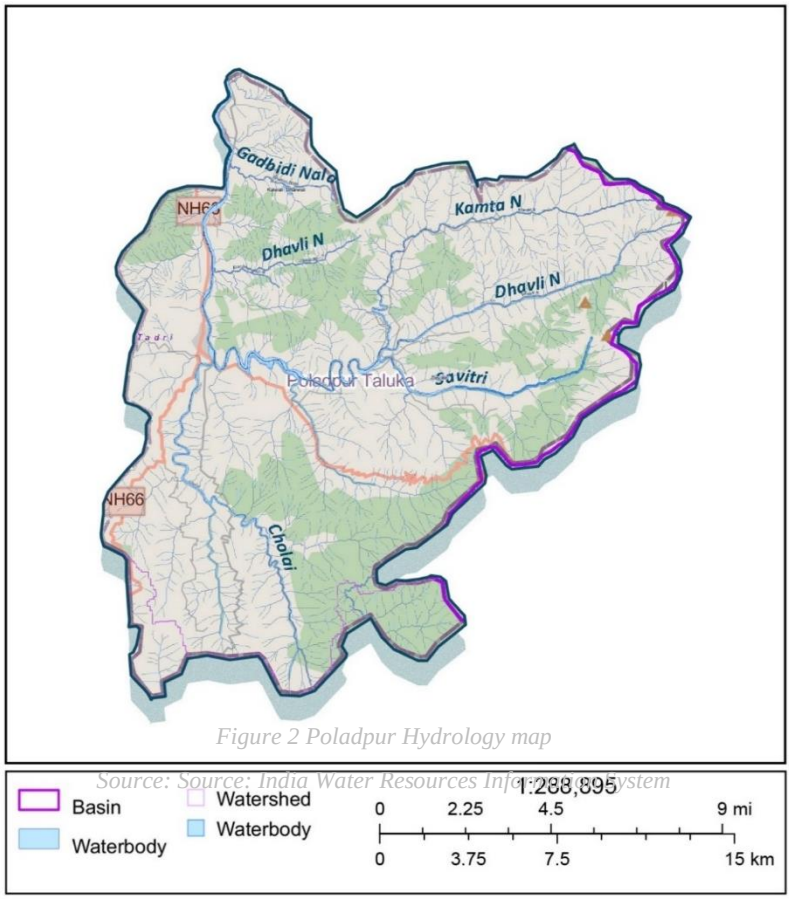

Figure 2 Poladpur Hydrology map

Source: Source: India Water Resources Information System

During the summer months, rural communities rely heavily on groundwater. However, groundwater reserves often remain unreplenished due to poor recharge rates and declining agricultural activity. This unreliable water access also hampers daily life, particularly in terms of clean drinking water availability. The risk of waterborne infections rises because of numerous communities turning to contaminated water sources. Women and children bear a disproportionate amount of the responsibility of gathering water, which inhibits their ability to engage in income-generating and educational activities and perpetuates cycles of poverty and social stagnation.

The inequality in water availability has far-reaching repercussions. The main source of income in the area, agriculture, is very subject to irregular rainfall and water supply, which can result in poorer crop yields, food shortages, and unstable finances. Many families are driven to relocate to cities because they can no longer support their farms. This ongoing rural-to-urban migration not only weakens the socio-

cultural fabric of rural communities but also exacerbates urban water demand, intensifying the scarcity in both rural and urban contexts.

लोकमत

पोलादपुरात टँकरने पाणीपुरवठा

७० टक्के भागाचा पाणीपुरवठा पूर्ववत; नगरपंचायतीला यश

लोकमत न्यूज नेटवर्क

पोलादपूर : अतिवृष्टीमुळे सावित्री नदीला आलेल्या महापुरात पोलादपूर शहराला पाणी पुरवठा करणारी जॅकवेल क्रमांक १ पोलादपूर महाबळेश्वर राज्य मार्गावरील लेप्रसी मिशन हॉस्पिटलजवळील जलवाहिनी वाहून गेल्याने शहरातील पाणी प्रश्न जटील बनला होता.

आठ दिवस वीजपुरवठा खंडित असल्याने नागरिकांची होणारी गैरसोय लक्षात घेऊन शहरातील ३० टक्के भागांत टँकरने, तर उर्वरित ७० टक्के

सध्या पावसाळ्याचे दिवस सुरु असून, पाणी गढूळ असल्याने रोगराई पसरण्याची शक्यता आहे. आरोग्याच्या दृष्टीने खबरदारीचा उपाय म्हणून नागरिकांनी पाणी उकळून व गाळून प्यावे.

- **विराज लबडे**, मुख्याधिकारी, पोलादपूर नगरपंचायत

भागाचा पाणीपुरवठा पूर्ववत करण्यात आला आहे. पोलादपूर शहराला पाणी पुरवठा करणारी जॅकवेल क्रमांक २ परामळे नादुरुस्त झाली होती. त्यामळे

ती तातडीने दुरुस्त करून जनरेटरच्या साह्याने पाणीपुरवठा सुरू आहे.

शहरातील वीजपुरवठा सुरळीत झाल्यानंतर नळपाणी पुरवठा योजनेच्या माध्यमातून शहरातील ७० टक्के भागाला पाणीपुरवठा करण्यात येईल. मात्र, ३० टक्के भागासाठी जिथे जॅकवेल वाहून गेली आहे. तिथे नवीन जॅकवेलचे बांधकाम पूर्ण होईपर्यंत तात्पुरते पंप खरेदी केले जाणार आहेत. पाणीप्रश्न लवकरात लवकर मार्गी लावण्यासाठीचे सर्व प्रयत्न प्रशासनाकडून केले जात आहेत.

Hello Raigad
Page No. 1 Aug 04, 2021
Powered by: erelego.com

Figure 3 - Newspaper cutout

Source: Lokmat

लोकमत

पोलादपूर तालुक्यातील ५१ गावे, १३६ वाड्यांत टंचाई

कृती आराखडा तयार : पाणी टंचाई निवारणासाठी प्रशासन सज्ज

प्रकाश कदम
लोकमत न्यूज नेटवर्क

पोलादपूर : तालुक्यातील १ऑक्टोबर २०२० ते ३० जून २०२१ पर्यंत ५१ गावे १३६ वाड्या एकूण १८७ वाड्यांचा पाणीटंचाई कृती आराखड्यामध्ये समावेश करण्यात आला असून, यासाठी अंदाजित ५६ लाख रुपये खर्च अपेक्षित असल्याची माहिती पंचायत समिती पाणीपुरवठा विभागामार्फत देण्यात आली आहे, तर नळ पाणीपुरवठा दुरुस्तीमध्ये तेरा गावे आणि तीन वाड्यांचा समावेश असून, यासाठी १५५ लाख रुपये खर्च अपेक्षित आहे. २४ गावे आणि ५६ वाड्यांसाठी बोरवेलची मागणी आली असून, यासाठी ५६ लाख रुपये खर्च अपेक्षित असल्याचे नमूद केले आहे.

याबरोबरच १६ गावे व ४५ वाड्यासाठी प्रस्तावित उपायोजना करण्यासाठी १३४ लाख रुपये खर्च अपेक्षित असल्याचे पाणीपुरवठा विभागाकडून सांगण्यात आले आहे. पोलादपूर तालुक्यात १ जानेवारी २०२१ ते ३१ मार्च २०२१ या कालावधीत पाणी टंचाई कृती आराखड्यामध्ये २४ गावे आणि ५६ वाड्यांचा समावेश करण्यात आला आहे. टँकरने पाणीपुरवठा करण्यासाठी

सद्यस्थितीत मागणी अर्ज प्राप्त झाल्यानंतर तत्काळ जिल्हा प्रशासनाकडे प्रस्ताव मंजूरीसाठी पाठविण्यात आले आहेत. कोणतीही गाववाडी पाण्यातपासून वंचित राहणार नाही यासाठी महसूल तालुका प्रशासन व पंचायत समिती प्रशासन प्रयत्नशील आहे. - **अविनाश कांबळे**, पाणीपुरवठा विभागाचे अधिकारी

२ गावे, ११ वाड्यांना तातडीने टँकरची गरज

- नळ पाणीपुरवठा योजना विशेष दुरुस्तीसाठी १३ गावे व ३ वाड्या समाविष्ट केले असून, यासाठी अंदाजित १५५ लाख रुपये खर्च अपेक्षित आहे. यामध्ये पैठण, वावे, धारवली, माटवण, ओझर वाडी, सडवली, काटेतळी, सवाद आणि पैठण आदिवासीवाडी, अग्रेकोंड, कोंढवी, तळ्याचीवाडी आदी गाव व वाड्यांचा समावेश आहे.
- सद्यस्थितीत दोन गावे व ११ वाड्यांना तातडीने टँकरद्वारे पाणी पुरवण्याची गरज असल्याचे पंचायत समितीचे अधिकारी अविनाश कांबळे यांनी सांगितले. यामध्ये क्षेत्रपाल, तुटवली या गावांचा तर कालवली पवारवाडी, भोसलेवाडी, विठ्ठलवाडी, परसुले धनगरवाडी, क्षेत्रफळ आमळेवाडी, तुटली धनगरवाडी, ओबळी धनगरवाडी, कालवली पाटीलवाडी, कालवली बौद्धवाडी, कालवली मोहल्ला यांचा समावेश आहे.

चांभारगणी बुद्रुक, चांभारगणी खुर्द, किनेश्वर, निवे, ताम्हाणे, कुंभ लवणे, कापडे खुर्द, कोतवाल बुद्रुक, कुडपण खुर्द, तुटवली, क्षेत्रफळ, चिखली, आडावळे, सडे, नाणेघोळ, ओंबळी, गोळेगणी, गोलदरा, खडकवणे तसेच तुटवली धनगरवाडी, परसुळे धनगरवाडी, क्षेत्रफळ आमळेवाडी, मोरसडे दिवाळवाडी, मोरसडे सडेकोंड, किनेश्वरवाडी आदी गावांचा समावेश करण्यात आला आहे, तर १ ऑक्टोबर ते ३० जून २०२१ या कालावधीत १६ गाव व ४५ वाड्या १३४ लाख रुपये अंदाजित खर्च असून, विहीर खोदणे व इतर कामांसाठी यामध्ये आडावळे खुर्द, वाकन गावठाण, वाकन, नाणेघोळ गावठाण, ओझरवाडी, कोतवाल बुद्रुक, कुडपण खुर्द, कोंढवी, तसेच पैठण गणेशवाडी चरई कासारवाडी, बोरघर चांदले, धारवली बौद्ध वाडी, धारवली पाटीलवाडी, माटवण मोहल्ला, वाकण जाधववाडी, कापडे खुर्द, पायटे, कोंढवी बौद्धवाडी आदी गाव-वाड्यांचा समावेश आहे.

Figure 4: Newspaper cutout

Source: Lokmat

IV. Socio-Economic Impacts

This section discusses the socioeconomic impacts of water scarcity, focusing on migration, infrastructural shortcomings, and cultural degradation.

Residents of Poladpur face several important problems that affect their day-to-day existence and means of subsistence.

4.1. Lack of community and social infrastructure:

One of the main issues is the lack of medical facilities. Residents must travel several kilometers from their villages to receive high-quality medical care. The taluka's few medical facilities and their isolated locations make it difficult to get healthcare in an emergency. Schools and colleges are also impacted by this lack of infrastructure, as many children and young people have limited educational

options due to the absence of local institutions. Due to the small number of stores, people are also forced to travel to the town.

The poor transportation system forces many villagers to walk great distances in order to meet their daily needs. Farmers find it difficult to sell their produce because there is only one sizable market in the taluka, despite the fact that agriculture is the main occupation. Because there isn't a local chakki (rice processing facility), farmers must travel to town to process their crops.

4.2 Water Scarcity:

Water scarcity is a significant problem in Poladpur that affects practically every aspect of day-to-day living. Variations in water availability have a significant impact on agriculture, the region's primary industry. This deficiency restricts crop production and lowers incomes, leading to a general decline in living conditions. Water scarcity is a direct cause of many other issues, including migration in pursuit of better resources and job opportunities.

4.3 Migration:

The migration of people from rural to urban areas in search of better resources and job opportunities is another important issue. As more families relocate to the city, urban infrastructure is becoming more and more stressed, and rural communities experience a decline in both community involvement and the labour force. Migration has also had a major impact on the region's traditional festivals and cultural practices. The decline in attendance at celebrations such as Ganesh Chaturthi and Hari Naam Spatha has eroded the cultural fabric of the community.

V. INTERCONNECTIONS: REGION, WATER, AND COMMUNITY

Figure 5 : water cycle of problem
Source: Author

This implies the normal water cycle in the area and how groundwater levels and agriculture impact it

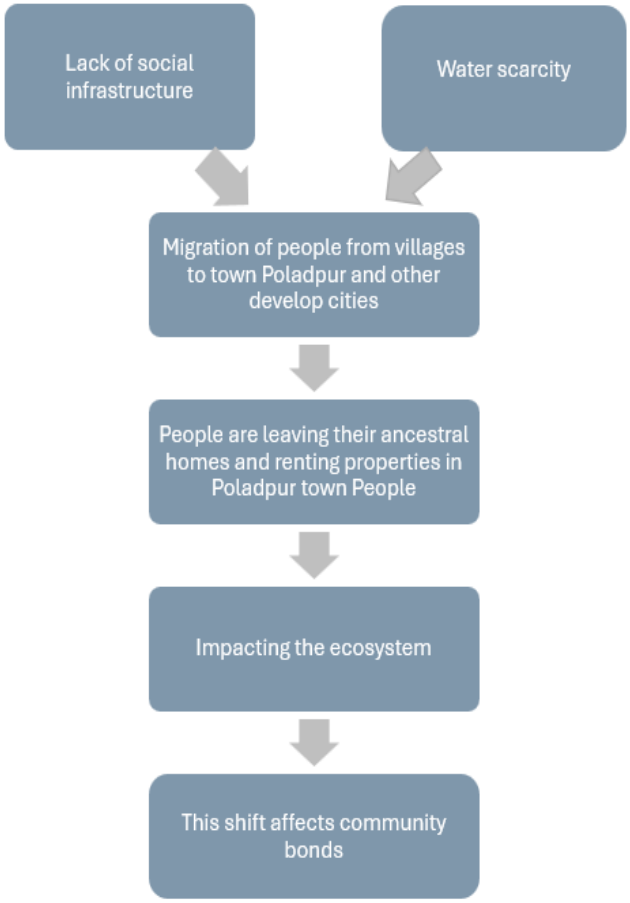

Figure 6 Water Scarcity: Triggering Migration and Weakening Communities
Source: Author

This illustrates the way in which two concerns can lead to a series of problems, culminating in a more significant obstacle.

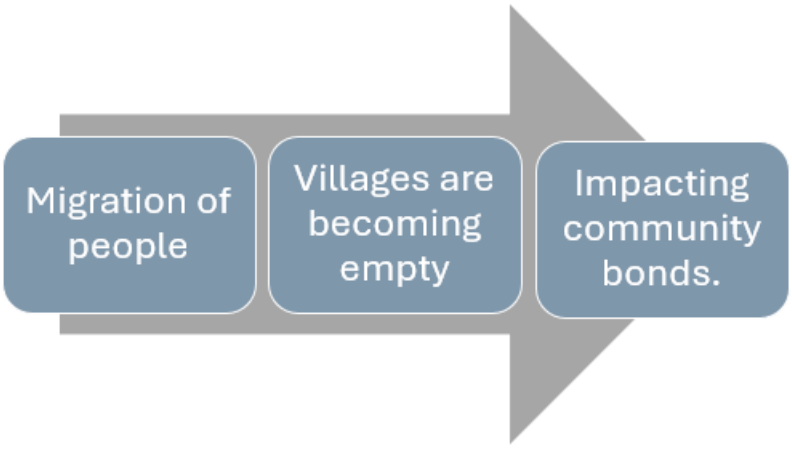

Figure 7 : Impact on community
Source: Author

This illustrates how a minor choice, like moving, can result in more significant issues, such as a deterioration of social cohesiveness and community ties

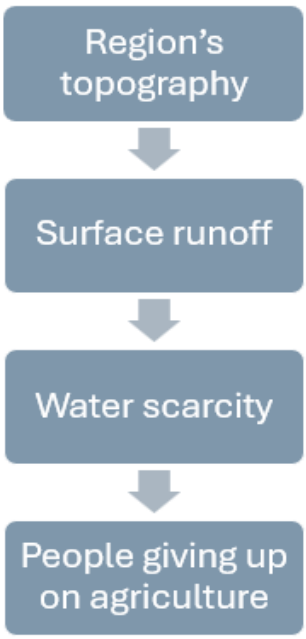

Figure 8: connection of problem
Source: Author

These findings highlight the interdependence between regional topography, water availability, and social structures.

Figure 9: landscape in monsoon and landscape in summer

This demonstrates the stark contrast between the region during the rainy season and summer, revealing two dramatically different landscapes. The abundant rainfall in the monsoon brings life, turning the area lush and green, while the dry summer months, marked by water scarcity, strip the region of its vibrancy, transforming it into a semi-desert. This seasonal shift not only affects the landscape but also disrupts the delicate balance of the ecosystem, with flora and fauna struggling to survive in increasingly harsh conditions. The depletion of water resources leads to declining biodiversity and ecological degradation

Figure 10: Initiative done by Deole village
Source: Author

The villagers made efforts to conserve surface runoff in collaboration with Paani Foundation. The community came together and dug water pits aimed at collecting surface runoff and allowing the water to seep down to recharge the aquifers. However, the initiative struggled due to excessive soil erosion in the area. After the first rain shower, the pits quickly filled with sand and stones, rendering them ineffective. The initiative ultimately failed because it was a one-time effort. While the community participated actively during the digging process under the Gaav Moda (Work for the Village) initiative, there was no follow-up to maintain or monitor the site. This failure can be attributed to a lack of awareness about surface runoff management and aquifer recharge. The absence of sustained community involvement and the lack of a long-term maintenance plan undermined the initiative's potential success.

VI. CONCLUSION

The case of Poladpur highlights how deeply water scarcity is woven into the ecological, social, and cultural fabric of rural Maharashtra. The interplay between declining groundwater levels, seasonal variability, and fragile infrastructure has triggered a cycle of agricultural decline and migration, weakening community ties and cultural practices.

Addressing these challenges requires a holistic approach, one that combines sustainable infrastructure, water conservation, and community engagement. Architectural and policy interventions must be rooted in the local ecology and socio-cultural context to restore resilience and vitality to these vulnerable regions.

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