

Evaluating The Ecosystem Dynamics In Dambarudahar Village: A Comprehensive Analysis Of Tribal Ecology In Betnoti Block, Mayurbhanj District, Odisha

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Abstract- *This research delves into the comprehensive study of Dambarudahar, a tribal village situated in the Mayurbhanj district of Odisha, India. Employing Participatory Learning Methods (PALM) and a combination of primary and secondary data sources, the study explores the social, economic, ecological, political, and cultural dimensions of the village. The village, populated by Scheduled Tribes (ST), Scheduled Castes (SC), and Other Backward Classes (OBC), faces issues of discrimination based on dietary practices and entrenched superstitions, notably beliefs in witchcraft. Educational progress, healthcare challenges, and economic sustenance primarily centred around agriculture and seasonal labour are among the key findings. The ecological analysis depicts the village's climate, vegetation, and dependence on the Sal-forest, while the political dimension outlines governance structures and the perceived efficacy of government schemes. Cultural diversity among the Santal, Mohanta, and Tanti communities is highlighted, emphasizing unique rituals, festivals, and dietary habits. Crucially, the study identifies prevailing developmental issues such as water scarcity, irrigation concerns, and the pervasive challenge of alcoholism, particularly among the Santal community. Efforts to mitigate these issues through infrastructure development and educational interventions are imperative for the village's sustainable future and the well-being of its inhabitants.*

Keywords- Tribal Communities, Caste-based Discrimination, Healthcare Challenges, Developmental Issues, Socio-Economic Resilience

I. INTRODUCTION

The essence of India, according to M. K. Gandhi, resides within its villages. A village, deriving from the French term denoting "a group of buildings," represents a community intertwined with natural wealth, strong social bonds, and a vibrant culture, offering a serene escape from urban chaos. India's village landscape, as per the 2011 census, encompasses

approximately 833 million people dispersed across 640,867 distinct villages, varying vastly in population size. Despite their intrinsic significance, numerous villages grapple with a dearth of essential amenities, such as quality education, healthcare, transportation, and infrastructural facilities. Agriculture, the cornerstone of India's agrarian economy, employs over 60% of the populace and contributes significantly to the GDP. However, this sector faces multifaceted challenges nationwide, impacting millions of livelihoods. Understanding the intricate social structures and cultural intricacies within villages is pivotal. Comprehensive studies examining village ecosystems delve into diverse dimensions encompassing social, cultural, political, health, and economic facets. Such analyses aim to unearth critical developmental hurdles faced by these communities. Villages, abundant in natural resources, often confront the brunt of natural calamities, from floods and cyclones to droughts. The coping mechanisms of villagers, frequently inadequate, lead to consequential impacts on both natural resources and the populace. A prime example is Dambarudahar, a tribal village nestled in the Anla Panchayat of the Betnoti block, Mayurbhanj district, Odisha. Comprising a population of 349 individuals per the 2011 census, with Santal, Mohanta, and Tanti communities coexisting, this village relies predominantly on agriculture and local Sal trees for sustenance. The study of this ecosystem unravels cultural, traditional, occupational, and dietary nuances among these communities, particularly highlighting the Santal community's deep-rooted connection with nature. This research endeavors to comprehend historical transitions, cultural richness, and identify developmental avenues in Dambarudahar. By encapsulating changes in customs, occupations, and lifestyles, this study aims to present a holistic picture of the village dynamics, enriching our comprehension of its inhabitants and signaling areas necessitating focused development initiatives.

II. OBJECTIVE OF THIS STUDY

1. To study the socio-economic dimension and demography of the tribal village.
2. To examine the economic, conditions, livelihood pattern and standard of living of the people of Santal, Mohanta and Tanti Community.
3. To study about the relation with natural resource and livelihood of villagers.
4. To understand the diversity of culture, political and poverty context of village.
5. To identify the developmental issue and community-based solution.

III. RESEARCH LOCATION & METHODOLOGY

The research was conducted in Dambarudahar village situated in the Betnoti block of the Mayurbhanj district, Odisha state. Mayurbhanj, a district in the northeastern part of Odisha, comprises 3966 villages, 26 tahsils, and 26 blocks. Betnoti, where the village is located, is about 27 kilometres south of the district headquarters in Baripada and consists of 24 panchayats and 229 villages. The village itself covers an area of 127 hectares and is home to approximately 766 individuals. The research period spanned from February 21st, 2023, to April 31st, 2023.

To comprehensively understand the village, the research employed various primary data collection methodologies involving Participatory Learning Methods (PALM) tools such as Transect Walk, Social Mapping, Resource Mapping, Mobility Mapping, Historical Timeline, Trend Analysis, Daily and Seasonal Calendars, Festival Calendar, Pairwise Ranking, Problem Tree, Solution Tree, and Wealth Ranking. These methodologies engaged different groups within the village, including farmers, women, schoolchildren, and various stakeholders, to gain insights into land observation, housing patterns, resource depiction, institutional connectivity, historical sequences, activity patterns, festival celebrations, problem prioritization, causal analysis, wealth distribution, livelihood cash flows, and more. Secondary data collection, derived from official sources, provided demographic details, literacy rates, caste, religious demographics, and information about government schemes and their utilization within the village. This comprehensive methodology aimed to offer a holistic understanding of Dambarudahar and its inhabitants' multifaceted aspects.

IV. RESULT & DISCUSSION

1. Social Dimension

The social dimension of the village of Dambarudahar reflects a complex interplay of demographics, caste dynamics, gender roles, health, education, language, affinity groups, sanitation, transportation, and family structures, each significantly shaping the lives of its residents. The village's history, rooted in the naming convention and geographical setup, contributes to the societal fabric. Over time, the village has witnessed substantial changes, notably in agriculture, housing patterns, cooking fuels, access to drinking water, savings practices, road infrastructure, and migration trends. These changes reveal a shift towards modernization and improvements in certain facets of village life, although challenges such as lack of irrigation, declining forest density, and increasing migration persist.

Demographically, Dambarudahar is home to a population of approximately 700 individuals, with a slight increase over time. The village's residents primarily consist of different religious communities, including Hindus and Sarna followers. Caste dynamics, dominated by Scheduled Tribes (ST) like the Santals, Scheduled Castes (SC), and Other Backward Classes (OBC), have evolved due to migration from neighbouring villages, influencing the village's demographic makeup. The migration trend is notable, with villagers seeking work opportunities in states like Gujarat, Tamil Nadu, and Andhra Pradesh.

Caste-based discrimination continues to manifest in various forms within the village. Social tensions persist between the Mohanta (OBC) and Tanti (SC) communities, especially concerning dietary practices, leading to a lack of social cohesion in certain social settings and festivities. Discrimination against women from the Santal community, labelled as witches ("Daini" or "Dan"), persists, reflecting deeply rooted superstitions that affect their lives negatively. The gender dimension in Dambarudahar is comparatively progressive, with nearly equal gender representation and minimal gender-based discrimination observed in education, employment, and participation in community activities. Women have gained visibility in leadership roles, with a female Sarpanch (village head) and fair wages for women in various sectors, demonstrating a semblance of gender equality in the village.

Healthcare access and practices present a mixed picture, with prevalent health issues like diabetes and high blood pressure attributed to indigenous alcohol consumption. While some healthcare facilities exist, including a government

dispensary and a sub-health wellness centre, reliance on traditional healers and quacks persists due to perceptions of limited effectiveness of government healthcare services.

Education in Dambarudahar showcases strides in accessibility and availability, with primary and higher secondary schools within close proximity, offering education up to the high school level. However, dropout rates, especially among girls due to early marriages or societal pressures, and among boys due to migration for work, remain concerning.

Language diversity exists within the village, with variations in spoken Odia among different communities, reflecting the cultural nuances within the village. Affinity groups, such as the Sarai Puja Committee and the Maa Laxmi Puja Committee, provide social support, albeit occasionally contributing to caste-based distinctions.

Sanitation practices are affected by beliefs, leading to the construction of toilets away from homes and prevalent open defecation, despite government initiatives like the Swachh Bharat Mission. Transportation facilities, while present, primarily rely on buses, auto-rickshaws, and private vehicles, posing challenges in connectivity for villagers.

Family structures encompass both joint and nuclear families, with the prevalence of women-headed households and SHGs playing a vital role in empowering women and enhancing their economic standing within the community. In conclusion, the social dimension of Dambarudahar is a complex tapestry, reflecting the village's historical roots, changing socio-economic dynamics, persistent challenges, and evolving strides toward progress. While advancements have been made in certain aspects, addressing issues related to caste discrimination, education, healthcare, sanitation, and gender disparities remains pivotal for the holistic development and well-being of the village's residents.

2. Cultural Dimension

The cultural dimension of the Dambarudahar village unveils a rich tapestry of customs and traditions among its three primary communities: Mohanta, Tanti, and Santal. Each community follows distinct religious practices and festivals, reflecting their beliefs and values. The Mohanta and Tanti communities, being Hindu, venerate their village deity, Etasuni, in a sacred grove, while the Santal community follows the Sarna religion, worshipping Jaheraera-tola. Festivals play a pivotal role in their lives, as the Hindu communities celebrate around 14 festivals annually, incurring substantial expenses during these times, leading to financial strain post-celebrations. The Santal community, celebrating 12

festivals, notably allocates significant spending during Makar Sankranti, symbolizing a communal emphasis on these cultural events. While the Mohanta and Tanti communities exercise financial caution, the Santal community tends to overspend, resulting in increased post-festival stress.

The practices and customs of these communities further illustrate their cultural distinctiveness. Mohanta and Tanti communities celebrate Makar Sankranti for three days, emphasizing religious rituals, food preparations like 'pithas,' and a mix of vegetarian and non-vegetarian meals. Similarly, they observe Prathama Saptami, Raja Sankranti, Mangala Puja, and the daily ritual of Sanjh, showcasing diverse traditions tied to prayers, well-being, and family prosperity. In contrast, the Santal community celebrates Baha Bonga, Magha Bonga, Diwali, and conducts traditional treatments for ailments like smallpox. The Santals' traditions emphasize worship in sacred groves, celebrating nature's bounty, and unique rituals for cattle welfare during Diwali.

Marriage customs among these communities exhibit a blend of arranged marriages within the same caste, prevalent dowry systems, and specific rituals spanning pre-wedding, wedding, and post-wedding ceremonies. The Mohanta and Tanti communities adhere to arranged marriages within their caste, whereas the Santals have diverse marriage practices delineated by different categories, such as 'Kirin Bapla' or purchase marriages. The dowry practice is more pronounced among the Santals, with specific rituals observed during marriage ceremonies.

Ceremonies related to births and deaths in these communities reflect distinctive cultural practices. The Mohanta and Tanti communities commemorate births with ceremonies like 'Naktaghoro Ceremony' and 'Anno chowani,' while the Santals conduct rituals with the involvement of the traditional birth attendant and unique customs like offering haria (liquor) and communal dances. Death ceremonies also differ, with practices like 'Tita-Vato' observed by the Mohanta and Tanti communities and specific rituals tied to cooking and fasting among the Santals.

Furthermore, the dietary patterns of these communities diverge significantly. While the Mohanta and Tanti communities predominantly consume rice-based meals, alternating between vegetarian and non-vegetarian dishes, the Santals exhibit a consistent preference for non-vegetarian food, with Haria as a morning staple and a particular liking for pig meat pitha.

In essence, the cultural dimension in Dambarudahar village manifests through distinct religious affiliations, varied

festival celebrations, intricate marriage customs, unique ceremonies related to births and deaths, and diverse dietary preferences. These practices and traditions underscore the richness and diversity of cultural heritage within the village, influencing social interactions, economic choices, and community dynamics.

3. Ecological Dimension

The ecological dimension of Dambarudahar Village, as revealed by Map 6: Resource Map of the village, illustrates the intricate relationship between the villagers and their natural surroundings. This dimension encompasses climate, topography, natural resources, and their collective impact on the residents' lives. The village experiences a subtropical climate characterized by humidity and distinct seasons: hot summers from March to June, rainy seasons with significant rainfall from June to September, and cold winters from October to February. Rainfall, essential for agriculture, has shown a decreasing trend year-on-year, leading to a heavy reliance on rain-fed farming practices. The soil type, Alfisols, predominantly found due to the surrounding forest, is fertile and suitable for paddy cultivation. Topographically, the village is relatively flat. The region is rich in natural resources, with Benasuri forest housing Sal trees, a significant source of traditional livelihoods and firewood. Water resources consist of a single large pond, EtahariPukhuri, and multiple smaller household-owned garia ponds, utilized mainly for bathing and fish rearing. Forests serve as grazing lands for villagers' livestock, primarily goats, as green fodder is scarce. The village's primary resource is its farming land, covering 105 hectares and primarily used for annual paddy cultivation. The village is abundant in flora, including Sal, Neem, Banyan, Mango, Jackfruit, Palas, Cactus, Papaya, Ashoka, and more, while its fauna includes cows, goats, sheep, hens, rats, cats, dogs, and snakes within the village, with elephants spotted in the surrounding forest.

The climate plays a pivotal role in shaping the villagers' lives, determining agricultural practices and livelihoods. With the village relying solely on rainwater due to the absence of artificial irrigation sources, the dwindling trend in rainfall poses significant challenges to sustaining agriculture. Despite this dependence, villagers strategically time their agricultural activities based on rainfall patterns, initiating land preparation in mid-June, sowing seeds in July, transplanting in mid-August, and finally harvesting from mid-November to mid-December. The soil's fertility, primarily Alfisols (brown forest soil), facilitates paddy cultivation and is a critical resource for sustaining agricultural productivity in the region.

Water resources, comprising EtahariPukhuri and household-owned garia ponds, serve essential purposes such as bathing and fish rearing. However, none of these water bodies are utilized for irrigation, emphasizing the village's dependency on rainfall for agricultural sustenance. The Benasuri forest not only serves as a source of livelihood through Sal leaf plate-making and firewood but also contributes significantly to biodiversity and climate change mitigation. It stands just 5 kilometers away, accessible for resource utilization. Grazing lands are mainly the forest and empty farming lands near garia ponds, reflecting the scarcity of green fodder and the villagers' reliance on natural landscapes for livestock sustenance.

The villagers' primary resource remains their farming lands, covering 105 hectares and primarily used for cultivating paddy once a year. Flora and fauna within the village and the surrounding forest contribute to its rich biodiversity, with a variety of plants like Sal, Neem, Banyan, Mango, Jackfruit, Palas, and animals including cows, goats, sheep, hens, rats, cats, dogs, and occasional elephant sightings in the forest. Overall, the ecological dimension of Dambarudahar Village underscores the intricate interplay between natural elements and human livelihoods, highlighting the village's reliance on its ecological resources for sustenance and economic activities.

4. Economical Dimension

The economical dimension of Dambarudahar village is a microcosm reflecting India's agrarian economy, highlighting livelihood patterns, poverty, access to financial services, and the role of various village institutions. Agriculture remains the primary source of income for villagers, spanning six months annually due to the lack of artificial water sources for irrigation. Off-season, villagers engage in labor-intensive work like agricultural labor or construction in neighboring villages, while women focus on making Sabai rope and Sal leaf plates. Migration to Gujarat and Andhra Pradesh for employment, predominantly in granite stone works or car factories, is common among villagers, with returns ranging from Rs. 12,000 to Rs. 16,000 per month. The daily calendar depicts minimal gender discrimination, with men and women working around 10 hours a day during cropping seasons in agriculture, construction, and Sabai rope production, highlighting the village's diverse livelihood options.

Agriculture remains a cornerstone, particularly paddy cultivation, relying solely on rain-fed farming due to the absence of irrigation infrastructure. The completion of the "Subarnarekha Canal," a government project, is anticipated to

alleviate rainfall fluctuations and enable year-round cultivation. Marginal farmers, semi-medium farmers, and landless farmers lease lands following traditional rules, paying for produce or providing manure and labor in exchange. Farmers earn income once a year, allocating funds for seeds, fertilizers, and savings at the local post office and Bank of India, conveniently located 2 kilometers away.

Livestock rearing, especially goats, cows, bulls, and sheep, plays a crucial role in households' incomes, with monthly earnings ranging from Rs. 1000 to Rs. 5000. Indigenous cows and sheep farming are preferred due to their adaptability and profitability. Backyard poultry also contributes significantly to household incomes, with indigenous hens primarily reared and fed natural food sources. A focus on treating sick hens traditionally persists, although the introduction of new breeds since 2000 has increased income through the sale of hens and eggs.

Sabai rope-making, reliant on Sabai grass from nearby markets, primarily engages women, providing income in seasons with increased grass availability. Similarly, Sal leaf plate-making involves collection and drying of leaves, followed by plate-making and selling, facing challenges due to wildlife threats and market limitations. Construction work, employing 12% of villagers, becomes the primary livelihood for many, facing competition from migrant workers earning lower wages, impacting local wages and employment opportunities.

The economical dimension of poverty within the Dambarudahar village is multifaceted and profoundly impacts various aspects of the community's livelihood. Poverty, delineated by inadequate access to fundamental resources like food, shelter, healthcare, and education, manifests as incomelessness, inequality, isolation, ill-health, and illiteracy among villagers. The lack of reliable income sources, primarily tied to agriculture heavily reliant on unpredictable rainfall, leaves a significant portion of the population without any means to secure their basic necessities. Analysis of income categorization indicates that while severe poverty, defined as an annual income below Rs. 60,000, is absent, a considerable level of inequality prevails, as demonstrated by the Lorenz curve and Gini coefficient. The top 5% of the population holding 30% of the village's wealth highlights the stark wealth disparity. Wealth categorization further delineates the four socioeconomic strata (S1 to S4), with the majority in S3 and a small, disadvantaged fraction in S1 without land or vehicles and an income below Rs. 5,000.

Isolation, driven by cultural practices like avoiding interaction due to dietary preferences, exacerbates the social

divide. Ill-health prevails due to widespread alcoholism, leading to issues like blood pressure and diabetes, which escalate financial burdens and contribute to a cycle of poverty. Illiteracy, while improved compared to earlier census data, remains a challenge, especially among women, albeit recent initiatives promoting education signal progress. Access to financial services, elucidated through Self-Help Groups (SHGs) and the Bank of India's presence, signifies a shift from moneylender dependence, enhancing financial inclusivity.

Infrastructure, a pivotal component, exhibits advancements, especially in housing types transitioning from mud to concrete houses owing to governmental schemes. However, water scarcity persists, primarily reliant on insufficient wells and tube wells, with the proposed Subarnarekha canal offering hope for agricultural sustainability. Roads, electricity, and access to post offices appear promising, with concrete roads aiding connectivity, electricity now accessible to all households, and the post office providing essential banking and postal services. Nonetheless, irrigation solely dependent on rainfall limits agricultural opportunities.

The Anganwadi stands as a cornerstone in promoting child welfare, offering nutrition, education, and health services, contributing significantly to children's growth and development, as well as maternal health. The Anla Milk Society's establishment and the market or "Hat" provide avenues for economic empowerment by creating platforms for milk sales and agricultural produce exchange.

Despite these advancements, challenges persist, including irregular ration distribution, the need for better water resources, and the dependence on rainfall for irrigation, impacting agricultural yield. Education initiatives reflect improvements, but gender disparities persist, necessitating further targeted efforts. Access to reliable financial services has shown a positive trajectory, yet the village grapples with wealth disparity and social isolation. The overall analysis underscores the nuanced nature of poverty within the Dambarudahar village, suggesting the necessity for targeted interventions addressing specific facets of inequality, infrastructure, education, and health to foster a more equitable and sustainable future for the community.

5. Political Dimension

The political dimension of Dambarudahar Village encompasses the governance system, panchayat operations, traditional governance methods, and the impact of various government schemes on the villagers' lives. The political landscape involves three major political parties: BJD (Biju

Janata Dal), BJP (Bharatiya Janata Party), and INC (Indian National Congress), with the majority currently supporting the BJP. Despite political affiliations, the village remarkably maintains a harmonious living environment with minimal political violence and a negligible crime rate. Under the panchayat system, Dambarudahar falls under Anla Grame Panchayat, led by the Pradhan, Swapna Singh, affiliated with the BJP. However, the panchayat office operates irregularly, opening only once or twice a week, and the Pradhan's presence is sparse. Allegations of favoritism and misappropriation of power are rampant, with benefits primarily going to individuals aligned with the ruling political party. Traditional governance methods vary among communities. The Santals have a Majhaharam who settles disputes within the community without involving the panchayat. The Mahanto and Tanti communities resolve issues through the ward member and then the Sarpanch, ultimately discussing matters in the Gram Sabha in front of all villagers.

The impact of government schemes is substantial. The Indira Awas Yojana and Pradhan Mantri Gramin Awas Yojana have provided housing benefits to villagers, albeit with reports of corruption favoring political affiliates. The Madhu Babu Pension Yojana, aimed at disabled, elderly, and widowed individuals, has seen high enrollment and widespread positive impact, especially fostering a sense of self-reliance among beneficiaries. Other schemes like Gangadhar Meher Siksha Manakbrudhi Yojana for students, Harishchandra Sahayata Yojana for funeral expenses, and healthcare schemes like Biju Swasthya Kalyan Yojana and Mamata Yojana have also positively impacted the villagers' lives, providing educational aid, financial assistance, and healthcare support. However, issues like delayed disbursement, corruption, and lack of awareness hinder the schemes' effectiveness, as observed in the PM Kisan Samman Nidhi Yojana and labour card registration process. MGNREGA, a flagship employment scheme, provides livelihood opportunities but faces challenges due to political interference and irregularities in attendance, impacting wage payments. Mamata Yojana, aiding pregnant women, has significantly reduced instances of malnutrition in children and supports women's health during and post-pregnancy. However, the village faces scarcity of food, highlighting the scheme's crucial role in providing nutritional support.

The presence of multiple government schemes, though beneficial, also underscores the need for effective implementation, transparency, and timely disbursement to ensure the intended beneficiaries receive the intended benefits. The schemes have contributed significantly to the village's socio-economic resilience, but the challenges in execution and

governance demand attention for improved efficacy and equity in distributing benefits.

6. Development issues

The development issues in Dambarudahar Village are multifaceted and significantly impact the community's well-being. The PALM tool, through pairwise ranking exercises with women and farmers, highlighted critical concerns such as drinking water scarcity, irrigation water deficiency, high seed and fertilizer costs, absence of streetlights, inadequate bathing facilities, and healthcare shortcomings. The analysis revealed that the most pressing problem is the scarcity of drinking water, with only three hand pumps and seven wells serving a population of 766. None of the wells provide suitable drinking water, forcing families to rely on a handful of submersibles. The irrigation water shortage has crippled agricultural practices, with the community relying solely on rain-fed cultivation, leading to low production and debt cycles. Solutions proposed by the community include government-led initiatives like constructing large water tanks and canals to address water scarcity. Issues like high seed prices, lack of streetlights, inadequate bathing facilities, and healthcare deficiencies further compound the challenges faced by the community, affecting their livelihoods and safety. Additionally, alcoholism is a prevalent issue, impacting health, livelihoods, and relationships within the community, prompting the need for comprehensive educational interventions for future generations. Addressing these development issues requires urgent government intervention, infrastructural improvements, and community-focused initiatives to ensure a better quality of life and sustainable growth for Dambarudahar Village.

V. CONCLUSION

The fieldwork conducted in Dambarudahar Village presented a comprehensive overview of its multifaceted dimensions, encompassing aspects like societal dynamics, livelihoods, education, healthcare, and cultural practices. One significant observation was the persistence of caste-based prejudices among the Santal, Mohanto, and Tanti communities, despite the active efforts of the younger generation to alleviate such biases through community initiatives. Education emerged as a beacon of hope, with increased enrollment and rising literacy rates among the youth. However, healthcare remains a challenge due to the absence of adequate facilities, leading to reliance on alternative medical sources. Agriculture, heavily reliant on rainfall, faces hurdles due to inadequate irrigation, resulting in crop failures and financial strain. The ecological dependence on the Benasuri forest and the southwest monsoon underscores the village's

reliance on natural resources. The PALM tools identified pressing development issues like irrigation and drinking water scarcity, urging the community to advocate for canal construction and improved water supply as essential steps for sustainable progress. Efforts to address these challenges must involve active engagement with local authorities to ensure accessible and reliable water sources for the community's well-being.

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