



From Margins to Mainstream: The Impact of the India Eco-Development Project on Tribal Well-Being in Kumily, Idukki

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Abstract

The study examines the impact of the India Eco-development Project (IEDP) on the tribal communities in Kumily, Idukki. Data were collected through semi-structured interviews, focus group discussions, and field observations. Significant improvements in physical infrastructure, such as housing, sanitation, and road access, were noted. However, social infrastructure development was mixed. While the IEDP fostered community participation and empowerment through the establishment of Ecodevelopment Committees (EDCs), persistent challenges remain, particularly concerning gender roles, education, and healthcare access. Although healthcare facilities have improved and infant mortality rates have declined, serious illnesses still necessitate long-distance travel to hospitals, and issues like alcohol abuse among youth remain prevalent. While the project supported women's empowerment initiatives, empowerment levels varied, with some women assuming greater responsibilities and others remaining constrained by traditional roles. These findings highlight the need for integrated public policies that address both physical and social infrastructure to achieve truly sustainable and inclusive development outcomes in protected area communities.

Keywords: Tribal, Livelihood Security, Empowerment, Periyar, Paliyan, Mannan

1. Introduction

The Periyar Tiger Reserve is located on the Western Ghats in the Idukki district of Kerala. The Periyar Valley, once ruled by the Pandyas, was transformed by the construction of Mullaperiyar dam in 1895. The dam created a reservoir, an artificial lake, and significantly changed the landscape. This man-made lake became a hub for wildlife, attracting various species of birds and elephants.

The Paliyans and Mannans are two sects of tribes who have lived in the Periyar Tiger Reserve for generations. They depended heavily on the forest land and various produce from the forests for their livelihood. They used to collect firewood, honey, pepper, frankincense, medicinal plants, and meat from the forest. Fishing was also a significant source of livelihood. Both tribes were displaced during the construction of the Mullaperiyar dam. They were given land for cultivation and settlement in Kumily, beginning a long and arduous struggle for them. While sustainable for generations, practices like gathering medicinal plants and collecting honey became unsustainable in the long term due to population growth and limited forest resources. This dependence was further strained by strict regulations in protected areas that excluded people. The tribes, who had always collected forest produce for survival, were harassed by forest officials for these practices, leaving them trapped in a cycle of exploitation. This was not their only hardship. They were also exploited by outsiders who took advantage of their resources and labor.

However, a new program called the India Ecodevelopment project offered a hopeful alternative, aiming to include the tribes in conservation efforts instead of excluding them and ensuring market participation. Launched in the 1990s with funding from the World Bank and the Global Environment Facility (GEF), it focused on India's conservation efforts while also promoting development. The India Eco-Development Project (IEDP), a specific program within this initiative, received nearly \$6 million for the Periyar Tiger Reserve over eight years (1996-2004). The project aimed to break the cycle of unsustainable practices by empowering local communities, particularly the Paliyan and Mannan tribes. This meant integrating them into conservation efforts and fostering a sense of shared responsibility for the environment. The project also focused on promoting sustainable resource use by finding alternative livelihood options for the

tribes, improving the well-being of nearby villages. Building on these principles, the IEDP established Ecodevelopment Committees (EDCs). These committees were formed by bringing together villagers to discuss local needs and develop solutions. This participatory approach mirrored the spirit of the Joint Forest Management (JFM) Act, a national initiative that encouraged collaboration between forest departments and local communities for sustainable forest management. The EDCs helped in reducing the unsustainable practices of the local communities and the criminal activities that were prevalent in the reserve area.

We can observe that there was de-commonization in the Periyar Tiger Reserve following its designation as a protected area. However, there has been a notable re-commonization through EDCs and community management.

The India Eco-Development Project (IEDP), launched with support from the World Bank and GEF, had five key objectives: enhancing protected area management, promoting community participation, developing sustainable eco-development programs, increasing environmental awareness, and establishing monitoring systems (World Bank, 1996; NTCA, 2005). To evaluate the effectiveness of the IEDP in Kumily, this study investigates five parameters: health, education, income, infrastructure development, and gender dynamics. These dimensions were selected because they reflect the project's core goals of improving livelihood security, fostering conservation partnerships, and empowering communities.

2. Objective of the Study

In this paper, we aim to evaluate the impact of the India Eco-Development Project (IEDP), particularly through the establishment of Ecodevelopment Committees (EDCs) under the framework of the Joint Forest Management (JFM) Act, on the livelihoods of tribal communities historically dependent on common property resources.

Specifically, the study examines two key aspects:

(i) how eco-development initiatives have transformed the livelihoods and well-being of the tribal households across dimensions such as health, education, income, and infrastructure, and

(ii) how community participation in conservation activities, facilitated through EDCs, has empowered local communities and influenced gender dynamics.

3. Literature Review

The intricate relationship between indigenous communities and their environment has been well documented in early studies.

Mohandas (1987) [3] offered a microcosmic view of the Paliyans of Kerala, describing not only their cultural and physical characteristics but also the substantial shifts in their traditional way of life resulting from external interactions. He highlighted that while exposure to outsiders introduced new practices and technologies improving living standards, it also threatened traditional practices, social structures, and language, underscoring the delicate balance between development and cultural preservation. Building on this, Soundarapandian (2001) [10] investigated the role of tribal development committees in Kerala, emphasizing their multifaceted contribution to social and economic development. These committees provided critical interventions in areas such as education, healthcare access, and income-generation activities, while simultaneously safeguarding cultural heritage by preserving traditional knowledge systems.

Elinor Ostrom's seminal work, *Governing the Commons* (2015) [4], offers a foundational framework for understanding how common property resources like forests can be sustainably managed. Ostrom emphasized the necessity of collective action and institutional design — clear rules, community monitoring, and shared benefits — to ensure the long-term health of communal ecosystems. Recognizing similar needs in the Indian context, the National Forest Policy of 1988 introduced the Joint Forest Management (JFM) program, institutionalizing collaboration between local communities and the state in forest governance. Pillai (2010) [5] further advocated for an inclusive approach to conservation, suggesting that participatory models, by empowering local people and integrating their traditional knowledge, could bridge the gap between conservation and community welfare. His work provided strategic insights into optimizing the collaboration between forest departments and indigenous communities for sustainable outcomes.

Historically, forest conservation efforts in the Periyar Tiger Reserve were implemented in ways that adversely affected tribal livelihoods, treating tribal communities as "encroachers" rather than rightful stakeholders. Activities central to tribal economies—such as fishing, collection of non-timber forest products (NTFPs), and subsistence farming—were severely restricted by conservation policies. However, Arun, Jayasankar, and Abraham's (2001) [1] study highlights that initiatives like Eco-Development Committees (EDCs) and community-based ecotourism have helped shift this approach. By involving tribespeople as active participants in conservation and providing them with viable alternative livelihoods, these programs demonstrate that sustainable conservation is possible only through genuine integration of tribal communities into resource management, marking a critical shift from exclusion to partnership. Drawing from these participatory efforts, Pillai (2013) [7] critiques traditional exclusionary park management and advances an inclusive conservation model at the Periyar Tiger Reserve. He highlights how Eco-Development Committees, revolving community funds, environmental education, and capacity-building initiatives can equitably share benefits, empower marginalized groups, and foster genuine stakeholder participation. Through a decentralized, co-management approach, protected areas are reframed as collaborative spaces where conservation goals and tribal livelihoods reinforce one another, while also mitigating human–wildlife conflict.

Studies on the Paliyan tribe reveal important trends in the gradual economic transformation of indigenous communities. Velayuthan (2003) [11] documented that increased interactions with outsiders led to significant changes in the Paliyan economy, moving away from traditional forest-based subsistence to diversified sources of livelihood, which created new vulnerabilities but also opportunities. Pushpam (2018) [8] explored these transitions further, focusing on the Paliyan tribe in Kerala. Her study highlighted how modernization influenced a shift from hunting-gathering to settled agriculture and wage labor. Pushpam also pointed out potential employment opportunities within the forestry department for tribal members, providing an important perspective on integrating marginalized groups into the formal economy while cautioning about the risks of losing traditional ecological knowledge.

The intersection between gender empowerment and conservation outcomes has drawn significant attention. Pillai and Suchintha (2006) [9] highlighted that in Kerala's Periyar Tiger Reserve, empowering women through self-help groups drastically reduced illegal activities like poaching and encroachment during daytime hours. Their study illustrated how providing women with economic agency translated into positive conservation impacts. Building on this, Pillai (2011) [6] proposed that inclusive conservation must prioritize local participation, especially that of women, to ensure both ecological protection and social equity. He stressed the importance of designing participatory forest management strategies that genuinely involve women at decision-making levels.

Modernization has brought profound cultural shifts among tribal communities. Soumya Devasia (2023) [2] documented the evolving religious beliefs and cultural practices among the Mannan tribe in Kerala, noting that younger generations show decreasing interest in preserving traditional customs. She attributed this change largely to increasing interaction with the mainstream society, reflecting both the opportunities and cultural erosion risks involved in socio-economic integration. These findings mirror the earlier observations by Mohandas (1987) [3], who warned that development initiatives, if not carefully managed, could inadvertently undermine the cultural fabric of indigenous societies.

The reviewed literature underscores a historical progression from exclusionary conservation to participatory eco-development, recognizing indigenous communities as critical stakeholders. However, gaps remain in comprehensively understanding how structured interventions like the India Eco-Development Project (IEDP) impact the multifaceted dimensions of tribal livelihoods and social well-being over time.

This study aims to bridge this gap by critically assessing the IEDP's outcomes in Kumily, with particular focus on livelihood transitions, gender dynamics, and community participation.

4. Data And Methodology

In this study, data were collected from two tribal settlements, namely Mannans and Paliyans, to assess their livelihood status following the implementation of the India

Eco-Development Project (IEDP). A qualitative survey instrument was developed to gather information on various aspects of livelihood, including sources of income, access to resources, education, healthcare, infrastructure, and gender dynamics. In the context of this study, livelihoods are understood as the capabilities, assets, and activities necessary for securing a means of living. This encompasses not only economic income but also access to health services, educational opportunities, infrastructure development, and participation in community decision-making processes. This holistic definition aligns with the IEDP's integrated approach to promoting sustainable development and improving overall well-being among tribal communities. The sampling strategy involved selecting households from each settlement through a systematic approach, ensuring representation from different demographic groups within the communities. A total of 60 households were surveyed, with 34 from the Mannan tribe and 26 from the Paliyan tribe. Data were collected through face-to-face interviews with household members, following informed consent procedures. Interviews were conducted in a respectful and culturally sensitive manner to encourage openness and candid responses from participants. Data analysis involved the creation of tabular and pie charts to represent key findings visually. The change in livelihood status will be analyzed in terms of health, education, income, infrastructure, and gender dynamics.

5. Analysis

5.1 Health

Mannans and Paliyans historically sustained themselves through a blend of hunting, gathering, and basic agriculture, delving deep into the forest for spices, medicinal herbs, and fish from the Periyar River. They also hunted small game like rabbits and wild boar for sustenance. However, significant shifts have occurred in their way of life. Government regulations have compelled them to abandon traditional hunting practices and herbal medicine, pushing them towards reliance on local hospitals and purchased meat. Consequently, their dietary habits have undergone a transformation. The once prevalent and nutritious traditional dish, Keppa Kali, made from ragi, is now less common in households. While they used to cultivate ragi, land constraints, and animal attacks have rendered purchasing ragi powder from the market the only viable option.

Today, their daily meals predominantly consist of rice or porridge, occasionally supplemented with fish or chicken sourced from markets or the forest when permissible. Many tribe members attribute this dietary shift to the rise in lifestyle diseases such as heart disease, diabetes, high blood pressure, and cancer. Moreover, a staggering 63% of the respondents suffer from chronic diseases. Additionally, alcohol and substance abuse have emerged as significant issues. Excessive alcohol consumption, especially among men, has resulted in premature deaths. At the same time, drug abuse, particularly among the youth, is a growing concern, with some students forgoing school to engage in drug peddling and consumption. This detrimental trend has further exacerbated health problems within the community. Traditionally, forest resources served as their primary source of healthcare. Practices included gathering medicinal plants, adhering to specific diets, and fasting rituals, and seeking protection from illness through totemic beliefs. During sickness, rituals and chants were performed, and skilled elders treated ailments using mantras and local herbs.

Local government initiatives, such as the Supplementary Nutrition Program, aim to address nutritional needs. Children aged 6 months to 3 years receive a nutritious powder called Amrithum Nutrimix twice a month. Those aged 3 to 6 attending anganwadis receive morning snacks, midday meals, and snacks 25 days each month. Pregnant and lactating mothers, along with adolescent girls, receive raw food according to Indian government guidelines. Most women from both tribes receive pregnancy care kits from Anganwadis and report satisfactory nutrition intake.

While private hospitals are preferred by women and their families for their advanced facilities during childbirth, the dedication of family health center staff in monitoring expecting mothers, ensuring proper nutrition, and providing vaccinations have contributed to remarkably low infant mortality rates.

Suffering from Chronic Diseases

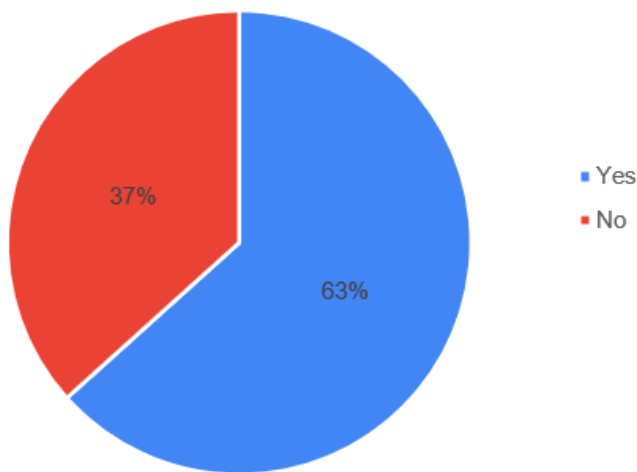


Fig. 1. Percentage of people suffering from chronic diseases
Source: Author’s calculation

5.2 Education

One area in which the lives of these tribal people have significantly improved is education. Most of the tribe's elders are barely literate, having only completed primary school. This is because the older generation was not allowed to attend school. The fact that the elderly women did not even complete primary school demonstrates the gender gap in education. But in the last few years, everything has changed. Most tribal people nowadays are literate, and the younger generation has completed at least higher secondary education. The government has provided all the facilities for sufficient learning, and qualified teachers in these schools provide proper training. Access to education has been made easy by the proximity of the primary and high schools to the settlements. Other public initiatives include creating a local library in the Paliyan community and youth PSC coaching programs, which have helped numerous women gain employment in the government.

Even then, there is an evident Gender disparity between the tribes. There are very few children attending college in the Mannan tribes. Girls are frequently the first in their families to drop out of school and enter the workforce to perform manual labor or other unskilled tasks. On the other hand, the trend is reversed in the case of Paliyan tribes.

While boys show less interest in studying, we observe that a greater proportion of girls attend school, and many go on to get a college degree.

The apathetic nature of the tribal boys towards education is an issue that needs attention. There are several reasons for this; the first is the issue of alcoholism and ganja abuse. The normalization of relations between tribals and mainstream society has led to the adoption of certain social vices, such as alcoholism, which negatively affects the youth's motivation and academic performance. The extent of the situation was exposed through interviews with the principal of the nearby school and forest staff.

Boys routinely skip final board examinations and do not even try to show up for class; as a result, school administrators have to coerce them to show up physically. The drastic effect of ganja abuse can be more clearly seen in the Paliyan tribal settlement, where the women have become the breadwinners of the house as men of all ages are prone to alcoholism and ganja abuse. Another factor that leads to this apathetic nature of the tribal youth, ironically, is the EDC scheme itself. The fact that they could get a job via the EDC program demotivated them to seek other jobs or gain an education. They find comfort in the relative stability that the jobs from the EDC program offer.

5.3 Income

The Mannans and Paliyans are majorly engaged in agriculture, fishing, and collecting different forest produce to earn their livelihood. With the implementation of EDC, most of them started working as Forest guides and forest watchers. This gave them an additional source of income. Currently, 18% of the families surveyed earn their income through EDC-related activities. Another significant share of the income comes from wage labor. Women mainly engage in daily wage labor through MGNREGA or nearby plantations. Agriculture and fishing continue to be major sources of income even today, as can be observed from the graph.

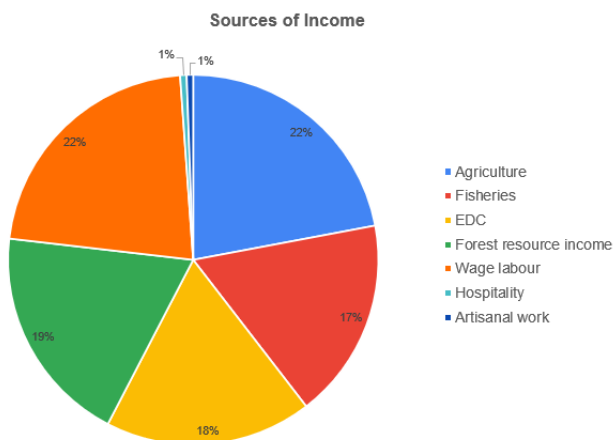


Fig. 2. Sources of income
Source: Author's calculation

It was also observed that the prices they receive for their yield increased significantly after introducing EDCs. This also contributed to an increase in the overall income of the tribes.

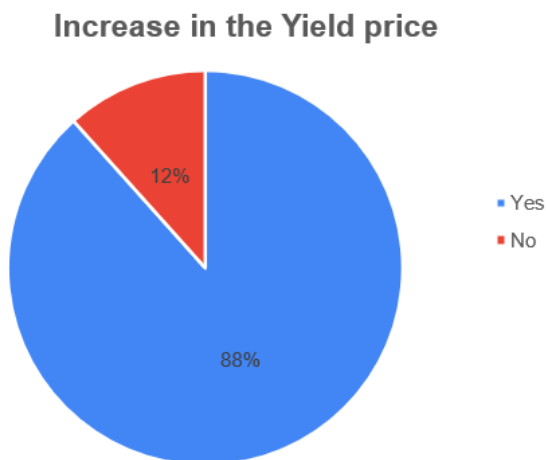


Fig. 3. Increase in the yield price after formation of EDC
Source: Author's calculation

Our analysis shows that most of the respondents fall in the income bracket of ₹20,000 and ₹30,000 (39%), followed by ₹10,000 to ₹20,000 bracket (36%).

An in-depth analysis shows that most households have multiple income streams and more often than not multiple household members are employed and contribute towards household income. This underscores the increased involvement of the tribal women in the labor force compared to pre- EDC era. Prior to the establishment of EDCs, women's economic activities were largely confined to subsistence agriculture, collection of minor forest produce for household use, and domestic responsibilities. Employment outside the household was rare, and formal engagement with government programs was virtually absent. Post-EDC implementation, there has been a significant increase in women's participation in structured economic activities, including employment in forest protection tasks, eco-tourism initiatives, and involvement in self-help groups (SHGs) linked to the EDCs.

Most households engage in collecting, cultivating, and selling items such as coffee, pepper, firewood and frankincense for additional income and personal use. The sales are facilitated through the EDC SHG which ensures a Minimum Support Price (MSP) for their products.

A significant development contributing to the rise in household income over time has been the formal employment opportunities created through the JFM-EDC program. In the Mannan tribe, all 600 families are currently enrolled as members of Ecodevelopment Committees (EDCs), while among the Paliyan tribe, 143 out of 250 families are EDC members. Among the 60 households surveyed for this study, 34 households (approximately 57%) reported that at least one family member is employed as a tribal watcher or eco-tourism guide under the EDC initiatives. This transition towards conservation-linked employment has provided a more stable income source for tribal households and has contributed to reducing their dependence on unsustainable forest resource extraction, in alignment with the core objectives of the India Eco-Development Project (IEDP).

Another staple income stream for the natives of these settlements is derived from their fishing rights in the Periar river. The income secured from fishing is difficult to estimate as it is a largely seasonal activity of which the income varies from month to month. The average monthly income that is estimated from fishing (₹20,000) is derived from the approximate annual income they derive from the same. This data is further complicated by the fact that a sizable portion of their income is generated during the monsoon season, when catches are disproportionately higher compared to other months.

An important insight from this data is that there is surprisingly small number of families living in poverty within these tribal settlements. However, despite the improved quality of living, many respondents lack the financial knowledge to provide accurate monthly or annual income information. This also highlights the unstable and uncertain nature of their revenue streams.

(Monthly income data is extrapolated from standardized income streams publicly available, including EDC wages, MGNREGA wages, Kudumbashree wages, and average MSP rates from the EDC for products such as fish, coffee, and pepper.)

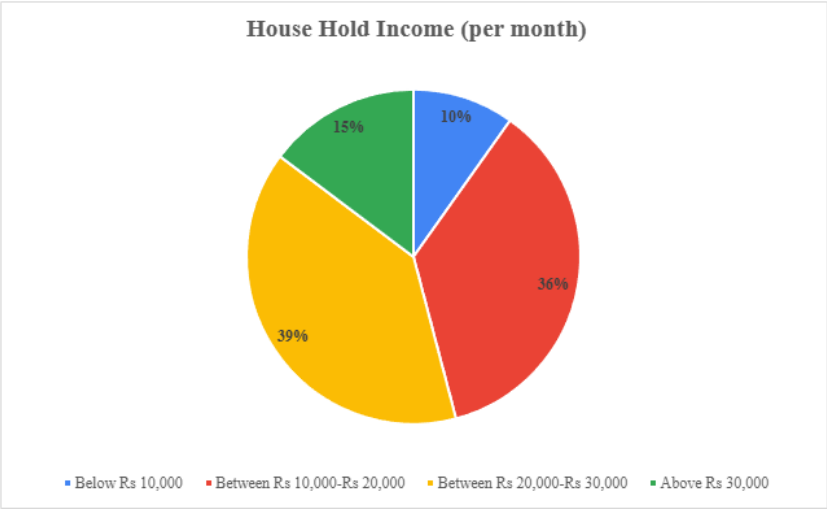


Fig. 4. Household Income (per month)
Source: Author’s calculation

5.4 Infrastructure

In the realm of infrastructure, great developments have occurred in the tribal settlements. Today, most houses are concrete houses with access to regular electricity,

water supply, and sanitation facilities. In most of the houses surveyed, the usage of electronic appliances like TVs or fridges is noted. We can also see a shift from using firewood to using LPG cylinders for cooking purposes. Proper roads have been built through the settlements, making it possible for them to access the nearby markets easily. This has led to an improved quality of life among the tribals. Better connectivity to the nearby towns implies better access to institutions like banks, insurance, other financial institutions, government offices, schools, and hospitals. The access to information regarding these institutions has also improved over the years. More awareness about various government schemes, loans, and educational or health benefits is available. The government provides water tanks and pipe connections for water and constructs concrete houses for the tribal families.

5.5 Gender Differential

5.5.1 Paliyan Women

Women in the Paliyan tribe exemplify the complex interplay between hardship and social progress. Traditionally restricted, Paliyan women have found themselves as the primary breadwinners due to male alcoholism. This has resulted in a paradoxical form of empowerment. On the one hand, earning wages through daily labor, plantation work, or MGNREGA programs provides financial independence, challenging the patriarchal structure. Women gain self-worth and agency, no longer solely reliant on men. However, this economic power stems from a negative source – male dependence on alcohol. Ideally, empowerment would not be driven by necessity but by opportunity. The current situation places a heavy burden on women, who shoulder household responsibilities and childcare alone, potentially leading to overwork and stress. The Paliyan case, therefore, is a double-edged sword. It showcases women's resilience but underscores the need to address male alcoholism and create a more equitable division of labor. Only then can Paliyan women truly flourish.

5.5.2 Mannan Women

Mannan women face a complex web of limitations in their daily lives. Financial dependence on their husbands restricts control over resources, while deeply ingrained

social norms dictate their interactions. Fear of violence and disrespect discourages most women from even basic conversations with men outside the family. Daily errands like market visits require a male escort, highlighting their lack of autonomy. This extends even to essential tasks like collecting forest produce, where cultural norms fail to acknowledge their contribution. Compounding this is a lack of financial literacy, further limiting their independence. However, a glimmer of hope emerges with the implementation of ecodevelopment committees. These committees represent a tentative shift towards tolerance and potentially pave the way for a greater agency for Mannan women. The success of these initiatives will hinge on dismantling restrictive social norms and empowering women with financial literacy, allowing them to participate more meaningfully in household decision-making and community development.

5.5.3 A Comparative Analysis of the Situation of Women in Mannan and Paliyan Tribes

The Paliyan and Mannan women present contrasting realities of empowerment and its complexities. Paliyan women, thrust into the role of breadwinners due to male alcoholism, have achieved a paradoxical form of empowerment. They have gained financial independence and challenged patriarchal norms by working as daily laborers, plantation workers, or MGNREGA employees. However, this economic power stems from a negative source, highlighting the difference between empowerment driven by opportunity and necessity.

In stark contrast, Mannan women face a web of restrictions. Financially dependent on their husbands, they are severely limited by social norms. Even basic interactions like speaking with men outside the family or visiting the marketplace require a male escort, exposing them to the threat of violence and disrespect. Financial illiteracy further restricts their independence.

For both tribes, the path to genuine empowerment is multifaceted. Paliyan women require solutions that address male alcoholism and create a more equitable division of labor. Mannan women need support in dismantling restrictive social norms and acquiring financial literacy. Ecodevelopment committees offer a glimmer of hope, but a more comprehensive approach is necessary. Education, skill development, and

creating a support system are crucial for both tribes. Only by breaking free from the cycle of necessity and fostering an environment that encourages opportunity can Paliyan and Mannan women truly claim their rightful place in society.

6. onclusion

This study assessed the impact of the India Eco-Development Project (IEDP) on tribal well-being through two critical lenses: the enhancement of livelihoods and the promotion of community participation in conservation activities. The findings reveal that the improvements in housing, healthcare, education, income diversification, and infrastructure development align with IEDP’s objective of fostering sustainable eco-development programs.

Furthermore, the establishment and active functioning of Ecodevelopment Committees (EDCs) reflect substantial progress in achieving participatory conservation and empowering local communities, particularly through greater economic roles for women. These alignments can be summarized as follows:

Table 1. Alignment of Study Findings with IEDP Objectives

IEDP Objective	Findings from the Study
Develop sustainable eco-development programs	Improved housing, healthcare access, education outcomes, diversified incomes, and infrastructure development
Promote community participation in conservation activities	Functioning EDCs, women's economic empowerment, and reduced dependence on unsustainable forest practices

Despite these achievements, several challenges persist, including gender disparities, substance abuse among youth, and financial illiteracy, which threaten to undermine long-term gains.

The journey of the Paliyan and Mannan tribes from marginalization to empowerment stands as a testament to the transformative potential of joint conservation and

development efforts. The India Eco-Development Project (IEDP) has not only improved material well-being but also fostered new relationships of trust and cooperation between forest officials and tribal communities. This shift from adversaries to allies, reflects a broader paradigm of inclusive governance and shared stewardship of natural resources. Alongside these advancements, preserving indigenous traditions and customs amidst evolving living standards highlights these communities' resilience and ability to adapt while maintaining a strong cultural identity

Going forward, strengthening institutional support, addressing emerging social issues, and ensuring sustained community engagement will be essential for consolidating these achievements and realizing the full vision of the India Eco-Development Project (IEDP).

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